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### Aims and Scope

IFLA Journal is an international journal publishing peer reviewed articles on library and information services and the social, political and economic issues that impact access to information through libraries. The Journal publishes research, case studies and essays that reflect the broad spectrum of the profession internationally. To submit an article to IFLA Journal please visit: [journals.sagepub.com/home/ifl](http://journals.sagepub.com/home/ifl)

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## Irish libraries: An introduction

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This article originated in a desire to provide a ‘landscape report’ on the different library sectors in Ireland, and describe their current state and future plans for the benefit of delegates at the IFLA World Library and Information Congress 2022 in Dublin. The initial plan was to collect the individual contributions and synthesise them into a single, seamless piece of work. Having received the contributions, however, I decided on a light-touch editorial approach. So, I revised the texts for consistency of grammar, condensed or expanded a small number of sections, and made slight stylistic changes. Otherwise, I let the authors speak for themselves.

What follows, therefore, is a series of separate stand-alone descriptions. The approaches adopted by each of the authors and the levels of detail differ in each piece. When put together, however, they do provide an introduction to the different library sectors in Ireland today. I trust it is of some interest to the readers of *IFLA Journal*.

Philip Cohen  
Chair, Irish National Committee, IFLA World  
Library and Information Congress 2022

### Historic libraries in Ireland

Ireland is the home of some truly outstanding historic libraries. Many are based in the capital and chief among them is the iconic Old Library of Trinity College Dublin, but there are also other, much smaller, libraries that are well worth a visit while you are in Ireland. These libraries not only reflect our historic past but also point to innovative ways of promoting and preserving our collections in the future.

#### *Bolton Library at the Glucksman Library, University of Limerick*

The Bolton Library is a collection of early printed books, manuscripts and incunabula of exceptional bibliographic importance. The core of what has become known in the 21st century as the Bolton Library began life as two separate collections, which were amassed at various locations principally during

the years 1669–1744. These collections were the passions of two future Church of Ireland archbishops: William King (1650–1729) and Theophilus Bolton (1678–1744). Bolton acquired a large portion of King’s collection after his death in 1729, and brought it to his home in Cashel, County Tipperary, to join the shelves of his own growing collection there. The library was moved to the University of Limerick in 2016 for an extensive cataloguing and conservation programme. It reflects the interests, knowledge and concerns at that time as King and Bolton sought to build a library to encompass as much as possible of humanity’s knowledge of the world. It is strong in theology, arts, history and science. The material collected by these two men reflects individual interests and passions, as well as the output of increasingly enlightened times. It would be a mistake to consider the Bolton Library a religious collection. It is so much more.

#### *Edward Worth Library*

The Edward Worth Library is the collection of an early 18th-century Dublin physician, Edward Worth (1676–1733). Worth was a connoisseur collector, fascinated by rare printing and fine bindings, and his collection of over 4300 volumes offers visitors a unique opportunity to step back in time and see bindings in an incredible state of preservation in their original early 18th-century cases. The Worth Library is housed in Dr Steevens’ Hospital, an early 18th-century foundation of which Worth was a trustee and which is now the headquarters of the Health Service Executive. Set up in 1995, the Worth Library Trust seeks to share Worth’s collections with as many people as possible via tours, a host of online exhibitions, a research fellowship programme, publications and other joint initiatives, such as our involvement in the FutureLearn massive open online course ‘The History of the Book in the Early Modern Period: 1450 to 1800’ – a free course that is coordinated by the Worth Library and the Departments of English and History at Trinity College Dublin. While the Worth Library is known for its extensive medical and scientific

collections (many of which have been the subject of online exhibitions), it is a must-see for all those interested in the history of the book as an object.

### *Marsh's Library*

Marsh's Library first opened its doors to the public in 1707. Our historic collections remain in the same place on the shelves where they were placed more than three centuries ago. The library is a rare survivor from a world long past. It functions both as a museum of what a library looked like in the early 18th century and a dynamic and welcoming space for tourist visitors, students and scholars. We aim to preserve our historic buildings and collections, and make the library relevant to new and diverse audiences in the 21st century. The library is a site of intellectual and cultural significance, and our plans for the future reflect our determination to protect for future generations the building, books and artefacts under our care. Over the past decade, we have moved to digitise our Irish manuscripts (a collaboration with Irish Script on Screen) and, most recently, the diary and correspondence of our first librarian, a Huguenot refugee. The unique printed material in the collections will be a focus of digitisation in the coming years. Collaborations with colleagues in international organisations support our mission to make the collections more widely known at all levels.

### *National Library of Ireland*

The foundation collection of the National Library of Ireland is that of the library of the Royal Dublin Society (RDS). The National Library was established by the Dublin Science and Art Museum Act of 1877 and was based in the Society's Leinster House premises until the new library building on Kildare Street was opened in 1890. Since 1927, the library has benefited from legal deposit legislation (for material published in the Republic of Ireland) and cares for over 12 million objects, including books, newspapers, manuscripts, maps, photographs, prints and drawings, and, increasingly, digital material. The Manuscripts Department and Special Collections Reading Room are at 2–3 Kildare Street. The National Photographic Archive in Temple Bar houses the library's photographic collections. There are three exhibition sites, which are all free to visit and include award-winning exhibitions on Seamus Heaney and WB Yeats, plus photographic exhibitions featuring the largest collection of Irish photographs in the world. MoLI (the Museum of Literature Ireland), at 86 St Stephen's Green, is a partnership between the library and University College Dublin. Redevelopment of the west

wing of the National Library's main building is ongoing and, when completed, will provide new public spaces, exhibition galleries, and learning and event facilities with universal access for all.

### *Royal Dublin Society Library and Archives*

The RDS Library and Archives has been a part of the RDS from its foundation in 1731. Its interests and collections reflect the RDS Foundation Programme areas of agriculture, science, enterprise, equestrianism and the arts. The RDS Library and Archives collections contain over 100,000 items comprising monographs and journals of Irish and general interest, some of which are rare and date back to the earliest days of printing in Europe. Our archival collections represent the corporate archive of the RDS. This unique resource dates back to 1731 and includes the proceedings, minutes and correspondence of the RDS and its Council and Standing Committees; records and catalogues of its shows and exhibitions, including the RDS Spring Show and the Dublin Horse Show; and material connected with Irish cultural institutions related to the RDS, including the National Library, National Museum of Ireland and the National Botanic Gardens, Glasnevin. We are currently in the process of digitising large parts of the collections for upload to the RDS Digital Archive.

### *Royal Irish Academy Library*

The Royal Irish Academy Library, founded in 1785, holds major manuscript, book, pamphlet and drawing collections of Irish interest. Home to the *Cathach*, the 6th-century Latin psalter reputed to have been copied by St Colum Cille (Columba), the library holds the largest collection of Irish-language manuscripts in the world, including the *Lebor na hUidre* (*Book of the Dun Cow*), which is the oldest extant manuscript completely in Irish; the 15th-century *Leabhar Breac* (*Speckled Book*); and the 14th-century *Book of Ballymote*. The library is located in Academy House, a fine mid-18th-century house built by Lord Northland, at 19 Dawson Street. We encourage the publication of texts based on our manuscripts and engage with the Dublin Institute for Advanced Studies' Irish Script on Screen project in making the manuscripts freely accessible for research and scholarly purposes. We offer comprehensive access and outreach programmes, facilitate masterclasses and visits, hold exhibitions and lecture series, and digitise and publish collections. We currently collaborate with multidisciplinary research projects such as Inks and Skins, Beyond 2022 and OS200.

### *Russell Library and Maynooth University Library*

The Russell Library houses the historic collections of St Patrick's College, Maynooth, which was founded in 1795 as a seminary for the education of Irish priests. The reading room was designed by the renowned British architect Augustus Welby Northmore Pugin (1812–1852) and completed in the year 1861. The Russell Library contains approximately 34,000 printed works dating from the 16th to the mid 19th century across a range of subjects, including theology, mathematics, science, geography and history. Other important collections include incunabula (pre-1501 printing), medieval and Gaelic manuscripts, and cuneiform tablets. The Russell Library is a research library and open to staff and students of Maynooth University and St Patrick's College. It is also open to academic visitors, researchers from other institutions and external readers. Readers are requested to make an appointment in advance of their visit. In addition, there is the St Canice's Cathedral Library collection under the custodianship of Maynooth University Library, following a long-term loan agreement with the Representative Church Body of Ireland in 2014. This unique collection of early printed books constitutes one of the most important antiquarian book collections in Ireland.

### *Trinity College Dublin*

The history of the library dates back to the establishment of Trinity College Dublin in 1592. It is the largest library in Ireland and holds over 6 million printed volumes, with extensive collections of journals, manuscripts, maps and music reflecting over 400 years of academic development. The most famous of its manuscripts, the *Book of Kells* and the *Book of Durrow*, were presented by Henry Jones, Bishop of Meath, in the 1660s. Other special collections include the Ussher Collection, acquired in 1661, and the Fagel Collection of 1802. The library was endowed with legal deposit privilege in 1801 and continues to receive copies of material published in the UK and Ireland. The library supports learning and research needs across all disciplines of the College. It is a major research library of international repute, providing services to a wide range of external users and institutions, and contributing to the development of creative initiatives in information provision. The exhibitions of manuscripts and other treasures attract hundreds of thousands of visitors to the Old Library each year. Trinity College Dublin is currently preparing an ambitious redevelopment plan, which will draw on the best 21st-century design and technology to safeguard the Old Library

building and conserve its precious collections for future generations.

Elizabethanne Boran  
Librarian, Edward Worth Library  
and colleagues in the individual historic libraries

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### **Public libraries**

Ireland has earned the moniker the 'Land of Saints and Scholars' in homage to the Irish monks and intellectuals who became exemplars of art and literature and custodians of ancient texts during the Dark Ages. The story of Ireland's public libraries is also a lengthy narrative. The hushed, oak-cased surroundings of Marsh's Library in Dublin are home to what was Ireland's first public library, founded in 1707. Later, and signalling the advent of the municipal public library, Dundalk Library in County Louth was the first public library in Ireland to open under the Public Libraries (Ireland) Act 1855, which allowed local authorities to establish a library and levy a maximum rate of one penny to support it.

### *Infrastructure*

More than 300 years since Ireland's first public library was established, there are now 30 public library services and 330 branch libraries in the country. This progressive and well-used network recorded almost 17 million visits in 2019. Public libraries fall under the remit of local authorities, providing a local service with a nationwide reach, as members can use all library services at any library branch in the country. In addition, a national shared catalogue, a shared library management system and an integrated nationwide delivery system mean that members can reserve items from any public library in the country for collection in their own local branch. Capital investment in recent years has seen €123 million invested in 17 static and 3 mobile libraries. There is a national collection of more than 12 million items, and there were more than 500,000 active library members in 2021. Joining fees and fines for late returns were removed by all public libraries in Ireland in 2019.

Public library branches in Ireland vary in size and in the scope of the services available. Opening hours also vary, with some smaller branches offering in the region of 10 hours per week; larger central branches providing up to 50 hours per week; and an increasing number offering the My Open Library service, which adds up to 95 hours per week on top of the normal staffed hours. This service provides enhanced access

for the community and is expected to be available in 200 libraries nationwide in the next decade.

### *National programmes*

Public libraries in Ireland work with many different stakeholders to deliver national programmes such as a national literacy and reading programme, Right to Read, with a core set of services including a Summer Reading Programme; a Children's Book Festival and, in 2022, My Little Library Book Bags for every child starting primary school; a national Work Matters programme for business and employment supports aimed at entrepreneurs, start-ups and job-seekers; the Healthy Ireland at Your Library programme, providing support materials for health and well-being, and events that focus on physical health, mental health and health literacy.

### *Digital learning centres and online services*

The public library in Ireland is a key enabler of digital support services, encouraging digital skills development through the provision of the Internet, personal computers and free Wi-Fi. In 2019, 70 libraries in Ireland established digital learning centres, which include interactive screens, tablets, three-dimensional printers, virtual reality headsets, gaming computers, robotics and other science, technology, engineering, arts and mathematics (STEAM) equipment. These centres offer a safe space for less confident users in the community to become familiar with technology. In addition, all public library services in Ireland provide access to a large collection of free online resources that are available nationally, including more than 500 flexible e-learning courses, 114 online language courses in 32 languages, more than 300 international magazine titles, 100,000 volumes of e-books and e-audiobooks, and 3200 online newspapers.

### *E-library services during the COVID-19 lockdowns*

Public libraries in Ireland moved their existing programmes to online platforms in response to COVID-19 restrictions in 2020. There was a huge increase in new library memberships and the use of the online resources during this time. Between 2019 and 2020, BorrowBox (for e-books and e-audiobooks) saw a 151% increase in new users, 121% increase in e-book loans and 108% increase in e-audiobook loans. Many Irish public librarians became involved in providing wider social supports for vulnerable communities through their work with the Community Call Helplines, while others delivered library materials directly to the homes of their users. Many people

reconnected with their local libraries during the pandemic, while others discovered their services for the first time.

### *National strategic planning for public libraries*

The current national library strategy, *Our Public Libraries 2022: Inspiring, Connecting and Empowering Communities*, has harnessed recent technological and service innovations. It has focused on improving the access, use and visibility of the public library, and establishing it as the go-to place for a range of sustainable, integrated public services. The strategy celebrates public libraries as attractive and welcoming spaces where all members of the community can access knowledge, ideas and information, and where people can reflect, connect and learn. There has also been an emphasis on supporting staff to develop and enhance their skills, and to develop the confidence and capacity to be leaders both for library users and for their fellow team members. A new strategic plan for 2023–2027 is in development and will be based on the needs and opportunities of the sector in line with the vision of an inclusive, modern, sustainable, high-quality public library service at the heart of every community in Ireland. In the 'Land of Saints and Scholars', one would expect nothing less.

Eileen Morrissey  
County Librarian, Wexford County Council  
Vice-President, Library Association of Ireland

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### **Consortium of National and University Libraries**

The Consortium of National and University Libraries (CONUL) is the representative body of major research libraries in Ireland and Northern Ireland. Its mission is to foster and enable 'new research, excellence in scholarship and teaching, digital depth and cultural breadth' (<https://conul.ie>). Its members include Dublin City University, Maynooth University, National University of Ireland Galway, RCSI University of Medicine and Health Sciences, Technological University Dublin, Trinity College Dublin, University College Cork, University College Dublin and University of Limerick. Other members are the National Library of Ireland and the Royal Irish Academy, plus Queen's University Belfast and Ulster University (which are beyond the scope of this piece).

Prior to the unprecedented events of the last two-and-a-half years, academic libraries were already dealing with rapidly changing environments, as

higher education addressed the new challenges of delivering and expanding resources in the context of increasing costs, ensuring equity of access and widening participation. The ‘digital shift’ that had commenced before the pandemic has been accelerated since early 2020, and this section sets out some key drivers and areas of focus for CONUL libraries.

### *Post-pandemic environment*

Much has already been written and presented in relation to academic libraries’ response to the COVID-19 pandemic, in particular the relative ease of transition to delivering services and resources remotely, including teaching and learning activities, engagement approaches, research support and access to collections. In 2022, while campuses have reopened and on-site services have resumed, it is acknowledged that there has been a paradigm shift. The now tired phrase ‘the new normal’ was used to describe a possible changed environment for academic libraries, where it was felt that some services and delivery mechanisms might cease entirely, being replaced by a ‘digital-first’ approach. In fact, it can be accepted that academic libraries, as with wider society, are still in a process of transition and change. Libraries within the broader university environment are figuring out the balance of providing in-person services along with opportunities to access resources, engage in teaching and learning activities, and avail of services online. It may be argued that this digital shift is in fact not a transition from the physical or analogue to the digital but instead an ongoing transformation and blending of both approaches. Below, I set out some features of the academic library landscape that form part of such a transformation.

### *Access to physical and digital collections*

During the periods of lockdown, access to electronic resources was hugely significant for the research, teaching and learning environment. Academic libraries proved themselves to be well placed to pivot to a primarily digital model, engaging with publishers to extend and enhance their e-resource provision through additional licensing arrangements. The need for print material continued, however, despite some arguments to the contrary. Academic libraries offered extremely popular ‘click and collect’ models to access print collections, which have been retained in many cases and continued in popularity, helping to meet the needs of a more dispersed and diverse user community. But the enhanced use of our electronic resources has brought an even keener focus on the challenge of developing electronic collections with limited time,

reduced budgets, and the challenge of negotiating deals with publishers that are equitable and affordable. The #ebooksSOS campaign in Ireland and the UK has brought attention to the enormous cost of e-books compared to print equivalents, the challenges of the licensing models, and the need to fully investigate open access opportunities and open educational resources.

### *Changed teaching and learning environment*

Academic libraries have always been key partners in the teaching and learning activities of their institutions, offering embedded, stand-alone and tailored classes. The demand for classes increased substantially during the pandemic, with a rapid shift to online delivery. This resulted in several major changes: the ability to use technology to deliver synchronous (live) and asynchronous (recorded) classes; the use of reusable learning objects; their combination to maximise student and academic participation; embedding them more easily into the course curriculum; and greater use of online learning platforms to increase student engagement and active learning through online assessment and feedback. Academic libraries have always been early adopters of instructional technology, and teaching and learning librarians adapted well to the online environment during COVID-19. As face-to-face classes have resumed, the challenge now is to continue to harness the learning from the delivery methods adopted during the pandemic to create a hybrid, user-focused teaching approach for the long term, working with academic and professional support colleagues to facilitate the ongoing development of online and blended learning opportunities.

### *Research support*

The way in which research support services are provided by academic libraries has been transformed since 2020. The online environment has greatly benefited the research community (students on taught Master’s programmes up to postdoctoral researchers and early career academics), allowing them to balance research and writing with their personal commitments and to easily engage with colleagues both locally and at a distance. Researchers have continued to express a preference to engage online, even as face-to-face delivery has recommenced. They use online platforms and events facilitated by libraries to present their research and participate in shared-interest cross-disciplinary networks, which was previously more challenging and time-consuming to do in-person. The discussion on open research has accelerated since COVID-19, with academic libraries playing a key role

in developing open scholarship policies, leading in the area of research data management and the creation of data management plans, and enhancing institutional repositories to ensure that university research output is captured, shared and disseminated widely.

### *Changing student needs*

Undoubtedly, higher education students have been significantly affected by the pandemic restrictions, experiencing their first year in university almost exclusively online, with none of the normal social interactions they could have expected. The Enhancing Digital Teaching and Learning in Irish Universities project is a four-year project aimed at 'enhancing the digital attributes and educational experiences of Irish university students through enabling the mainstreamed and integrated use of digital technologies across the teaching and learning process' (<https://edtl.blog>). The project gained increased significance during COVID-19. A survey of students in the summer of 2021 found that many wanted to be fully on campus; others wanted to be able to attend remotely, at least part of the time; and more wanted flexibility of choice regarding how they engaged in their learning. Consequently, universities need to balance the competing imperatives of student preferences in order to deliver a holistic and academically meaningful learning experience. University libraries can play their part by structuring resources, engagement opportunities and classes to ensure that students are being met at their point of need, have equity of access (whether on-site or studying remotely), and are provided with a variety of ways to ask questions and have them answered quickly.

Áine Carey

Assistant Librarian, Maynooth University Library

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### **Technological University and Institute of Technology libraries**

Of those students attending public higher education in Ireland in 2021-2022, 38% (94,494) attend a technological higher education institution (<https://hea.ie/statistics/data-for-download-and-visualisations/key-facts-figures/>). These institutions are Atlantic Technological University, Munster Technological University, South East Technological University, Technological University Dublin and Technological University of the Shannon: Midlands Midwest, plus

Dundalk Institute of Technology and the Institute of Art, Design and Technology, Dún Laoghaire.

Established from 1970 onwards, these institutions have grown from regional technical colleges serving the needs of their locale to playing a pivotal role nationally and internationally in providing certificate, diploma, degree, Master's and PhD programmes, as well as increasing research activity. Additionally, these institutions offer several pathways and links to higher education through established relationships with further education colleges, industry and apprenticeships. They offer extensive lifelong learning and part-time courses, and support a high level of mature students returning to higher education or starting their higher education for the first time. The class sizes are generally smaller than in a more traditional university.

Institutes of Technology and Technological Universities have more than 50 years of experience in delivering high-quality library services and expertise to support and strengthen the teaching, learning and research needs of their staff and students. The libraries provide physical spaces for individual and group learning, and deliver vast print and online collections, including unique and distinctive collections. Library staff supply information literacy resources and tutorials to individuals and in classes, both face-to-face and online. In addition, the libraries provide dedicated specialist knowledge to enrich digital scholarship and research. Finally, the sector has a strong collaborative culture of library staff sharing knowledge and expertise with one another and across the wider library profession.

Mary Delaney

Head of Library and Information Services, South East Technological University Carlow Library

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### **Higher Education Colleges Association libraries**

Formed in 1991, the Higher Education Colleges Association (HECA) represents 12 member institutions, comprising most of the major independent colleges in Ireland, educating 27,000 students. All HECA members are state-accredited, delivering validated programmes across a diverse range of disciplines at the certificate, diploma, degree and Master's levels.

HECA libraries have modern learning spaces, extensive print and online collections, and discovery searching software. They support the teaching, learning and research activities of their institutions with a variety of services, including programme-embedded information literacy and academic integrity



initiatives. The libraries have a strong focus on open science and scholarship – many of them use the Koha open source library management system, institutional repositories have been established using software such as dSpace and Digital Commons, and open access journals have been launched or are in development. The HECA Library Committee is a key resource for library staff to share knowledge and engage with the wider library community both nationally and internationally.

Patricia O’Sullivan  
Executive Director, Higher Education Colleges  
Association

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### School libraries

On 17 April 2022, an article appeared in the *Irish Independent* with the headline ‘€20 m grant funding announced for school libraries’. The article went on to explain that this fund, from the Department of Education, would provide schools all over Ireland with resources to ‘enhance their library catalogues’. Any grant towards school library resources is welcome but as the vast majority of schools in Ireland do not have a school library (i.e. a dedicated space run by a qualified librarian), it is misleading to state that this grant is for school libraries. In fact, although most fee-paying schools have libraries staffed by professional librarians, there are only 30 publicly funded schools in Ireland that have professionally staffed libraries. These libraries were set up as part of the Junior Certificate School Programme (JCSP) Demonstration Library Project, which began as a research project in 11 schools in 2002, with plans to further expand to 50 schools by 2010. Despite the evidenced impact of the initiative on student engagement, retention and literacy development, expansion remains on hold in 2022. This is regrettable because JCSP is an innovative, collaborative and creative project that has significantly impacted teaching and learning in our school communities. Warm, bright, comfortable spaces have been created within the project schools, in which students can learn, grow and develop through access to the library resources, through participation in the wide range of library-based initiatives, activities and events, and, very importantly, through the support and guidance of the school librarian.

Considering the poor status of school libraries in Ireland, this €20 million funding will likely be used to stock shelves at the back of classrooms and, unless teachers have enough time and enthusiasm to

catalogue, classify and promote the books, they are at risk of gathering dust over time. The main problem here in Ireland has been the lack of understanding that a school library needs a dedicated space and a school librarian. School librarians can foster a love of reading; teach research and digital literacy skills; inspire; and transform the library space into a welcoming, educational, exploratory, digital, creative, cultural and, most importantly, community space. The School Libraries Group of the Library Association of Ireland has been campaigning that every school in Ireland should be provided with resources for a school library, run by a qualified librarian. A recent parliamentary report on reform of the school Leaving Certificate supported this view and its top-10 key recommendations included the need for a library and a librarian in all primary and post primary schools by the end of 2024.

Thanks to government support and initiatives, there is a wonderful culture and appreciation of public libraries in Ireland, which has helped to enrich our literature and cultural heritage. Now, we trust that the government will extend this support and appreciation to school libraries so that all of society can benefit. The first step towards achieving this is to understand what school libraries really are and what school librarians can really do.

Kathleen Moran  
Senior Librarian, JCSP Demonstration Library  
Project  
Chair, School Libraries Group, Library  
Association of Ireland  
Andrea Dillon  
Secretary, School Libraries Group, Library  
Association of Ireland

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### Health libraries

Irish health librarians and information professionals work in a variety of settings, which can be broadly divided into three groups: hospital librarians either working as part of Health Library Ireland or in publicly funded voluntary hospitals; librarians and information specialists working in publicly funded health and research agencies; and librarians working as health-related subject librarians (or in health science faculties) in universities and other higher education institutions.

#### *Recent activities and future plans*

The Health Service Executive is the national body that is responsible for public health services in

Ireland. Health Library Ireland was set up in 2016 in order to consolidate regional Health Service Executive library structures. The first strategy was published in 2018 and has been largely implemented. Much of the strategy focuses on delivering knowledge services to everyone working in the Health Service Executive, and includes the roll-out of a National eHealth Library for everyone working in the publicly funded health sector. During the recent pandemic, Irish health librarians across many organisations were involved in literature-searching for rapid reviews and evidence summaries on COVID-19. Health Library Ireland developed the platform 'COVID-19 Evidence and Clinical Guidance'. In very difficult circumstances, the pandemic highlighted the value of our highly specialised skills in finding high-quality, evidence-based health information and making it available and accessible to health professionals and the general public.

Health librarians and information professionals are represented by the Health Sciences Libraries Group of the Library Association of Ireland. This is a very active group with a lively discussion list, journal club and regular newsletter. It hosts a conference every year, as well as organising other continuing professional development and networking events. Membership is open to all members of the Library Association of Ireland with an interest in health information and librarianship. The Group launched its virtual journal club in April 2021. This is a collaborative effort with the goal of providing an active online knowledge-sharing space to support continuing professional development and one another professionally at a time when it has been difficult to meet physically. At the time of writing, the virtual journal club has met four times, and an article about its inception has been published in the *Journal of Health Information and Libraries Australasia*. The Health Sciences Libraries Group held its annual conference in March 2022. It was the first in-person meeting since the outbreak of COVID-19, not only for the group but also for all Irish librarians. The group is currently working on a framework to enhance its provision and support of continuing professional development activity, which is identified as one of the main benefits of membership.

Aoife Lawton  
General Manager, National Health Library and  
Knowledge Service, Health Service Executive

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## Corporate libraries

Twenty years ago, there were in-house libraries managed by librarians in many industries in the private sector: accountancy, banking, engineering, law, manufacturing and others. This library sector has changed considerably since then. While there are still some librarians working in the private sector, using their information management skills, they are not necessarily working in or managing library services. The legal sector is an exception, with many of Ireland's corporate law firms having an in-house library staffed by law librarians. These librarians manage and develop print and online collections, enquiry services, legal information literacy programmes, current awareness services, and library and knowledge management systems.

In recent years, law librarians have taken on the challenges of hybrid working brought about by COVID-19. Whilst print textbooks are still important in the legal world, the move to a hybrid working model has accelerated the reliance on digital resources. Thus, law librarians work closely with practitioners to ensure that they have online access to all the material they need when they need it, and training on the use of such resources is recognised as a priority. As information technology is evolving, so too is the role of the law-firm librarian, and the future looks bright.

Ann O'Sullivan  
Knowledge Services Manager, A&L Goodbody

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## Government libraries

The government libraries sector in Ireland remains strong and vibrant, although its profile has changed significantly over the past 20 years. Many government departments no longer have a library and, if they do, it is often not staffed by qualified librarians. However, the sector has seen growth in government agencies and analogous independent agencies.

The job titles of staff in this library sector are varied, including librarian, information manager and knowledge manager. The roles are also varied, with many involved in traditional library activities such as collection management, acquisition, current awareness and research support. New roles include intranet and website management, knowledge management, repository management and information literacy training. Undoubtedly, the role of government libraries will continue to develop in support of government strategies and a policy of evidence-based decision-making and digital government.

Government librarians network and share experience through the Government Libraries Section of the Library Association of Ireland. The Government Libraries Section also strives to promote and develop the role of libraries throughout the civil service.

Noeleen Murtagh  
Librarian, Food Safety Authority of Ireland  
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# Advocacy of the Sustainable Development Goals in Jordanian academic libraries

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## Abstract

In view of the increased importance of the Sustainable Development Goals and the limited number of public libraries in Jordan, it is important to investigate the role and practices of academic libraries in promoting knowledge and skills to support the Sustainable Development Goals in Jordan. It is also important to explore the challenges that might hinder the accomplishment of the Sustainable Development Goals. The results of this study support the fact that academic libraries can significantly contribute to the Sustainable Development Goals ( $M = 3.53$ ) by providing access to relevant and up-to-date information ( $M = 4.16$ ) and giving training on information literacy ( $M = 4.03$ ). Access to information contributes to the quality of life of society ( $M = 4.41$ ). This article provides insights for academic librarians and decision-makers into disseminating measures for promoting knowledge and skills related to the Sustainable Development Goals among students and the public community in Jordan. The study recommends some relevant strategies, such as the collaboration of academic libraries with governmental and health institutions to support the realization of the Sustainable Development Goals in Jordan.

## Keywords

Sustainable Development Goals, SDGs, academic library, advocacy, United Nations Agenda, access to information, Jordan

## Introduction

The Sustainable Development Goals (SDGs) are gaining the attention of almost all institutions and firms, including libraries and information centres, across the globe. The United Nations (UN) 2030 Agenda for Sustainable Development is a framework of 17 SDGs integrating economic, environmental and social development. Their purpose is to engage countries in creating a better world for their people, providing a comprehensive list of critical issues that affect decision-making (IFLA, 2019). In this regard, the International Federation of Library Associations and Institutions (IFLA) has played a major role in the creation of the UN 2030 Agenda. It strongly called for the inclusion of access to information, the safeguarding of cultural heritage, universal literacy, and access to information and communications technologies (ICTs) in the framework (IFLA, 2020b). The

IFLA (2020b) affirmed the role of libraries as key institutions for achieving the SDGs through guaranteeing access to information. Also, the IFLA (2020a) has explained the role of libraries in promoting universal literacy, better understanding information needs, and preserving culture and heritage – among other things. The role of the library and information science profession as a key partner and active contributor cannot be neglected (Pinto and Ochôa, 2017). Ojiambo and Kasalu (2015) point out that academic libraries play a role in providing information resources that meet the information needs of their community, including students, teaching staff, non-teaching staff and all other society members. They

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provide support for society members and enable them to educate themselves. Public libraries can drive development for a sustainable, inclusive and healthy future for all people (Kosciejew, 2020).

Libraries around the world serve their communities by providing access to information through various information resources that meet their information needs. For instance, Ojiambo and Kasalu (2015) affirm that academic libraries provide a variety of information services to support the educational environment they are part of. They add that special libraries play a key role in providing information that is in line with their organization's vision and mission in order to support decision-makers in making insightful decisions. The IFLA (2019) also explains that libraries offer a wide range of information services that promote the achievement of each and every one of the 17 SDGs. For example, they promote literacy innovation and creativity, offer free access to information and understand local community needs. Similarly, Benson et al. (2019) note that academic libraries particularly are engines of change and have to contribute effectively towards the development of their country in several key areas, such as quality education, ending poverty and hunger, improving the living conditions of the people, gender equality, access to water and sanitation, and healthy lives. Bawack (2018) points out that the success of any society, country or institution is strongly associated with the adequacy of its library collections, infrastructure and information dissemination policy. Moreover, Onah et al. (2015) affirm that access to information in information agencies, especially libraries, is required for the realization of all the SDGs. In line with this, Abdullahi and Abdullahi (2017) note that libraries have a vital role to play in national development, which means that they have national responsibilities in providing information services for the attainment of the SDGs.

In Jordan, the number of public libraries is limited to one active library – Abdul Hameed Shoman (2021) – while there are around 34 academic libraries in the country (MOHE, 2021). Therefore, the inadequacy of public libraries in Jordan and the prevalence of academic libraries calls for academic libraries to carry out the mission of public libraries and support lifelong learning. Also, the number of studies that have investigated libraries' contribution to the achievement of the SDGs in Jordan is very limited, as there is only one study that has investigated Abdul Hameed Shoman, the main active public library in Jordan (Tbaishat, 2021). This study investigates the contribution of academic libraries to the SDGs and will be

the first to investigate academic libraries in relation to the SDGs.

Libraries in general and academic libraries in particular are undergoing major changes, especially following the information and technology revolution. Many institutions, including academic libraries, now believe that it is essential to make informed decisions to contribute towards national development. Evidently, it is important to investigate the role of academic libraries at Jordanian universities in the actualization of the SDGs. This study mainly aims to investigate (1) the perception of librarians of the library's role in the accomplishment of the SDGs; (2) the practices they implement; (3) the requirements for actualizing the SDGs; and (4) obstacles related to academic libraries' contribution to the realization of the SDGs in Jordan. The findings of this study will help public and professional experts to fully understand their key roles in contributing towards achieving the SDGs.

## Literature review

There have been many research studies on the SDGs, with most asserting the role of public libraries in the advocacy of the SDGs. A comprehensive search was conducted in Google Scholar using the University of Jordan domain. The aim was to gather most of the existing literature on the topic.

### The SDGs

In 2015, at the Sustainable Development Summit, the UN implemented the 2030 Agenda for Sustainable Development, which includes 17 SDGs and 169 targets spanning different categories such as the economy, education, the environment and social development. It provides a framework for development. It called on all world nations to adopt the SDGs to end poverty, combat inequality and injustice, protect the planet, guarantee peace for all people, innovate and, above all, tackle climate change by 2030. The goals are interconnected, where tackling some goals will lead to the success of others. The 17 SDGs, according to the UN, are shown in Figure 1. The Division for Sustainable Development Goals in the UN Department of Economic and Social Affairs provides support and capacity-building for the SDGs. The Division for Sustainable Development Goals evaluates the UN system's implementation of the 2030 Agenda. It also supports outreach activities relating to the SDGs (IFLA, 2020b; United Nations, 2021). The UN 2030 Agenda is considered a political commitment. This means that organizations at different levels, including libraries and civil society



**Figure 1.** The SDGs.

Source: IFLA (2020b).

organizations, are required to make sure that their government is accountable for the implantation of the SDGs in their country (IFLA, 2017). Moreover, the IFLA has been advocating for the inclusion of access to information, ICT and culture as part of the UN 2030 Agenda.

### *Libraries' contribution to the SDGs*

The development of all aspects of individual life – the economy, education and business, for example – is attributed to information. This reflects the reality of the information society, where information is essential to accomplish every task that an individual carries out. For instance, the IFLA (2020a) affirms the importance of free access to information to enable individuals to make informed decisions to improve their lives. Moreover, it is noted that communities that have access to information have an advanced position in eradicating poverty and inequalities. They also have improved agriculture, quality education, health support, culture, research and innovation (Okuonghae and Igbinovia, 2019). Access to information is an essential service for libraries to provide. In relation to the attainment of the SDGs, academic libraries

have a critical role to play in providing access to information for individuals in various formats without contradiction and discrimination. Realizing the great potential of the role of libraries in achieving the SDGs, many African countries have signed a declaration in support of providing the resources necessary to aid the contribution of libraries in their nations (Bradley, 2016). Wand (2016) affirms the need and importance of data and information to achieve sustainable development, and that this is where libraries and information centres are essential for socio-economic development. Abdel Hadi (2017) points out the role of Egyptian libraries and information centres in realizing the SDGs at the national and international levels by ensuring access to information, promoting information literacy and increasing awareness about the SDGs among library patrons.

In 2003, the IFLA called for 'libraries for lifelong literacy' IFLA (2016). The goal here is to facilitate access to information alongside understanding and using information effectively. However, with information available everywhere, it is essential to focus on developing lifelong information literacy skills (Gorman, 2003). The IFLA (2020b) affirms that access to information is essential in achieving the

SDGs. In line with this, libraries are not only key partners for governments, but are also already contributing to progress towards the achievement of the 17 SDGs. Their main role revolves around offering free access to information. They utilize advances in digital technology and promote digital inclusion through access to ICTs, Internet connection and skills. They also promote innovation, creativity and access to the world's knowledge for future generations (IFLA, 2019). The UN's 2030 SDGs are directly and indirectly affirming the role of information in social and economic development, which is related to the human need for information (Wand, 2016).

The IFLA states:

Libraries and access to information contribute to improved outcomes across the Sustainable Development Goals (SDGs) by:

- Promoting universal literacy, including digital, media and information literacy and skills, with the support of dedicated staff;
- Closing gaps in access to information and helping government, civil society and business to understand local information needs better;
- Providing a network of delivery sites for government programmes and services;
- Advancing digital inclusion through access to ICT;
- Serving as the heart of the research and academic community; and
- Preserving and providing access to the world's culture and heritage. (IFLA, 2020a)

It recommends that libraries should partner with governments to implement national strategies, as libraries are considered to be well-established, cost-effective and powerful partners in the fight for poverty reduction, economic development and learning for all (IFLA, 2020a). The report also points out the role of libraries in raising national awareness of the SDGs by providing information and updates about the SDGs for decision-makers and local communities.

Further, the IFLA initiated the International Advocacy Programme – a capacity-building programme – in 2016. The programme was designed to promote and support the role of libraries in the planning and implementation of the UN 2030 Agenda and the SDGs. It ran from 2016 to 2018 in order to raise the level of awareness of library staff with regard to the SDGs at all levels – community, national and regional (IFLA, 2020a, 2020b).

Moreover, the IFLA (2017) issued a tool kit aimed at the inclusion of libraries in formal national and

regional development plans to activate their role in achieving the UN 2030 Agenda. This tool kit has helped libraries in many countries to have the opportunity to relate to their government on their partnership for advancing their development priorities. Furthermore, the tool kit affirms that leaving access to information and libraries off the grid of national development plans means that governments are missing out on cost-effective and ready-to-use information platforms that are able to provide public access to information and skills. Libraries are valuable in achieving health, education, economic and cultural goals, and in advocating to governments about the need for adequate resources to provide high-quality library programmes and services. In relation to this, the third UN World Conference on Disaster Risk Reduction, held in Sendai, Japan, in 2015, developed a global agenda for safeguarding cultural heritage. The Addis Ababa Action Agenda framework for financing was also announced in 2015 for the creation of an open-access knowledge-sharing platform with the support of the IFLA. Moreover, Moldova, Georgia and Ukraine have access to information and library commitments as part of their open government partnership national action plans.

### *Public libraries and the SDGs*

Access to and the provision of information is essential for the attainment of sustainable development, either economic, social or environmental (Kosciejew, 2020). Kosciejew (2020) affirms that it is important to increase awareness of the UN 2030 Agenda among libraries and information specialists alongside promoting the role of public libraries in the actualization of the SDGs. In line with this, Uzuegbu (2019) points out that rural residents who received information literacy provision contributed more in achieving sustainable development targets compared to their counterparts who received information from existing information communication systems. Information literacy provision appeared to have affected their behaviour. Library staff play a major role in the actualization of the SDGs. For instance, Igbinovia and Osuchukwu (2018) posit that the knowledge-sharing behaviour of library staff of SDG-related information can effectively contribute to the realization of the SDGs. Wand (2016) found that, in a Middle Eastern and North African sample of countries, there was a significant correlation between access to information centres and socio-economic development.

Furthermore, Abdullah (2017) investigated Arab libraries as partners in achieving sustainable development. She studied Egyptian public libraries as a model

and the findings indicate that 50% of the libraries under investigation contributed to the achievement of the SDGs while the other 50% were facing obstacles, such as the lack of human development programmes. Al Nabhani et al. (2021) investigated the efforts of information institutions in the Sultanate of Oman in making information accessible to all and helping achieve the Oman Development Goals 2030. The results indicate that information institutions are providing access to information in different ways and to many different types of users. They also provide training for users to guarantee successful access to information (Al Nabhani et al., 2021). In line with this, Mohammed (2019) points out that libraries in Egypt are essential partners in the attainment of the SDGs by facilitating access to information. Also, Gazhal (2019) states that public libraries are among the institutions that may make a significant contribution to the implementation of the SDGs. They realize that increasing access to information in an equal, flexible and sustainable manner is necessary to support and implement sustainable development. The study affirms that Arab public libraries play a major role in achieving the SDGs. It also indicates the importance of integrating the SDGs among the priorities of public library activities.

### *Academic libraries and the SDGs*

Scanning the literature revealed many studies that have investigated academic libraries' contribution to the SDGs. Brydges and Clarke (2015) point out that academic libraries are playing a major role in scholarly communication, including in the preservation of research data, measurement of research impact and promotion of institutional repositories. However, more than just providing access to data and knowledge that support research, libraries and librarians can take part (have hands-on involvement) throughout the research process (Okuonghae and Igbinoia., 2019). Librarians' involvement in cross-disciplinary research is essential because of their information literacy skills. Cross-disciplinary research is a way of attaining the SDGs. It provides a framework for understanding and updating the SDGs. It also provides a multifaceted approach to addressing SDG problems (Igbinoia, 2017). This corroborates the assertion of Hamad et al. (2019) that academic libraries are shifting towards supporting and even partnering with researchers in their research. SDG-related information-sharing among librarians is required in order to realize the SDGs. They need to develop themselves in areas related to the SDGs, such as ICT skills, which will stimulate a high rate of

knowledge-sharing. This reflects libraries' management role in setting up infrastructures such as ICTs and information repositories that foster knowledge-sharing on the SDGs (Igbinoia and Osuchukwu, 2018).

Bawack (2018) affirms that academic libraries in Cameroon can assist the government in achieving its agenda related to the SDGs by 2035. The research bases its argument on the fact that academic libraries are pillars for collecting, organizing and disseminating information, which helps to create well-informed and educated individuals. They also help in the identification, selection, analysis, creation, storage and dissemination of research work and publications created by faculty members. Benson et al. (2019) also assert that libraries are key actors in the attainment of the SDGs, regardless of their type. Libraries are considered social service organizations and therefore occupy a central position in the overall actualization of the SDGs. Benson et al. (2019) conclude that libraries need to reposition their services to provide SDG-target-specific information services through partnership with other institutions and agencies in order to attain the SDGs.

Okuonghae and Igbinoia's (2019) results show that academic libraries in Nigeria contribute to the achievement of the SDGs by providing encouraging learning spaces and information resources for users. Also, academic libraries need to collaborate with government and non-governmental institutions in order to foster the attainment of the SDGs by providing information support for these institutions. Poor networking and SDG-knowledge-related information-sharing among libraries and library professionals, in addition to the inadequacy of library staff training, can prevent or present hurdles in the provision of information services for the attainment of the SDGs. Okuonghae and Igbinoia (2019) also point out that academic libraries should bridge information gaps and help in the understanding of users' information needs. It is an important step to be able to provide equal access to information in accordance with users' needs.

Tachie-Donkor et al. (2019) and Atta-Obeng and Dadzie (2020) affirm the fact that academic institutions, and specifically their libraries, contribute significantly to lifelong learning (SDG 4) and promoting knowledge and skills for lifelong learning opportunities among students in Ghana. Their role is in providing access to relevant information and giving training on research publication, search strategies, communication skills and information literacy. Moreover, the attainment of SDG 4 needs effective collaboration among school and academic libraries, educational systems and stakeholders to provide access to



information in many formats. This is in an attempt to ensure inclusive and quality education, as well as the acquisition of lifelong learning skills (Tachie-Donkor et al., 2019). Library staff should be able to improve users' digital skills in order to support the digital inclusion of their patrons (Okuonghae and Igbinovia, 2019).

Mbagwu et al. (2020) investigated the role of academic libraries in sub-Saharan Africa in the attainment of SDG 2 and SDG 3. They found that natural disasters, food insecurity, and the lack of agricultural and health information are the main obstacles to the achievement of SDGs 2 and 3. They conclude that academic libraries can achieve SDGs 2 and 3 by preparing and providing access to agricultural and health information in different formats and languages that rural communities can understand. Libraries also need to collaborate with agricultural and health professionals in the provision of extension services to their target communities.

## Method

In Jordan there are 10 public universities with academic libraries (MOHE, 2021). These libraries are considered to be a catalyst for change. They provide support to their parent institutions by acquiring relevant information resources and making them available to support learning, teaching and research. They also support users by providing training and workshops for skills related to information literacy and how to efficiently use various information resources. These 10 public universities were chosen for this research (see Table 1). Their libraries provide services to students, academic staff and other university staff. They also provide research support for the public.

A questionnaire was used as the data collection method for better outreach and a comprehensive exploration of librarians' perceptions of the library's role in the accomplishment of the SDGs. It was also used to investigate librarians' perceptions of the practices they were implementing, the requirements to actualize the SDGs, and obstacles related to academic libraries' contribution to the realization of the SDGs in Jordan. The questionnaire was prepared and distributed in the Arabic language and then translated into English. All professional library staff ( $N = 359$ ) in all of the participating academic libraries during the academic year 2020–2021 were included in the study and invited to complete the questionnaire. The questionnaire was distributed to the library staff electronically via Google Forms (15 March–17 April 2021) and the data was

**Table 1.** Number of library staff and respondents at academic libraries in Jordan.

| University                                  | Number of staff | Number of respondents |
|---------------------------------------------|-----------------|-----------------------|
| University of Jordan                        | 74              | 46                    |
| Jordan University of Science and Technology | 30              | 21                    |
| Al-Balqa Applied University                 | 53              | 39                    |
| Yarmouk University                          | 54              | 40                    |
| Mu'atah University                          | 50              | 30                    |
| The Hashemite University                    | 31              | 17                    |
| Al al-Bayt University                       | 22              | 15                    |
| Al-Hussein Bin Talal University             | 20              | 11                    |
| Tafila Technical University                 | 17              | 10                    |
| German Jordanian University                 | 8               | 4                     |
| <b>Totals</b>                               | <b>359</b>      | <b>233</b>            |

transferred from Google Forms to the SPSS Statistics 25 programme.

Of the 359 responses, 233 questionnaires were suitable for analysis, giving a response rate of 64.9%. The term 'library staff' is used to refer to any personnel working in a library, including top managers (such as heads of divisions and heads of departments) and professionals performing routine tasks. A 'division' represents multiple departments – for example, the technical division or the information division. A 'department', however, deals with certain processes and includes a number of employees – for example, the acquisitions department or the cataloguing and classification department. Table 2 shows the distribution of the sample based on several factors that might affect the respondents' perceptions of the library's role in the accomplishment of the SDGs. The varying factors are gender, job title, educational level, years of experience and specialization.

## Research objectives and questions

This research set out to investigate the role of academic libraries in realizing the SDGs. For this purpose, a questionnaire was developed. The first part of the questionnaire collected personal demographic information to establish the extent to which certain external factors (gender, job title, educational level, years of experience and specialization) might affect the respondents' assessment of the role of academic libraries in the accomplishment of the SDGs. The second part of the questionnaire consisted of 44 items

**Table 2.** Study sample distribution based on variant factors.

| Factor/<br>variable    | Variable type                      | Number | %    |
|------------------------|------------------------------------|--------|------|
| Gender                 | Male                               | 137    | 58.8 |
|                        | Female                             | 96     | 41.2 |
| Job title              | Higher administration              | 10     | 4.3  |
|                        | Head of division/<br>department    | 50     | 21.5 |
|                        | Employee                           | 173    | 74.2 |
| Educational<br>level   | Diploma                            | 78     | 33.5 |
|                        | Bachelor of Science                | 119    | 51.1 |
|                        | Higher education                   | 36     | 15.5 |
| Years of<br>experience | < 5                                | 38     | 16.3 |
|                        | ≥ 5 and < 10                       | 91     | 39.1 |
|                        | ≥ 10                               | 104    | 44.6 |
| Specialization         | Library and information<br>science | 165    | 70.8 |
|                        | Information technology             | 47     | 20.2 |
|                        | Other                              | 21     | 9    |

**Table 3.** The weights used to determine the degree of agreement for each item.

| Degree   | M         |
|----------|-----------|
| High     | 3.68–5    |
| Moderate | 2.34–3.67 |
| Weak     | 1–2.33    |

(ranked questions) in an attempt to answer the main research questions, which are as follows:

1. What is the role of academic libraries towards the accomplishment of the SDGs? (18 items)
2. What are the practices that academic libraries implement to accomplish the SDGs? (7 items)
3. What are the requirements to actualize the SDGs? (9 items)
4. What are the obstacles that academic libraries are facing in relation to the realization of the SDGs? (10 items)
5. Are there significant differences at the significance level ( $\alpha = .05$ ) in the staff's assessments of the role of academic libraries towards the accomplishment of the SDGs based on different variables (gender, job title, educational level, years of experience and specialization)?

A Likert scale was applied to weigh the degree of agreement with the questionnaire items. Table 3 shows the range of weights used to determine the

**Table 4.** Cronbach's alpha test.

| Factor                                                                            | Number<br>of items | Cronbach's<br>alpha |
|-----------------------------------------------------------------------------------|--------------------|---------------------|
| The role of academic libraries towards the accomplishment of the SDGs             | 18                 | 0.86                |
| The practices that academic libraries implement to accomplish the SDGs            | 7                  | 0.88                |
| The requirements to actualize the SDGs                                            | 9                  | 0.85                |
| The obstacles that academic libraries face related to the realization of the SDGs | 10                 | 0.92                |
| <b>Totals</b>                                                                     | <b>44</b>          | <b>0.9</b>          |

degree of agreement for each item using the mean ( $M$ ) value.

To ensure validity, the questionnaire was reviewed by a group of referees from the faculty of educational sciences and library professionals to check for clarity and grammatical errors and to identify the suitability of the questionnaire items to provide answers to the main research questions. All reviewer recommendations were taken into consideration, and the questionnaire was revised accordingly. Moreover, to ensure the reliability or internal consistency of all of the items on the questionnaire, a Cronbach's alpha test was conducted. A good and acceptable Cronbach's alpha value is above .70 (above .80 is better and above .90 is the best). The Cronbach's alpha value for this study was high at .90 (see Table 4). This strongly established the reliability of the questionnaire items.

### Statistical analysis

Means and standard deviations ( $SD$ s) were calculated to assess the degree of the respondents' agreement with the items and thereby their perceptions of the role of academic libraries towards the accomplishment of the SDGs, the practices that the libraries under investigation were implementing, the requirements to actualize the SDGs, and the difficulties faced in order to accomplish the SDGs. A multi-way analysis of variance (ANOVA) was conducted to investigate the existence of any statistical differences at the significance level ( $\alpha = .05$ ) by using  $F$ -tests between the responses based on different variables (gender, job title, educational level, years of experience and specialization).

**Table 5.** Means and standard deviations of responses on the perceptions of librarians of the library's role towards the accomplishment of the SDGs.

| Item number   | Item description                                                                                                                                                                                                        | M           | SD          | Degree of agreement |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|---------------------|
| 14            | Help individuals locate information to create better-informed societies                                                                                                                                                 | 4.41        | 0.94        | High                |
| 10            | Provide accurate, up-to-date information                                                                                                                                                                                | 4.16        | 0.80        | High                |
| 4             | Support the research community                                                                                                                                                                                          | 4.11        | 0.74        | High                |
| 11            | Provide information resources for library users related to community development                                                                                                                                        | 4.04        | 0.94        | High                |
| 3             | Promote digital media and information literacy skills                                                                                                                                                                   | 4.03        | 0.89        | High                |
| 1             | Provision of information literacy programmes to help users locate information                                                                                                                                           | 3.98        | 0.94        | High                |
| 18            | Cooperate with both local and central government to establish a real partnership to make access to information much easier                                                                                              | 3.96        | 1.10        | High                |
| 13            | Assist library users in information search and retrieval from different databases                                                                                                                                       | 3.81        | 1.03        | High                |
| 8             | Provide free access to a variety of information sources for all groups of people in the community, regardless of differences in gender, age, profession or political orientation, or religious or sectarian differences | 3.78        | 1.07        | High                |
| 2             | Help individuals locate information to make informed choices                                                                                                                                                            | 3.70        | 1.08        | High                |
| 9             | Provision of selective dissemination of information and current awareness services                                                                                                                                      | 3.70        | 1.06        | High                |
| 12            | Provision of both quiet and collaborative spaces that are conducive to all types of learning                                                                                                                            | 3.64        | 0.99        | Moderate            |
| 5             | Provide programmes to promote lifelong learning                                                                                                                                                                         | 3.54        | 1.07        | Moderate            |
| 7             | Provide access to the world's culture and heritage                                                                                                                                                                      | 3.50        | 1.07        | Moderate            |
| 16            | Hold educational, cultural and guidance seminars on employment and innovation                                                                                                                                           | 3.06        | 1.31        | Moderate            |
| 15            | Help library users to identify the various support programmes that are provided by the government and other charities                                                                                                   | 2.97        | 1.32        | Moderate            |
| 6             | Preserve the world's culture and heritage                                                                                                                                                                               | 2.12        | 0.87        | Weak                |
| 17            | Provision of seminars related to sustainable communities and cities                                                                                                                                                     | 2.05        | 0.93        | Weak                |
| <b>Totals</b> |                                                                                                                                                                                                                         | <b>3.53</b> | <b>0.38</b> | <b>Moderate</b>     |

## Results

### *The role of academic libraries towards the accomplishment of the SDGs*

To answer the first research question – ‘What is the role of academic libraries towards the accomplishment of the SDGs?’ – the means and standard deviations were calculated for all factors under the main research question to investigate the services that Jordanian academic libraries offered to their patrons during the pandemic (see Table 5).

As indicated by the results in Table 5, the staff assessment of the role of academic libraries towards the accomplishment of the SDGs was generally moderate, with a total mean of 3.53 and a standard deviation of 0.38. Of the 18 questionnaire items, 11 scored a high mean, ranging between 3.70 and 4.41. Five of the 18 items scored a moderate mean, ranging between 2.97 and 3.64, and, finally, two items scored weak means of 2.05 and 2.12. The respondents indicated that libraries helped individuals locate information to create better-informed societies ( $M = 4.41$ ,  $SD = 0.74$ ). They were also responsible for providing accurate

and up-to-date information ( $M = 4.16$ ,  $SD = 0.80$ ). Moreover, the respondents emphasized that libraries provided information resources for library users related to community development ( $M = 4.04$ ,  $SD = 0.94$ ) and promoted digital media and information literacy skills ( $M = 4.03$ ,  $SD = 0.89$ ). Cooperating with both local and central government to establish a real partnership to make access to information much easier was also rated highly ( $M = 3.96$ ,  $SD = 1.10$ ). Moreover, the respondents indicated that their libraries were moderately responsible for the provision of both quiet and collaborative spaces that were conducive to all types of learning ( $M = 3.64$ ,  $SD = 0.99$ ). It is interesting that the respondents perceived that libraries moderately provided programmes to support lifelong learning ( $M = 3.54$ ,  $SD = 1.07$ ). However, the respondents indicated that libraries provided seminars related to sustainable communities and cities ( $M = 2.05$ ,  $SD = 0.93$ ). In general, it was noted that library staff perceived that academic libraries played a major role in the advocacy of the SDGs by providing access to information. They also provided support in terms

**Table 6.** Means and standard deviations of responses on the practices implemented by libraries to actualize the SDGs.

| Item number   | Item description                                                                                                                                                       | M           | SD          | Degree of agreement |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|---------------------|
| 19            | Organizing awareness campaigns through different media on the different SDGs and their specific targets                                                                | 4.07        | 0.87        | High                |
| 23            | Advancing digital inclusion through access to ICTs and dedicated staff to help people develop new digital skills                                                       | 3.42        | 1.20        | Moderate            |
| 20            | Organizing periodic information literacy training for community members                                                                                                | 3.31        | 1.19        | Moderate            |
| 24            | Forming a consortium or collaboration with UN depository libraries that support the dissemination of information and research to help decision-makers achieve the SDGs | 2.24        | 1.00        | Weak                |
| 21            | Closing gaps in access to information and helping government, civil society and business better understand local information needs                                     | 2.23        | 0.95        | Weak                |
| 25            | Making an appropriate space for discussion on various developmental issues, particularly rural community development                                                   | 2.12        | 0.92        | Weak                |
| 22            | Promoting universal literacy through the campaign over different media                                                                                                 | 2.09        | 0.91        | Weak                |
| <b>Totals</b> |                                                                                                                                                                        | <b>2.78</b> | <b>0.49</b> | <b>Moderate</b>     |

of increasing their patrons' information literacy skills so that they could locate suitable information.

#### *The practices that academic libraries implement to accomplish the SDGs*

The second question focused on finding out what practices the academic libraries implemented to actualize the SDGs. The results show that staff assessment of the practices that academic libraries implemented to accomplish the SDGs was moderate (low moderate), with a mean score of 2.78 and standard deviation of 0.49 (see Table 6). The respondents indicated that the libraries organized awareness campaigns through different media on the different SDGs and their specific targets ( $M = 4.07$ ,  $SD = 0.87$ ). The next practice that libraries implemented was advancing digital inclusion through access to ICTs and dedicated staff to help people develop new digital skills ( $M = 3.42$ ,  $SD = 1.20$ ). Also, the libraries were organizing periodic information literacy training for community members ( $M = 3.31$ ,  $SD = 1.19$ ). However, the respondents indicated that forming a consortium or collaboration with UN depository libraries that support the dissemination of information and research to help decision-makers achieve the SDGs was poor in their libraries ( $M = 2.24$ ,  $SD = 1.00$ ). Table 6 shows more of the practices that academic libraries implemented for the advocacy of the SDGs in Jordan.

#### *The requirements to actualize the SDGs*

The third question focused on finding out the requirements for academic libraries to actualize the SDGs, and the staff assessment of these was high, with a

mean of 3.85 and standard deviation of 0.38 (see Table 7). For instance, the respondents thought that libraries needed to create and design powerful and effective library programmes to contribute to the implementation of the SDGs, including literacy programmes, especially for older persons, as well as programmes that helped increase the demand to visit libraries ( $M = 4.20$ ,  $SD = 0.76$ ). They also thought that selecting suitable resources based on the development indicators raised in the SDGs was important for libraries to contribute to achieving the SDGs ( $M = 4.16$ ,  $SD = 0.80$ ). Other important requirements indicated by the respondents were the use of ICT tools for sustainability in academic libraries to advance their services ( $M = 4.12$ ,  $SD = 0.84$ ) and raising awareness of the developmental issues covered in the SDGs ( $M = 4.08$ ,  $SD = 0.81$ ). Hosting local forums to discuss the challenges faced by local communities and institutions, such as infectious diseases, community health, education and human rights ( $M = 3.64$ ,  $SD = 0.99$ ), and supporting libraries in rural areas by providing them with appropriate collections to meet the needs of the local community ( $M = 2.97$ ,  $SD = 1.06$ ) were the least important requirements as perceived by the respondents (see Table 7).

#### *Obstacles related to the realization of the SDGs in academic libraries*

The fourth question focused on finding out the obstacles related to the accomplishment of the SDGs that librarians working in academic libraries in Jordan might face. The results show that the librarians' perception of the challenges they might face in order to realize the SDGs was moderate, with a total mean

**Table 7.** Means and standard deviations of responses on the requirements to actualize the SDGs.

| Item number   | Item description                                                                                                                                                                                                                                      | M           | SD          | Degree of agreement |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|---------------------|
| 27            | Creating and designing powerful and effective library programmes to contribute to the implementation of the SDGs, including literacy programmes, especially for older persons, as well as programmes that help increase the demand to visit libraries | 4.20        | 0.76        | High                |
| 28            | Selecting suitable resources based on the development indicators raised in the SDGs                                                                                                                                                                   | 4.16        | 0.80        | High                |
| 31            | Using ICT tools for sustainability in academic libraries to advance their services                                                                                                                                                                    | 4.12        | 0.84        | High                |
| 26            | Raising awareness of the developmental issues covered in the SDGs                                                                                                                                                                                     | 4.08        | 0.81        | High                |
| 32            | Increasing electronic resources to embrace green collections and green technologies                                                                                                                                                                   | 4.04        | 0.94        | High                |
| 34            | Strengthening community partnerships between academic libraries and other relevant state agencies for easy understanding, exchange and joint coordination to meet the SDGs                                                                            | 3.81        | 1.03        | High                |
| 30            | Understanding local community needs and their various issues to help solve them                                                                                                                                                                       | 3.70        | 1.06        | High                |
| 33            | Hosting local forums to discuss the challenges of local communities and institutions, such as infectious diseases, community health, education and human rights                                                                                       | 3.64        | 0.99        | Moderate            |
| 29            | Supporting libraries in rural areas by providing them with appropriate collections to meet the needs of the local community                                                                                                                           | 2.97        | 1.06        | Moderate            |
| <b>Totals</b> |                                                                                                                                                                                                                                                       | <b>3.85</b> | <b>0.38</b> | <b>High</b>         |

**Table 8.** Means and standard deviations of responses on obstacles faced by academic libraries in the realization of the SDGs.

| Item number   | Item description                                                                           | M           | SD          | Degree of agreement |
|---------------|--------------------------------------------------------------------------------------------|-------------|-------------|---------------------|
| 43            | Lack of funds allocated to invite guest speakers to deliver awareness lectures             | 4.16        | 0.80        | High                |
| 35            | Inadequate library infrastructure                                                          | 4.00        | 0.99        | High                |
| 36            | Lack of funding allocated to organize awareness campaigns                                  | 3.98        | 0.94        | High                |
| 37            | Lack of library staff time to deliver information literacy seminars                        | 3.78        | 1.07        | High                |
| 40            | Inadequate training of library staff                                                       | 3.70        | 1.06        | High                |
| 42            | Lack of information literacy skills among users                                            | 3.38        | 1.15        | Moderate            |
| 44            | Lack of library staff awareness of their social responsibility towards the local community | 3.18        | 1.33        | Moderate            |
| 38            | Poor policy by the parent institution                                                      | 2.97        | 1.32        | Moderate            |
| 39            | Too much external interference                                                             | 2.01        | 0.91        | Weak                |
| 41            | Poor networking among libraries and library professionals                                  | 1.97        | 0.98        | Weak                |
| <b>Totals</b> |                                                                                            | <b>3.31</b> | <b>0.43</b> | <b>Moderate</b>     |

value of 3.31 and standard deviation of 0.43 (see Table 8). The results show that librarians saw the lack of funds allocated to invite guest speakers to deliver awareness lectures as the main challenge they faced in order to realize the SDGs ( $M = 4.16$ ,  $SD = 0.80$ ). Also, the librarians indicated that inadequate library infrastructures might hinder the realization of the SDGs in academic libraries ( $M = 4.00$ ,  $SD = 0.99$ ). It appears that financial considerations were the main challenge. However, the librarians did not regard poor networking among libraries and library professionals

as a challenge for them to realize the SDGs ( $M = 1.97$ ,  $SD = 0.98$ ). More of the challenges and the librarians' perceptions of these challenges can be seen in Table 8.

### Effect of external factors on the results

It was crucial to investigate whether there were external factors that might have influenced the responses to the fifth research question: 'Are there significant differences at the significance level ( $\alpha = .05$ ) in the

**Table 9.** Means and standard deviations of the responses based on the different factors/variables.

| Factor/variable     | Variable type                   | n   | M    | SD   |
|---------------------|---------------------------------|-----|------|------|
| Gender              | Male                            | 137 | 3.44 | 0.32 |
|                     | Female                          | 96  | 3.45 | 0.35 |
| Job title           | Higher administration           | 10  | 3.54 | 0.34 |
|                     | Head of division/department     | 50  | 3.46 | 0.29 |
|                     | Employee                        | 173 | 3.44 | 0.35 |
| Educational level   | Diploma                         | 78  | 3.43 | 0.36 |
|                     | Bachelor of Science             | 119 | 3.49 | 0.32 |
|                     | Higher education                | 36  | 3.34 | 0.28 |
| Years of experience | < 5                             | 38  | 3.41 | 0.43 |
|                     | ≥ 5 and < 10                    | 91  | 3.47 | 0.31 |
|                     | ≥ 10                            | 104 | 3.44 | 0.32 |
| Specialization      | Library and information science | 165 | 3.41 | 0.33 |
|                     | Information technology          | 47  | 3.56 | 0.3  |
|                     | Other specialization            | 21  | 3.47 | 0.37 |

**Table 10.** F-test analysis of the responses based on the different factors/variables.

| Variable            | Sum of squares | df       | Mean square | F     | Significance level |
|---------------------|----------------|----------|-------------|-------|--------------------|
| Sex                 | 0.006          | 1        | 0.006       | 0.049 | .825               |
| Educational level   | 0.430          | 2        | 0.215       | 3.795 | .053               |
| Years of experience | 0.001          | 2        | 0.001       | 0.006 | .936               |
| Specialization      | 0.480          | 2        | 0.240       | 4.237 | .061               |
| Job title           | 0.375          | 2        | 0.187       | 3.308 | .070               |
| Error               | 223            | 25.737   | 0.373       |       |                    |
| Total               | 233            | 2801.440 |             |       |                    |
| Corrected total     | 232            | 26.644   |             |       |                    |

staff's assessments of the role of academic libraries towards the accomplishment of the SDGs based on different variables (gender, job title, educational level, years of experience and specialization)?' The means and standard deviations of the responses based on the five variables, as well as a multi-way ANOVA, were calculated to confirm if the variables influenced the responses (see Table 9).

The results reveal that the mean values of the responses varied between the respondents with different factors (gender, job title, educational level, years of experience and specialization). For instance, respondents with the specialization 'information technology' appeared to have more agreement about the role and responsibilities of academic libraries in the advocacy of the SDGs, with a mean value of 3.56, compared to the respondents with 'library and information science' and 'other' specializations, with mean values of 3.41 and 3.47, respectively (see Table 9). To support the results, a multi-way ANOVA at the significance level ( $\alpha = .05$ ) was conducted between the means of the responses of the different library staff based on the different variables. The

analysis suggests that there were no statistically significant differences at the significance level ( $\alpha = .05$ ) between the means of the responses based on the different variables. This could indicate that the staff were aware of the important role and responsibilities of academic libraries towards the accomplishment of the SDGs (see Table 10).

## Discussion

It appears that realizing the SDGs rests on access to and the provision of information. This is to say that economic, health and educational growth is directly related to information. It is known that public libraries are the libraries that are responsible for the achievement of the SDGs. However, this is not the case in Jordan because of the limited number of public libraries, compared to the large number of academic libraries, for a sustainable, prosperous, inclusive and healthy future for all people. The results of this research reveal that the implementation of the SDGs in academic libraries in Jordan is still in its initial stages, focusing mainly on facilitating access to

information. Academic libraries should help individuals locate information to create better-informed societies by providing accurate and up-to-date information through subscriptions to a wide range of electronic resources and databases. In line with this, the IFLA 2020b affirms the advancement of the SDGs through awareness and contributing resources and services to meet various goals and targets. These results confirm along IFLA (2019) followed by IFLA (2020, 2020a, 2020b) which affirm that libraries can support the SDGs through access to information. Access to information guarantees a better world for people, enhances decision-making (IFLA, 2019) and contributes to the quality of life of society (Chow and Tian, 2021).

### *The contribution of academic libraries to the accomplishment of the SDGs*

This study was able to determine a moderate perception level among academic library staff about the roles and responsibilities of academic libraries in Jordan towards the accomplishment of the SDGs. For instance, library staff affirmed that academic libraries should help individuals locate information to create better-informed societies, along with providing accurate and up-to-date information. This could be achieved by library subscriptions to a wide range of electronic resources and databases to support the learning process, as well as research. These results are in line with the IFLA (2019), which affirms the inclusion of access to information to support the achievement of the SDGs, and the IFLA (2020a, b), which affirms that libraries are key institutions for achieving the SDGs through guaranteeing access to information. Also, Onah et al. (2015) and Abdullahi and Abdullahi (2017) state that access to information and libraries especially are required for the realization of all the SDGs. Access to information guarantees a better world for people and enhances decision-making (IFLA, 2019). Access to information contributes to the quality of life of society (Chow and Tian, 2021). This supports the results indicated in this research where the respondents asserted that academic libraries helped individuals locate information to make informed choices and decisions.

Moreover, the respondents emphasized that libraries should provide information resources for library users related to community development, and promote digital media and information literacy. The IFLA (2019) and Mbagwu et al. (2020) also state that libraries can empower their local communities through establishing ICT centres and digital consumer libraries, primarily to help people in their information

seeking and locating. Cooperating with both local and central government to establish a real partnership to make access to information easier was also perceived among the roles of academic libraries. The IFLA (2017) and Abdullahi and Abdullahi (2017) point out that libraries have a national responsibility in providing information services for the attainment of the SDGs, which will lead to national development. Benson et al. (2019) affirm that libraries should partner with other institutions and agencies in order to attain the SDGs. The IFLA (2020a) recommends that libraries should partner with governments to implement national strategies, where libraries are considered as partners in the fight for poverty reduction, economic development and learning for all. Moreover, Pinto and Ochôa (2017) affirm that the contribution of the library and information science profession to the SDGs cannot be neglected. ICTs and information literacy can be used to empower communities with the technological information and skills necessary for sustainable health, a sustainable economy, education, and food production and security (Mbagwu et al., 2020).

Another role of academic libraries was to provide support for lifelong learning. This can be explained by the support that libraries provided in terms of information literacy skills. This result is in accordance with Tachie-Donkor et al.'s (2019) research, which indicates that academic libraries are responsible for user education, information literacy, and lifelong learning programmes for students and researchers. Users are helped to learn how to use a library and its various services and resources. Also, the respondents indicated that libraries provided seminars related to sustainable communities and cities. In line with this, Mbagwu et al. (2020) affirm that libraries (universities) can establish adult education centres/community libraries to satisfy the information needs of the local community and other community groups. Moreover, libraries should provide free access to a variety of information sources for all groups of people in the community, regardless of differences in gender, age, profession or political orientation, or religious or sectarian differences. This means that academic libraries should provide equitable spaces and access to information, ICTs, skills training and other educational opportunities that can help individuals develop skills and build knowledge for employment and other economic opportunities (Kosciejew, 2020). Another example with regard to academic libraries' contribution to the SDGs was the role of academic libraries during the COVID-19 pandemic, where they played a major role in spreading health awareness about the pandemic. Libraries hold a social

responsibility towards their users and the community they support. Ali and Gatiti (2020) and Hamad et al. (2021) affirm that access to information remains a social responsibility of librarians and information personnel.

It was noted that library staff perceived that academic libraries played a major role in the advocacy of the SDGs by providing access to information. Academic libraries have a variety of information sources in different formats and subjects. This variety can help in providing sustainable information that can contribute to health awareness, food security and respond to or prevent climate change, for example. The academic libraries also provided support in terms of increasing their patrons' information literacy skills so that they could locate suitable information. The information needs of a community are enormous. However, access to and dissemination of information in a community will make any intervention sustainable. Bawack (2018) affirms that academic libraries can create well-informed and educated individuals. Moreover, Rayward and Jenkins (2007) point out that libraries can provide virtual communication and thereby information support for people in isolation. They also highlight that libraries are responsible for supporting social continuity and social change by providing an information infrastructure.

### *Academic libraries' practices to accomplish the SDGs*

The academic libraries appeared to have moderately adopted practices that could support the realization of the SDGs in Jordan. The overall assessment of the practices that academic libraries in Jordan implemented for SDG advocacy had a mean score of 2.78, indicating a low moderate score. This suggests that these libraries might still be at the initial stages of the advocacy of SDGs. The respondents indicated that academic libraries focused on the importance of raising public awareness of the SDGs and their specific targets through awareness campaigns on different media – for example, they held employment days, which supported SDGs 1 and 5. In addition, they focused on advancing digital inclusion through access to ICTs and dedicated staff to help people develop new digital skills, which in turn would provide them with life learning skills. Also, the libraries were organizing periodic information literacy training sessions for community members. However, forming a consortium or collaboration with UN depository libraries that support the dissemination of information and research to help decision-makers achieve the SDGs was poor, indicating that libraries are still not realizing the importance of collaboration with other

institutions. Furthermore, closing gaps in access to information and helping government, civil society and business to better understand local information needs, and making an appropriate space for discussion on various developmental issues – particularly rural community development and promoting universal literacy through campaigns over different media – were considered to be weakly practised given that the nature of academic libraries should be to provide support to their local community and focus on supporting the learning process.

Given the results presented here, the libraries' overall practices to accomplish the SDGs appeared to be weak, regardless of staff awareness of academic libraries' role and responsibilities towards the accomplishment of the SDGs. Academic libraries are information and research institutions which are responsible for dispensing authentic and reliable information that helps in making informed decisions. It is crucial for libraries to increase staff awareness of their role in realizing the SDGs. Furthermore, it is important to train library staff to provide support and be innovative in the practices they can implement for the advocacy of the SDGs. The library staff appeared to believe that providing access to a range of electronic resources was the main role of academic libraries, and so their main role was as a service and access provider – which is at the core of realizing the SDGs. This argument is supported by the fact that sustainable development efforts can be attained by access to and the provision of information. A lack of information hinders economic, social and environmental development. Overall, libraries of different types are engines of change that can help drive development for a sustainable, prosperous, inclusive and healthy future for a community (Kosciejew, 2020).

### *Requirements to actualize the SDGs in academic libraries*

The respondents indicated that creating and designing powerful and effective library programmes was one of the main requirements to actualize the SDGs in academic libraries. For instance, they affirmed that literacy programmes, especially for older persons, as well as programmes that encouraged and increased library visits contributed to the implementation of the SDGs. They also thought that selecting suitable resources based on the development indicators raised in the SDGs was important for libraries to contribute significantly to achieving the SDGs. The use of ICT tools for sustainability in academic libraries to advance their services and raising awareness of developmental issues covered in the SDGs was also needed



**Table 11.** Academic libraries' perceived responsibilities and practices related to the SDGs.

| Item description                                                                                                                                                                                                          | SDGs       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Helping individuals locate information to create better-informed societies                                                                                                                                                | 1, 2, 3, 8 |
| Providing accurate, up-to-date information                                                                                                                                                                                | All        |
| Supporting the research community                                                                                                                                                                                         | All        |
| Providing information resources for library users related to community development                                                                                                                                        | All        |
| Promoting digital media and information literacy skills                                                                                                                                                                   | All        |
| Provision of information literacy programmes to help users locate information                                                                                                                                             | All        |
| Cooperating with both local and central government to establish a real partnership to make access to information easier                                                                                                   | 16, 17     |
| Assisting library users in information searches and retrieval from different databases                                                                                                                                    | All        |
| Providing free access to a variety of information sources for all groups of people in the community, regardless of differences in gender, age, profession or political orientation, or religious or sectarian differences | 5, 10, 16  |
| Helping individuals locate information to make informed choices                                                                                                                                                           | All        |
| Provision of selective dissemination of information and current awareness services                                                                                                                                        | All        |
| Provision of both quiet and collaborative spaces that are conducive to all types of learning                                                                                                                              | All        |
| Providing programmes to promote lifelong learning                                                                                                                                                                         | All        |
| Providing access to the world's culture and heritage                                                                                                                                                                      | 11         |
| Holding educational, cultural and guidance seminars on employment and innovation                                                                                                                                          | 9          |
| Helping library users to identify the various support programmes that are provided by the government and other charities                                                                                                  | All        |
| Preserving the world's culture and heritage                                                                                                                                                                               | 11         |
| Provision of seminars related to sustainable communities and cities                                                                                                                                                       | 11         |
| Organizing awareness campaigns through different media on the different SDGs and their specific targets                                                                                                                   | All        |
| Advancing digital inclusion through access to ICTs and dedicated staff to help people develop new digital skills                                                                                                          | All        |
| Organizing periodic information literacy training for community members                                                                                                                                                   | All        |
| Forming a consortium or collaboration with UN depository libraries that support the dissemination of information and research to help decision-makers achieve the SDGs                                                    | 16, 17     |
| Closing gaps in access to information and helping government, civil society and business to better understand local information needs                                                                                     | 16, 17     |
| Making an appropriate space for discussion on various developmental issues, particularly rural community development                                                                                                      | 16         |
| Promoting universal literacy through campaigns over different media                                                                                                                                                       | All        |
| Organizing awareness campaigns through different media on the different SDGs and their specific targets                                                                                                                   | All        |

in order to provide SDG-related services in libraries. Hosting local forums to discuss the challenges of local communities and institutions, such as infectious diseases, community health, education and human rights, and supporting libraries in rural areas by providing them with appropriate collections to meet the needs of the local community was required by academic libraries, as perceived by the respondents, in order to support the SDGs.

#### *Obstacles related to the realization of the SDGs in academic libraries*

The lack of funds allocated to invite guest speakers to deliver awareness lectures on the SDGs, an inadequate library infrastructure and little funding for organizing awareness campaigns were considered to be the main challenges to the realization of the SDGs in academic libraries. Another obstacle was the

inadequate training of library staff about the practices needed to accomplish the SDGs. It appears that financial considerations are the main challenge. In the main, the challenges are directly or indirectly related to financial issues. Okuonghae and Igbinoia's (2019) results show that inadequate library staff training can prevent or present a hurdle in the provision of information services for the attainment of the SDGs. Staff training and awareness workshops are crucial to realizing the SDGs. However, these require financial allocations out of the main library budget. The poor library infrastructure might also be considered a money/budget-related issue. Pinfield et al. (2017) point out that a library infrastructure needs to be in place in order for libraries to provide full services and information access. One interesting finding is the lack of library staff awareness of their social responsibility towards the local community. It appears that the librarians did not seem to have time for training,

which might reflect the size of the workload in the library environment. The responses imply the significant demands on staff time in the context of information organization. Poor policy on the part of the parent institution reflects the need to increase the library management's awareness of the needs of their library staff and how to improve their library services to support the advocacy of the SDGs.

Given the results presented here, it is important to provide training for librarians to improve their ICT skills and increase digital inclusion and practices. Also, the library administration needs to organize awareness campaigns for its staff so that they have confidence in their skills, which will reflect on their performance in supporting the accomplishment of the SDGs. Furthermore, it is important to increase the library administration's awareness of their librarians' needs, which calls for a continuous needs assessment procedure in light of new technologies that might add value to the library service.

### Effect of external factors on the results

Another relevant finding is that the library staff's perceptions of the role of academic libraries in Jordan towards the accomplishment of the SDGs were not affected by external factors such as gender, job title, educational level, years of experience and specialization. This clearly indicates the importance of the roles and responsibilities of academic libraries towards the accomplishment of the SDGs, regardless of the staff's experience or job title, for example (see Table 10). This affirms the important role of academic libraries in sustainable development at the national level.

The research results confirm the participatory role of academic libraries in the accomplishment of the SDGs in Jordan. The responses are aligned with the 17 SDGs. Table 11 shows the perceived roles and practices related to the SDGs as indicated by the respondents. All of the libraries' participatory actions and perceived roles and responsibilities towards advocacy of the SDGs revolve around access to information that supports self-learning practices, along with seminars and workshops related to development issues.

This study has practical implications for academic libraries in Jordan. It provides insights into a strategic planning framework to cover all the relevant SDGs. The study also adds to the existing literature by emphasizing the role and contribution of libraries in general, and academic libraries in particular, in the attainment of the SDGs at the national and international levels. The results presented here support the arguments of many previous studies (e.g. Al Nabhani

et al., 2021; Atta-Obeng and Dadzie, 2020; Benson et al., 2019; Gazhal, 2019; IFLA, 2020a, 2020b; Okuonghae and Igbinovia, 2019; Tachie-Donkor et al., 2019).

## Conclusion

### Research implications

This research aimed to identify the roles and responsibilities of academic libraries in Jordan in the realization of the SDGs, considering libraries as key institutions for achieving the SDGs through guaranteeing access to information. The study will be useful, first, for library managers in realizing the role of their libraries in relation to the local community, and therefore the advancement of the SDGs. It will help them to plan for employee training programmes and workshops. Second, it will be useful for trainers in arranging training for academic librarians in Jordan and other developing countries. The research results will also be useful for other libraries, such as specialized and school libraries, as they are all considered to be part of the information support system. Moreover, the results will help library and information science departments and schools revise their curricula in accordance with the required skills and competencies for academic librarians.

Given the results presented here, it is crucial to maintain ongoing training for library staff on the important roles and responsibilities of academic libraries in relation to the SDGs. All of the respondents acknowledged the library's role and responsibilities in providing help to individuals with locating information to create better-informed societies ( $M = 4.41$ ). Moreover, libraries need to concentrate more on training their staff to provide information services to support the SDGs, mainly providing information access at all countries level by mainly providing access to information to all society members and at all country level. It is also important to collaborate with other libraries, the government and charities in order to build a strong information community and understanding, exchange and joint coordination to meet the SDGs. This is needed to increase educational, agricultural, climate change and health awareness for all society members. Furthermore, it is important to increase staff awareness about their role in providing information support and to train them to fulfil their role.

The results indicate that the practices implemented by these libraries to embrace the SDGs are still relatively low. Academic libraries need to advance in embracing the SDGs and shift from awareness campaigns to training campaigns, taking participatory

action. It is apparent that academic libraries in Jordan are playing an increasing role in the national development process. Librarians are now having greater collaboration with professionals in different fields, giving them more exposure and allowing them to become involved in providing solutions to various issues. Based on the IFLA's (2020b) recommendations, it is important that libraries raise awareness about the SDGs, what they mean and how libraries fulfil them.

### Recommendations

Academic libraries contribute to almost every SDG. However, their contribution is still limited to facilitating access to information as the grounds for supporting other goals. The overall assessment of the practices that academic libraries in Jordan implement for SDG advocacy has a mean score of 2.78, indicating a low moderate score. This suggests that these libraries might still be in the initial stages to fully embrace SDGs. Mostly, current library practices are focused on organizing awareness campaigns and facilitating access to information. However, academic libraries in Jordan are vital in achieving the SDGs at the national level. Accordingly, it is essential for these libraries to undertake more practices in order to embrace more SDGs.

Although academic libraries provide access to a variety of information resources on different subjects, they need to benefit more from and collaborate with scholars at universities to advance the realization of the SDGs. There is expertise in education (SDG 1, SDG 4), health (SDG 3), agriculture (SDG 2) and climate change (SDG 13). This collaboration could result in strategic planning for SDG advocacy in Jordan and academic library programmes and services.

Academic libraries have embraced practices related to organizing awareness campaigns on the different SDGs and their specific targets using different media. They also need to organize training sessions for users in different subjects, such as health-related issues (e.g. COVID-19), agriculture and employment skills (SDGs 1, 2, 3, 4 and 6).

Furthermore, libraries need to collaborate with health institutions, such as the King Hussein Cancer Centre and Jordan University Hospital, to organize awareness sessions about topics such as cancer (especially for women), family protection and planning (SDG 4), and public health. Libraries need to focus more on women's empowerment projects and provide training sessions in collaboration with university scholars as part of their social responsibility towards the community (SDG 5).

Libraries need to train their staff about their role in supporting the achievement of the SDGs. For example, they could provide support for sustainable economic growth and help people with online applications and advice on entrepreneurship and employment skills. Academic libraries could collaborate with each other and with government, and attend civil society meetings to help in developing the country's plan. This indicates the role of libraries and access to information in delivering open government partnership commitments.

The results also, lay the ground for academic libraries to be innovative in their practices and take more actions to embrace the realization of the SDGs. Although public libraries hold social responsibilities towards the community at the national level, academic libraries share these responsibilities. The prevalence of academic libraries in Jordan calls for such social responsibility, as there is only one main active public library – Abdul Hameed Shoman located in Amman. Based on the requirements identified by the respondents, libraries can convert these requirements into practices such as hosting local forums to discuss the challenges of local communities and institutions (infectious diseases, community health, education, human rights). Furthermore, libraries need to create and design programmes that can effectively contribute to the implementation of the SDGs, including literacy programmes, especially for older persons. Further studies investigating academic libraries' activities related to the SDGs are needed to measure the actual contribution of these libraries to the achievement of the SDGs.

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# An initial evaluation of research data management online training at the University of New South Wales

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## Abstract

In response to low research data management engagement at the University of New South Wales, Australia, an introductory research data management online training was developed and rolled out to all newly enrolled Higher Degree Research candidates. This article outlines the development process of the research data management online training and provides an initial evaluation of the training from the perspectives of the candidates and the university. As such, this article joins up with existing literature on research data management training to assist institutions and research data management stakeholders with the development of research data management training to help researchers and research students enact research data management best practices. Overall, the majority of the candidates ( $n = 643$ ) were satisfied with the quality of the training and found it helpful. The benefits the training brought to the university are mapped out by linking institutional research data management problems, the research data management online training's design and findings into a coherent narrative.

## Keywords

Data management training, evaluation, participatory design approach, research students, academic development

## Introduction

Research data management (RDM) can be understood as the organisation, storage and sharing of data from the start of a project through to the publication and archiving of research findings (Redkina, 2019). RDM is an evolving discourse in the research context and has significant implications for researchers (e.g. in applying for funding and complying with research codes of conduct; Corti et al., 2014). Nonetheless, despite the growing impact of RDM on research practices, several studies have reported that researchers and research students lack awareness of RDM best practices and how

to act on those best practices (Clement et al., 2017; Kennan and Markauskaite, 2015; Thielen and Nichols Hess, 2017; Whitmire, 2015). As such, many higher education institutions recognise the importance of investing in RDM upskilling and engagement for their research community (for a systematic review of RDM training, see Oo et al. (2021)). Although RDM support

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services, including training, generally come out of institutional libraries (Cox and Verbaan, 2016), there is an emerging trend for RDM support services to be jointly developed and implemented by institutional RDM stakeholders (e.g. library, information technology and e-research teams; e.g. Morgan et al., 2017; Petters et al., 2019; Wittenberg and Elings, 2017; Yu et al., 2017). This is perhaps in recognition of the fact that RDM is highly complex in practice and traverses many different business units in an institution (Awre et al., 2015).

The University of New South Wales (UNSW), Sydney, Australia, embarked on a strategic RDM initiative in 2018 led by the Division of Research and supported by the library, UNSW IT, the Data Governance team and the Research Integrity team. A key component was the development of RDM training for UNSW researchers and Higher Degree Research (HDR) candidates. In 2019, an introductory RDM online training (RDMoT) module was rolled out to all newly enrolled candidates. This article provides an initial evaluation of the RDMoT. Overall, the majority of the candidates ( $N = 643$ ) who completed the RDMoT module were satisfied with its quality and found it helpful. We also attempt to highlight the benefits that the RDMoT brought to the university by leveraging on ‘qualitative and quantitative data, between stories and indicators’ (Bamber and Stefani, 2016: 252). In this way, the article joins up with existing literature on RDM training to assist institutions and RDM stakeholders with the development of RDM training to help researchers and research students enact RDM best practices.

The article begins by describing the context in which the RDMoT operated, which is followed by an outline of the developmental approach to the RDMoT and its key features. After this, we present the RDMoT findings and demonstrate how we attempted to show the impact of our RDMoT development work by linking institutional RDM problems, the RDMoT’s design and our findings into a coherent narrative. The last section draws various strands of the article together, outlining how the RDMoT’s findings have implications beyond the training sphere. It also discusses the limitations of the training, and highlights how good training alone is insufficient to bring about behavioural change and requires it to link up with other RDM activities (e.g. information sessions and RDM systems updates). On the latter point, this means that, for institutions seeking to bring about a positive RDM behavioural change, it stresses the importance of collaboration among RDM institutional stakeholders and the alignment of RDM training, policies, systems and processes.

## Context

In 2017, UNSW reviewed its RDM practices as part of developing and enhancing its RDM services and infrastructure to support researchers in (1) managing the increasing volume and complexity of research data and (2) complying with the university data policies. Through the review, it was discovered that researchers and HDR candidates were not adequately aligning their research projects with RDM best practices. The key interrelated indicators included:

1. Many research projects did not have an RDM plan (RDMP) on the institutional RDMP system, ResData.<sup>1</sup> Having RDMPs allows researchers to ‘think through’ the management and safeguarding of their data throughout the research lifecycle.
2. Researchers and candidates were not classifying their data sensitivity and thus storing their data on systems that could be inappropriate for sensitive data.
3. Many researchers and candidates were using non-institutionally supported data systems, which were likely not meeting UNSW’s requirements for storing sensitive data.
4. Anecdotally, several researchers and candidates did not see themselves as having data, and thus did not see the need to engage with RDM.

This last indicator is consistent with findings reported in the literature relating to what is/is not considered data by researchers affecting their engagement with RDM practices (Di Cresce and King, 2017; Kurata et al., 2017; Thoegersen, 2018; Voß and Hamrin, 2018).

In response to this review, the Division of Research led a strategic RDM initiative set up around three streams: (1) People, (2) Policy and (3) Tools. While each stream had its own sets of priorities and deliverables, all of the streams were aligned to the common goal of enabling researchers and candidates to engage with RDM best practices. Given that the RDMoT is the medium containing, and synthesising, all RDM information, much of the alignment (or at least flagging of areas to be aligned) occurs within the People stream, which was responsible for the RDMoT development.

## Approach to RDMoT development and overview

Experiences from other institutions have shown that successful RDM training tends to be user-centric (Oo et al., 2021). As such, the development of the RDMoT draws from a user-centric participatory design

approach. A participatory design approach is user-centric as it commits to ensuring that users can influence the design and development of the tools, environments and systems that serve them (DiSalvo et al., 2017; Simonsen and Robertson, 2013). '[T]he goal is not just to empirically understand the activity, but also to simultaneously envision, shape, and transcend it in ways the [users] find to be positive' (Spinuzzi, 2005: 164). Moreover, several case studies have demonstrated the value of a participatory design approach in facilitating outstanding organisational/behavioural change (Balka, 2013; Braa and Sahay, 2013; Trigg and Ishimaru, 2013). As such, the participatory design approach aligns with the overall goal of enabling the research community to engage with RDM best practices (see Mattern et al., 2015). Nonetheless, it must be emphasised that, in a participatory design approach, the academic developers are not passive data collectors waiting for inputs from the users. A key feature of a participatory design approach is the 'process of mutual learning for both designers and users', which allows all participants to co-produce future tools, environments and systems, including any initial artefacts and prototypes (Simonsen and Robertson, 2013: 3). This suggests that the product developed through a participatory design approach will be useful to everyone involved. In the case of the RDMoT development, not only are researchers' and HDR candidates' voices heard, but an institutional voice is also articulated through the academic developers from the initiative's People stream.

### *RDMoT development process*

The RDMoT development team, led by the first author, pulled together RDM information from various locations (e.g. policies, web pages and RDM systems) to form UNSW's RDM baseline information. This information was then summarised using a storyboard. Thereafter, the team held a workshopping session with HDR candidates, nominated by the faculties, to review the storyboard and examine how the RDMoT could be made useful for them. In addition to reviewing the storyboard, the candidates were asked to provide feedback on the preferred tone, graphics and layout for the RDMoT. The RDMoT development team took on board the points raised in the workshop and incorporated them into building a prototype for pilot-testing with 57 candidates.

### *RDMoT learning objectives and design features*

The introductory RDMoT module aimed to unpack RDM for HDR candidates by familiarising them with UNSW data classification standards and data storage

systems, and getting them to complete an RDMP.<sup>2</sup> There are three key design features in the RDMoT.

First, in line with the participatory design approach, the RDMoT was designed with the end users in mind (i.e. both HDR candidates and institutional stakeholders). For instance, through the workshop and pilot-testing sessions, it was observed that candidates did not know what RDM is and required scaffolding to submit an RDMP on ResData. As such, the RDMoT included a broad overview of RDM, covered key content for submitting an RDMP and offered a walkthrough of the submission on ResData. As discussed earlier, there was low RDM engagement at UNSW, and an indicator was low RDMP numbers. The RDMoT was then designed such that a candidate must create an RDMP and enter its details into the module to complete the training.<sup>3</sup>

Second, the RDMoT used a conversational tone to simulate a coach figure and help candidates learn better, rather than a formal impersonal tone (see Clark and Mayer, 2016). For example, to prompt a candidate to periodically review their RDMP, a reminder was phrased as follows:

Set a calendar reminder to keep your RDMP up to date. Choose a date about 6 months from now and slot it in. Leave yourself an amusing note (e.g. 'My RDMP is not dead!!!')... you will appreciate it in 6 months!

Finally, explanatory feedback was designed into the RDMoT activities to ensure that the candidates were able to progress through the training knowing exactly why their choices were correct or incorrect in the various activities. Explanatory feedback has been shown to lead to improved learning outcomes compared to no feedback or corrective feedback (i.e. just telling learners that they are right or wrong; Hattie and Timperley, 2007; Moreno and Mayer, 2005; Van der Kleij et al., 2015).

### **Evaluation approach**

This initial evaluation used a mixed-methods approach of combining both quantitative and qualitative forms of data collection and analysis. By drawing on a mixed-methods approach, we were able to effectively communicate our findings to different stakeholders, as certain 'stakeholders may find certain types of measures or evidence more credible than other types' (Fitzpatrick et al., 2011: 386; see also Newcomer et al., 2015). We chose a concurrent triangulation strategy as it involved a shorter data collection time than a sequential approach, and data from the different methods could be used to corroborate the findings and enhance the evaluation's validity and



reliability (Bryman, 2012; Creswell, 2015) – or, as Bamber and Stefani (2016: 252) put it, ‘an accumulated mix of data types provides meaningful indications of the value of educational development activities’. This evaluation employed two data collection strategies: (1) online survey data (a combination of a six-point Likert scale and open-ended items) and (2) focus group data. The qualitative data was coded and categorised through a formal and systematic strategy, and all of the themes that emerged were reviewed by more than one author for intercoder agreement (Creswell, 2012).

### What does RDMoT mean to the HDR candidates and university?

At UNSW, all HDR candidates enrolled in 2019 had to complete the introductory RDMoT module. For this cohort, 919 completed the module and 643 submitted the online survey and consented to their data being used for publication. The survey used in this article had high internal consistency, with a Cronbach’s alpha index of .89.

### Online survey

The RDMoT development team designed the survey and pilot-tested it during the development process outlined earlier. The survey aimed to get an indication of (1) the candidates’ knowledge and understanding of RDM and (2) their experience of the RDMoT. The items for the former were designed based on the RDMoT’s learning objectives, which were linked to the RDM review. The items for the latter were adapted from the myExperience student survey for UNSW courses.

Based on our engagement with UNSW RDM stakeholders, we understand that the candidates surveyed were broadly representative of the larger HDR cohort. A breakdown of the sample of 643 candidates, including gender, age and faculty, is presented in Table 1. Of the 643 candidates, 267 (42%) were male, 358 (56%) were female and 18 (2%) preferred not to say. In terms of age range, there were five class intervals with class differences of 10 years each. The age range was from 20 to 69, and more than 50% of the candidates were aged 20–29. All nine UNSW faculties were represented.

The descriptive analysis of the survey presented in Table 2 includes the means and standard deviations of the candidates’ knowledge and understanding of RDM and their RDMoT experience. It can be seen from Table 2 that the candidates demonstrated a strong knowledge and understanding of RDM at UNSW ( $M = 5.4$ ,  $SD = 0.5$ ). In addition, their

**Table 1.** Demographic profile of HDR candidates (online survey).

| Demographics             | <i>n</i>   | %  |
|--------------------------|------------|----|
| <b>Gender</b>            |            |    |
| Male                     | 267        | 42 |
| Female                   | 358        | 56 |
| Prefer not to say        | 18         | 2  |
| <b>Age range</b>         |            |    |
| 20–29                    | 403        | 63 |
| 30–39                    | 168        | 26 |
| 40–49                    | 45         | 7  |
| 50–59                    | 19         | 3  |
| 60–69                    | 7          | 1  |
| Other                    | 1          | 0  |
| <b>Faculty</b>           |            |    |
| Art and Design           | 14         | 2  |
| Arts and Social Sciences | 61         | 10 |
| Canberra                 | 32         | 5  |
| Science                  | 157        | 24 |
| Medicine                 | 122        | 19 |
| Law                      | 15         | 2  |
| Engineering              | 199        | 31 |
| Business                 | 17         | 3  |
| Built Environment        | 26         | 4  |
| <b>Total</b>             | <b>643</b> |    |

**Table 2.** Descriptive statistics of the end-of-module survey.

|                                            | <i>n</i> | <i>M</i> | <i>SD</i> |
|--------------------------------------------|----------|----------|-----------|
| Knowledge and understanding of RDM at UNSW | 628      | 5.4      | 0.5       |
| Experience of RDMoT module                 | 627      | 5.1      | 0.67      |

experience of the RDMoT was high ( $M = 5.1$ ,  $SD = 0.67$ ), even though the mean value of this construct was slightly lower than the mean value of the candidates’ knowledge and understanding of RDM at UNSW.

The percentages of the Likert scale for each item of the survey provide details for two constructs: (1) knowledge and understanding of RDM at UNSW and (2) experience of the RDMoT module.

*Knowledge and understanding of RDM at UNSW.* The frequency breakdowns of each item in this construct are shown in Table 3. More than 95% of the candidates agreed on each item that, after completing the module, they had knowledge and understanding of what RDM meant for them at UNSW. A closer look at these items shows that more than 60% of the candidates strongly agreed that they knew they could

**Table 3.** Percentage breakdown of the construct 'knowledge and understanding of RDM at UNSW'.

| RDM knowledge and confidence                                                                         | Strongly agree | Agree | Moderately agree | Moderately disagree | Disagree | Strongly disagree |
|------------------------------------------------------------------------------------------------------|----------------|-------|------------------|---------------------|----------|-------------------|
| I acknowledge I definitely have research data                                                        | 63             | 32    | 4                | 0                   | 0        | 1                 |
| I am confident of classifying research data in accordance with the UNSW Data Classification Standard | 40             | 51    | 9                | 0                   | 0        | 0                 |
| I must store my research data on systems that are appropriate for their data classifications         | 64             | 33    | 3                | 0                   | 0        | 0                 |
| I know how to submit an HDR RDMP on ResData                                                          | 43             | 45    | 10               | 1                   | 1        | 0                 |
| I must have regular RDM conversations with my supervisor(s)                                          | 41             | 46    | 12               | 0                   | 1        | 0                 |
| I know I can contact RDM@UNSW for RDM assistance                                                     | 63             | 35    | 2                | 0                   | 0        | 0                 |

**Table 4.** Percentage breakdown of the construct 'experience of the RDMoT module'.

| RDMoT experience                                                                                                                       | Strongly agree | Agree | Moderately agree | Moderately disagree | Disagree | Strongly disagree |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------------------|---------------------|----------|-------------------|
| The aims of this module were clear to me                                                                                               | 45             | 47    | 6                | 1                   | 0        | 1                 |
| The content in this module was organised in a clear and logical way                                                                    | 46             | 45    | 7                | 1                   | 1        | 0                 |
| The principles from this module can be applied to my research project(s)                                                               | 44             | 47    | 8                | 1                   | 0        | 0                 |
| This module changed the way I think about research data management                                                                     | 26             | 43    | 24               | 3                   | 3        | 1                 |
| This module was helpful in getting me thinking about how I can align my research project(s) to research data management best practices | 35             | 51    | 11               | 1                   | 1        | 1                 |
| This module was helpful in completing the mandatory fields of my RDMP                                                                  | 37             | 47    | 13               | 2                   | 1        | 0                 |
| The module was able to engage me most of the time                                                                                      | 27             | 51    | 17               | 3                   | 2        | 0                 |
| Overall, I am satisfied with the quality of the module                                                                                 | 34             | 54    | 9                | 1                   | 1        | 1                 |

contact RDM@UNSW for RDM assistance and that they must store their research data on appropriate systems, and acknowledged they had research data (for more items, see Table 3).

**Experience of the RDMoT module.** The results of the frequency breakdown of each item for the candidates' experience of the RDMoT module are shown in Table 4. More than 90% agreed on each item that they had a positive module experience. For example, 97% agreed that they were satisfied with the overall quality of the module (for more items, see Table 4).

In addition to the Likert Scale survey items, we included two open-ended questions to allow candidates to articulate their experiences of the module: 'What were the best things about this module?' and 'What could be improved?'

Through the analysis of the question 'What were the best things about this module?', eight themes emerged: (1) RDMoT design and delivery; (2) data classification

**Table 5.** Percentages of HDR candidates' responses on the best things about the RDMoT module.

| Themes                       | % of total |
|------------------------------|------------|
| RDMoT design and delivery    | 52         |
| Data classification section  | 14         |
| Data storage section         | 9          |
| Relevance for HDR candidates | 8          |
| Data management overview     | 6          |
| RDMP walkthrough section     | 6          |
| N/A/No responses             | 3          |
| General positive comments    | 2          |

section; (3) data storage section; (4) relevance for HDR candidates; (5) data management overview; (6) RDMP walkthrough section; (7) N/A/No responses; and (8) general positive comments. The details of these eight themes are presented in Table 5. Among them, 52% of the candidates commented that the best thing about the RDMoT module was its design and delivery.

**Table 6.** Percentages of HDR candidates' responses regarding their suggestions for improving the RDMoT module.

| Themes                       | % of total |
|------------------------------|------------|
| Nothing needs improvement    | 52         |
| RDMoT design and delivery    | 29         |
| RDMP walkthrough section     | 7          |
| Relevance for HDR candidates | 3          |
| RDMP system interface        | 3          |
| More RDM topics              | 2          |
| Data classification section  | 2          |
| Data storage section         | 2          |

For example, one candidate remarked: 'I like this module a lot! It was very simple to understand and follow until the end. Above all, its content is highly relevant and useful'. In addition, 14% of the candidates commented that the best thing about the module was the data classification section. For instance, one candidate responded: 'it helped a lot on how to identify and classify my own research data'.

Regarding the analysis of the question 'What could be improved?', eight themes emerged: (1) nothing needs improvement; (2) RDMoT design and delivery; (3) RDMP walkthrough section; (4) relevance for HDR candidates; (5) more RDM topics; (6) RDMP system interface; (7) data classification section; and (8) data storage section. The details of these eight themes are presented in Table 6. Among them, 52% of the candidates commented that no improvement was required for the RDMoT module. For example, one response went as follows: 'I think the module serves its purpose in an effective way, I have no suggestions to modify it'. Meanwhile, 29% commented that the RDMoT design and delivery could be improved. For instance, they asked for more case studies and examples: 'Overall is great. Some examples could be added more for more clearly [*sic*] understanding'. In addition, less than 20% suggested improvement of the module with regard to the RDMP walkthrough section, relevance, more RDM topics, the RDMP system interface, and the data classification and data storage sections.

### Focus groups

Seven semi-structured focus group sessions were conducted to see how the candidates engaged with RDM after completion of the RDMoT, and to corroborate the survey data. Recruitment emails were sent to all of the HDR candidates who completed the RDMoT, and 35 candidates participated in the sessions (for the breakdown of gender, age range and faculty, see Table 7).

**Table 7.** Demographic profile of HDR candidates (focus groups).

| Demographics             | n         | %  |
|--------------------------|-----------|----|
| <b>Gender</b>            |           |    |
| Male                     | 18        | 51 |
| Female                   | 17        | 49 |
| <b>Age range</b>         |           |    |
| 20–29                    | 18        | 51 |
| 30–39                    | 13        | 37 |
| 40–49                    | 3         | 9  |
| 50–59                    | 0         | 0  |
| 60–69                    | 1         | 3  |
| <b>Faculty</b>           |           |    |
| Art and Design           | 2         | 6  |
| Arts and Social Sciences | 4         | 11 |
| Canberra                 | 3         | 9  |
| Science                  | 7         | 20 |
| Medicine                 | 7         | 20 |
| Law                      | 1         | 3  |
| Engineering              | 8         | 23 |
| Business                 | 1         | 3  |
| Built Environment        | 2         | 6  |
| <b>Total</b>             | <b>35</b> |    |

The focus groups, led by the first author, were conducted face-to-face and virtually (for the focus group guide, see Appendix 1).

After each session, the key points discussed were sent to the participants for member-checking to 'determine the accuracy' of those points (Creswell, 2015: 191). The participants were provided with the opportunity to verify and make any changes to the points. All of the participants found the key points to be reflective of the sessions. The following six themes emerged: (1) suggestions for improving RDMoT; (2) improved RDM engagement; (3) positive overall experience; (4) flagged issues around engaging with RDM best practices; (5) relevance for HDR candidates; and (6) RDMoT met learning objectives. The details of these six themes are presented in Table 8.

As can be observed from Table 8, large portions of the sessions were used by the participants as a platform for suggesting RDMoT improvements. The suggestions included requests for additional RDM topics (e.g. data encryption) and incorporating RDM short videos.

This was followed by discussions about improved RDM engagement, whereby the participants talked about how they experienced changes in their thinking and practices around RDM after completion of the RDMoT. For instance, one participant commented: 'Uh, yeah, so, I mean, it really made me think about

**Table 8.** Percentage breakdown of focus group discussion themes.

| Example codes                                                        | Categories                                        | Themes                                                 | % of total |
|----------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------|------------|
| Preferred step-by-step instructions over a broad approach            | Suggestions for training design                   | Suggestions for improving RDMoT                        | 25         |
| To include more information on data encryption                       | Suggestions for RDM content                       |                                                        |            |
| Started using UNSW OneDrive                                          | Change in practice                                | Improved RDM engagement                                | 18         |
| Broadened understanding of data                                      | Change in thinking                                |                                                        |            |
| Research team's protocols and/or supervisors determine data handling | Difficulties in enacting RDM practices            | Flagged issues around engaging with RDM best practices | 17         |
| Difficulties with completing RDMP at early stages of candidature     | Difficulties with RDMP completion                 |                                                        |            |
| Difficulties with using UNSW OneDrive                                | Issues with data storage platforms                |                                                        |            |
| Contextualised and relevant content                                  | Relevance of the training                         | Relevance for HDR candidates                           | 15         |
| Case studies were useful                                             | Usefulness of the RDM content/activities          |                                                        |            |
| Clear, concise and well-structured module                            | Good overall design                               | Positive overall experience                            | 14         |
| Self-paced module                                                    | Flexible                                          |                                                        |            |
| Awareness of data storage options                                    | Improved awareness of data storage best practices | RDMoT met learning objectives                          | 11         |
| Highlighted the importance of data classification                    | Improved awareness of data classification         |                                                        |            |
| Highlighted the importance of good data management                   | Awareness of the importance of data management    |                                                        |            |

the way I handled my data in the past and how I've left it open to being lost quite easily or perhaps being stolen'. The participants also shared how they were switching from unsupported storage systems to UNSW-supported systems; regularly updating their RDMP; planning for the management of future research data; and initiating RDM conversations with their supervisors. Relatedly, when the participants talked about their RDM engagement, they also flagged issues around their attempts at engaging with RDM best practices – for example, technical issues with moving onto supported data systems and struggles with incorporating RDM best practices into existing research teams' data practices.

Overall, the findings from these sessions corroborated the survey findings. The participants indicated a positive overall RDMoT experience and their discussions echoed the survey findings – for instance, how they liked the RDMoT's design and delivery (e.g. flexibility of working at their own pace) and the data classification section. Many of the participants also appreciated the relevance of the RDMoT for their projects, as it provided helpful information for them to enact RDM best practices. One participant remarked: 'So, I think I had a bit of an idea. But [the module] definitely improved my knowledge about it. And I think I have already started implementing some

of the things already'. Finally, in sharing their experiences, the participants talked about how they had a better understanding of RDM and became aware of UNSW data classification standards and data storage systems after completing the RDMoT. These responses speak to the RDMoT's learning objectives and can be mapped to RDM knowledge and understanding survey items.

#### *Articulating the RDMoT's impact: what does the RDMoT mean to the university?*

The findings presented above point towards two inferences on completion of the RDMoT: (1) the HDR candidates had a good understanding of RDM at UNSW and (2) the module was well received by, and useful to, them. Broadly, then, the RDMoT in and of itself could be considered a success by most academic developers and training designers. However, to highlight the benefits that the RDMoT brought to the university, which we argue are a result of good academic development design, we need to join up the problems with the data in order 'to assemble the story in writing and put it into a logical and coherent order' (Newcomer et al., 2015: 548). The story, or vignette, that follows is what the first author used in his various university reports and meetings (at times, only certain

**Table 9.** Mapping the key RDM indicators to the RDMoT's learning objectives, activities, outcomes and results.

| Number | Indicator                                                                        | Learning objective                                                                       | Activity                                                                                                                                                                                                                                                                                                                                                                        | Target outcome                                                                                                                                                  | Results after RDMoT completion                                                                                                                                                               |
|--------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.     | Low RDMP numbers                                                                 | HDR candidates know how to submit an RDMP                                                | <ul style="list-style-type: none"> <li>• A section providing a walkthrough for submitting an RDMP on ResData</li> </ul>                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• To complete the RDMoT, candidates must submit an RDMP on ResData and enter the RDMP number in the RDMoT</li> </ul>     | <ul style="list-style-type: none"> <li>• 636 HDR RDMPs on ResData</li> </ul>                                                                                                                 |
| 2.     | Not classifying data sensitivity                                                 | HDR candidates know how to classify their data sensitivity based on institutional policy | <ul style="list-style-type: none"> <li>• Interactive research – area-specific case studies: a candidate can choose relevant case studies that require them to classify the different types of data in the cases</li> </ul>                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Survey responses indicating that candidates are more confident in classifying their data after the training</li> </ul> | <ul style="list-style-type: none"> <li>• 100% of the candidates are confident in classifying their data</li> <li>• HDR candidates record their data classification in their RDMPs</li> </ul> |
| 3.     | Use of non-institutionally supported data systems                                | HDR candidates know of institutionally supported systems                                 | <ul style="list-style-type: none"> <li>• Overview of institutionally supported systems and highlighting the level of data sensitivity that can be stored on these systems</li> </ul>                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• Survey responses indicating that candidates know they must store their research data on appropriate systems</li> </ul> | <ul style="list-style-type: none"> <li>• 100% of candidates know they must store their data on systems that are appropriate for their data classifications</li> </ul>                        |
| 4.     | Researchers and candidates do not recognise that all research projects have data | HDR candidates know they have data                                                       | <ul style="list-style-type: none"> <li>• Interactive activity requiring a candidate to sort what items can be considered data, with the correct response being that all the items can be considered data</li> <li>• The data classification case studies cycle through different types of data, allowing a candidate to see the different types of data in a project</li> </ul> | <ul style="list-style-type: none"> <li>• Survey responses indicating that candidates know they have data</li> </ul>                                             | <ul style="list-style-type: none"> <li>• 99% of candidates acknowledge they definitely have data</li> </ul>                                                                                  |

parts) to target his audience effectively (Fitzpatrick et al., 2011).

The introductory RDMoT was designed in response to the RDM review and, by implication, to help researchers and HDR candidates align their research projects with RDM best practices. For the RDMoT's initial rollout, it only targeted HDR candidates. We understand training as an experience with learning objectives mapped to demonstrable outcomes. As such, we examined the four key indicators

that surfaced in the RDM review and came up with corresponding objectives, activities and outcomes for the candidates. We ensured that the outcomes were measurable so that stakeholders could see the RDMoT's direct impact in quantifiable terms. The information shown in Table 9 clearly communicated to the RDM initiative's stakeholders how attempts to improve the indicators, or at least steer them in a positive direction, were designed into the RDMoT – for instance, how the completion of RDMoT

translated directly to an RDMP on ResData (i.e. candidates must submit an RDMP on ResData and enter the RDMP number into the RDMoT to complete it).<sup>4</sup>

The RDMP was designed as a form for candidates to record and think through their RDM practices, including their data classifications. Given that research data comes in various forms and candidates are responsible for upholding the integrity of their research (see *Australian Code for the Responsible Conduct of Research* (National Health and Medical Research Council (NHMRC) et al., 2018)), candidates are also responsible for assessing the accuracy of their data classifications. That said, candidates need to be adequately equipped to self-assess (Joughin et al., 2019) their data classifications. Hence, a key focus of the RDMoT was on data classification. All of the candidates responded that they were confident in classifying their data sensitivity after completing the RDMoT, and 28% of their responses for ‘What were the best things about this module?’ was around data classification. Examples of these responses are as follows:

Classification of data based on the case study, which helps me to understand the classification of my own [research] data. Excellent idea of giving a practical example!! [sic]

I did not know about data classification level before but it was nice to learn about it and discuss it with my supervisor.

I got a detailed idea about how to classify my data (whether is it Sensitive or Private).

As such, the mix of quantitative and qualitative data clearly demonstrated to the stakeholders how the RDMoT, through deliberate design, directly affected the first two indicators – that is, adding to the number of RDMPs and upskilling candidates to classify their data and record their classifications on a plan.

As far as the third indicator – the use of non-institutionally supported data systems – is concerned, the issue was not that the candidates were using non-supported systems, but that those systems were likely unsuitable for storing sensitive data. In contrast, the university has oversight of supported systems – some of which are suitable for storing sensitive data – and can in many cases guarantee data retrieval within federal and state legislative data retention periods (e.g. data from clinical trials must be retained for a minimum of 15 years). However, university policy does *not* require candidates to use supported data systems if they use systems that are suitable for the sensitivity of their data, as research projects may require unique data systems that are not supported by the institution (e.g.

projects with contractual agreements specifying non-supported data systems). That said, the initiative’s stakeholders would like candidates to use supported data systems as far as possible for the reasons outlined above. Therefore, the RDMoT survey question could only take the form of ‘I must store my research data on systems that are appropriate for their data classifications’, which stands in contrast to ‘I must store my research data on institutionally supported systems’, which would have been a more direct response to the desired behaviour implicit in the third indicator.

To steer the candidates towards adopting supported data systems, the RDMoT was designed to highlight the features of the key supported systems (e.g. free research data support and suitability for storing sensitive data). Information was also explicitly presented such that the unsupported platforms commonly used by researchers were unsuitable for storing sensitive data. The UNSW Data Storage Guide, (See <https://research.unsw.edu.au/data-storage-and-tools>) as part of the RDMoT development and used in the RDMoT, provides a graphical overview of the information provided, and the initiative’s stakeholders were very pleased with the information presented in the guide. To foreground the RDMoT’s effectiveness in getting candidates to use supported systems, the following examples from the focus group session stories were shared (OneDrive, mentioned below, is a supported system that is suitable for storing sensitive data):

And before that module, I don’t have any particular idea in my mind about data management. I will just be using the USB [universal serial bus] or hard drives to store my data and I will loss [sic] my data if my USB is misplaced or something like this. But after that, after having this course online, I realised that I have to store my data where I can access from anywhere. So, I just started using OneDrive, so now I can access my data everywhere, even if I’m home when I’m away from my office.

Hey, like, I would say I’m so lucky I learnt about OneDrive [after the RDMoT] because when I moved here in Sydney, I used my personal laptop for, like, a week and it died. Yeah, so, like, when I was waiting for the university laptop for about a month, I started using another computer, and so I started using OneDrive storage, like, storing everything in there, so when I got my university laptop, I already had everything in there. It was life-saving.

In addition to demonstrating the uptake of OneDrive, the above stories also highlighted how the use of a supported system was beneficial for the candidates – that is, how they were able to access their data via different locations (a feature that was raised in the RDMoT).

Although the RDMoT is unable to directly contribute to the increased uptake of supported systems, it is at least able to articulate the supported systems in a favourable way to the candidates and influence their choice of data systems. Importantly, the RDMoT contributed to addressing the third indicator (i.e. alignment to university policy) by having 100% of the candidates responding that they knew they must store their research data on systems that are appropriate for their data classifications after completing the RDMoT.

The final indicator relates to how some candidates thought that they did not have research data and thus did not need to adhere to the data governance policies or engage with RDM practices. This ‘do not have data’ narrative was frequently raised during meetings with the initiative’s stakeholders and was deemed a key concern that must be addressed. Through our engagement with the candidates, we provided feedback to the stakeholders that a key reason for the candidates thinking that they did *not* have data, especially at the early stages of their projects when they had not conducted experiments or fieldwork, was that they had a narrow understanding of what data *is*. As such, we incorporated different types of data throughout the RDMoT (e.g. interactive case studies) to ensure that we exposed the candidates to as many types of data as possible. The RDMoT’s contribution to this final indicator is evident from 99% of the candidates responding that, after completing the RDMoT, they acknowledged that they had research data. The following excerpts from the candidates who completed the RDMoT clearly indicate that the RDMoT’s design broadened their conceptualisation of what data can be:

Now, my understanding, I think of what is data, is much broader, ‘cause I think this module covered a bit about, you know, even stuff like annotated reading. So, your notes or minutes from meetings or, I mean, really anything that is written down on the computer is part of your data, which I hadn’t really thought about before.

The best thing for me was to know what research data mean. Previously, I had a narrow definition of the research data. Now, I am familiar with different data forms in research as well as how to precisely classify them. I also learned how I can store my research data, which is very important.

As Vilar and Zabukovec (2018: 26) aptly point out, RDM is an integral part ‘of everyday research work and of researchers’ work habits, not so much a separate formalized task in the research process’, which means that engaging with RDM should begin at the start of a research project and only end when a project is finished. Hence, this broadened understanding of

data is crucial in getting candidates engaged with RDM, as what constitutes data affects their recognition of the ‘applicability of’ RDM concepts and practices (Thoegersen, 2018: 492). In this way, the earlier candidates recognise that they have data, the earlier they will start engaging with RDM practices, which speaks to the RDM initiative’s common goal.

### Concluding remarks and the limited impact of the RDMoT

To be clear, the assembling of the preceding story draws on data that was ‘plan[ned] in advance’ (Bamber and Stefani, 2016: 247). This deliberate planning for data is crucial in demonstrating the impact, and value, of good academic development and training design for two interrelated reasons: (1) little is left to some random chance that disparate data can be joined up coherently and (2) it is not due to serendipity, but good design and development, that the RDMoT brought about positive results.

We assembled quantitative and qualitative data, and problems, to articulate how the RDMoT contributed to improving RDM engagement at UNSW. Relatedly, we also highlighted what user-centric academic or training development can achieve. There is, however, still much left untold – perhaps akin to an impact’s aftershock. While the RDMoT was well received and useful to the candidates, our data also contained suggestions for improving the RDMoT (e.g. more discipline-specific examples). In our view, what qualifies as aftershocks is that feedback which is beyond the current RDMoT’s scope but still within the RDM ecosystem. For instance, there were requests for RDM topics that were not covered in the RDMoT, which indicates candidates’ willingness to engage with RDM and support further RDMoT development. There was also feedback around the RDMP system (i.e. ResData), which can be used to inform improvements to the system. Lastly, issues raised around barriers to engaging with RDM best practices bring to the fore the areas that the RDM initiative can further examine – for instance, how candidates are having difficulties using supported data systems due to technical and team-culture issues. In this way, the impact of our development has wider effects beyond the RDMoT’s direct benefits and connects with the work in other RDM areas.

Nonetheless, there are two key limitations to the RDMoT’s impact. First, we are unable to conclude at this point if the RDMoT can influence long-term behavioural change, which is particularly important given that this cohort of HDR candidates will be at the university for several years. This cohort

completed the RDMoT early in their candidature, usually within three months of their enrolment. At that juncture, they were still being inducted into research and thus were less likely to be prioritising data management. Therefore, a key limitation in this evaluation is the inability to determine if the completion of RDMoT will translate into the sustained enactment of RDM best practices for the duration of their research project (e.g. storing data on systems appropriate for their data classifications).

Another related limitation is that the HDR candidates' retention of the RDMoT's content will decay over time. This means that it is plausible that, as time passes, the HDR candidates will begin to forget the RDMoT content and may not manage their data in alignment with RDM best practices. For instance, even though the RDMoT reminded them to periodically review and update their RDMPs, they may forget to do so when they progress to a later candidature stage. An implication of having an out-of-date RDMP is that new research team members referring to that plan might not be storing data in accordance with the team's current data storage practices.

These limitations highlight the cross-sectional nature of this initial evaluation, which stresses the need for longitudinal studies to track behavioural or cultural shifts. More importantly, it stresses the need for sustained engagement with the HDR candidates to enable them to enact RDM best practices. The RDMoT in its current form serves as a catalyst for change and joins up with other activities in the RDM initiative to bring about a cultural shift. The key activities include conducting RDM informational sessions at schools and faculties; publishing RDM articles in university newsletters; and updating the ResData system to allow for the sending of periodic reminders to review RDMPs. These points restate the complexity of RDM in practice and how a positive RDM behavioural change can only be achieved via a concerted effort by different RDM stakeholders in an institution.

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### Notes

1. UNSW Library launched ResData in 2014, a service for managing UNSW research data. A key component is for researchers and HDR candidates to create an RDMP to record metadata for their projects and related data.
2. See <https://research.unsw.edu.au/research-data-management>
3. The ResData system is configured such that when HDR candidates access the system, they start completing RDMPs linked to their projects based on their student records. As such, the HDR candidates completed actual RDMPs for their HDR projects during the RDMoT.
4. The RDM stakeholders understood that RDMPs may contain sensitive or confidential information, and require discipline expertise to evaluate them. As such, evaluating the quality of RDMPs can be challenging, and further research will be required to determine optimal evaluation processes.

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## Appendix I

### Semi-structured focus group guide

1. What is your overall experience of the module?
2. How would you describe your understanding of RDM prior to completing the module?
3. How has your understanding of RDM changed after completing the module?
4. How has the training changed the way you handle data?
5. On the RDMP section, how was it useful or not useful in helping you complete the RDMP's mandatory fields?

6. There is some feedback that it may be more useful for the HDRs if they did the introductory RDM online training later in their candidature. What are your thoughts on this?
7. Are there any RDM-related areas that you would like more information around?
8. Any other comments?

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# Exploring academic staff engagement in depositing locally produced research content in open access institutional repositories in Tanzania

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## Abstract

This study explored academic staff engagement in depositing locally produced content in open access institutional repositories in public universities in Tanzania. The general objective of this study was to establish the extent to which academic staff are engaged in depositing locally produced content in open access institutional repositories. The study employed a cross-sectional research design. Data was collected using a structured questionnaire, which was administered to 292 academic staff selected through systematic random sampling. Purposive sampling was used to select 14 key informants. The results reveal that 92.5% of the respondents were aware of the presence of open access institutional repositories and 46.2% of the respondents had self-archived their academic work in open access institutional repositories. Poor Internet connectivity, low bandwidth, and a time-consuming and unstable power supply were the challenges encountered by the academic staff in the process of uploading their work. Several recommendations are suggested to expedite the process.

## Keywords

Depositing, locally produced content, open access institutional repository, self-archiving, research output, Tanzania

## Introduction

Open access institutional repositories (OAIRs) are gaining popularity in the academic arena because of their potential to facilitate the availability and accessibility of locally produced research output for a wider community. An OAIR is ‘a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members’ (Lynch, 2003:). OAIRs facilitate the storage and accessibility of locally produced content generated by university communities. They also increase the accountability and promotion of locally produced

content, and increase the visibility of the university (Abdelrahman, 2017; Saini, 2018).

A number of OAIRs have been established in different countries around the world. Their establishment has been spearheaded by the advent of Internet technologies, which enable libraries to deposit locally produced content and enhance its availability and

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accessibility for the user community. Europe, Asia, Australia and the Americas were the first regions to adopt OAIRs. In Africa, OAIRs were started in 1998 (Nyambi and Maynard, 2012). At the time the present study was conducted, the Directory of Open Access Repositories listed South Africa (43) and Kenya (43) as having the most OAIRs, followed by Nigeria (30; OpenDOAR, 2020). In Tanzania, OAIRs were first adopted in 2009 at the University of Dar es Salaam (UDSM), followed by Mzumbe University (MU) in 2010, Sokoine University of Agriculture (SUA) in 2011, and Muhimbili University of Health and Allied Sciences (MUHAS) in 2012.

The success of OAIRs in universities requires enough rich content to meet the needs of the user community. This locally produced content can be monographs or peer-reviewed journal articles, as well as electronic theses or dissertations and other digital assets such as data sets, course notes, learning objects or conference proceedings. Locally produced content is generated or produced by academic staff and students in the university from their academic work. Locally produced content is considered to be very important as it provides knowledge to the university community, satisfies local information needs, enhances self-reliance, enable intra and extra digital divide, enhances easy and free community access to information, and gives a community an identity as it mirrors real-life situations and operations (Saulus et al., 2017). For this local content to be visible, it is important to deposit it in OAIRs.

The depositing of locally produced content in OAIRs can be defined as the process whereby library or academic staff upload locally produced content in university OAIRs. In the past, it was librarians who normally deposited content in university OAIRs because they were the custodians of the OAIRs. Nowadays, library staff alone cannot manage to deposit all of the content created by university communities because it is difficult to know what has been created by academic staff or researchers. The engagement of academic staff in depositing locally produced content in OAIRs is therefore very important. Engagement can be defined as the way in which academic staff are involved in the process of depositing locally produced content in university OAIRs by either willingly giving their work to be deposited or self-archiving without the help of a librarian. Self-archiving is the act of (the author) depositing a free copy of an electronic document online in order to provide open access to it (Harmad, 2001).

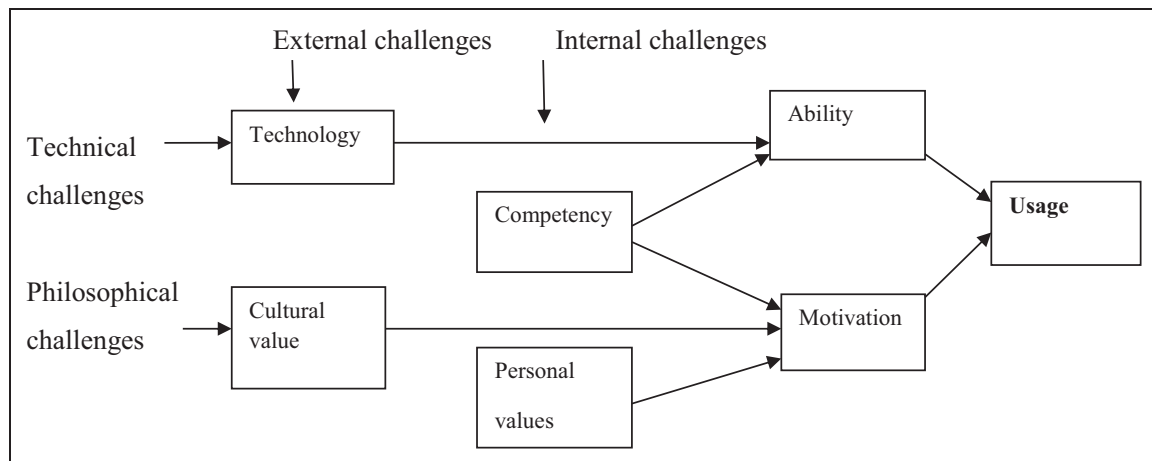
Engaging academic staff in depositing or self-archiving locally produced content in OAIRs is very important in the academic arena. It increases the amount

of content available in OAIRs, provides sufficient information resources for the academic community, and decreases the costs of buying information resources such as books and journals, which are expensive. It also provides full-text scholarly publications that are free from copyright and licensing restrictions. Generally, the depositing of locally produced content in an institutional repository provides a diversity of information for the community within and outside the institution cheaply and without restrictions (Jain, 2013).

In order to engage academic staff fully in depositing their locally produced content in OAIRs, universities in Tanzania have formulated OAIR policies, which serve as a guiding framework to ensure the maximum dissemination of research generated by the university community. For instance, the OAIR policies at SUA and MUHAS mandate that all academic staff submit their peer-reviewed research output to the OAIR, and require the immediate depositing of peer-reviewed research in the university OAIR. However, the policies at the UDSM and MU require that only the abstract of an article be deposited in the OAIR. Despite the availability of OAIR policies at the universities in this study, the engagement of academic staff in depositing or self-archiving their locally produced content in OAIRs is low (Mnzava and Chirwa, 2018). Therefore, this study set out to investigate the extent to which academic staff are engaged in depositing or self-archiving their locally produced content in OAIRs in Tanzania.

### *Statement of the problem*

In Tanzania, there are more than 1500 academic staff who have produced scholarly publications from their research and other academic activities. For example, from 2011–2012 to 2016–2017, the academic staff (1045) at the UDSM produced 448 conference and journal papers, 25 research reports, 19 books and 19 book chapters (<https://www.udsm.ac.tz>) (University of Dar es Salaam facts and figures 2011–2012 to 2016–2017). Moreover, there are OAIR policies which mandate that academic staff deposit their locally produced content in university OAIRs. Despite these policies, the amount of content deposited in OAIRs in Tanzania is very low (OpenDOAR, 2020). According to OpenDOAR's (2020) figures, Tanzania has 112,167 content items deposited in its OAIRs, which is a much smaller number than South Africa, with 153,639, and Kenya, with 136,275 (Bangani, 2018; OpenDOAR, 2020). One would have expected that because of the large number of academic staff in Tanzanian public universities and the amount of research produced, the number of



**Figure 1.** Quadratic Usage Framework (Marshall, 2007).

deposited local content items would be high. The low amount of content hinders the accessibility and visibility of the universities. This study was therefore conducted to investigate the extent to which academic staff are engaged in depositing or self-archiving locally produced content in OAIRs in Tanzania.

#### *Objective of the study and conceptual framework*

The general objective of this study was to establish the extent to which academic staff in public universities in Tanzania engage in depositing locally produced content in OAIRs.

Specifically, the study sought to (1) find out the level of awareness among academic staff of OAIRs; (2) indicate the extent to which academic staff engage in self-archiving locally produced research content in OAIRs; and (3) reveal the challenges encountered when self-archiving locally produced content in OAIRs.

#### *Research questions*

From the objectives of the study, the following research questions were formulated:

1. What is the level of awareness of OAIRs among academic staff?
2. To what extent do academic staff engage in self-archiving locally produced research content in OAIRs?
3. What are the challenges encountered by academic staff when self-archiving locally produced content in OAIRs?

#### *Conceptual framework*

This study was guided by the Quadratic Usage Framework in establishing the extent to which academic staff

in public universities in Tanzania engage in depositing or self-archiving locally produced content in OAIRs. The Quadratic Usage Framework is an advanced model which includes more factors that can assist in explaining factors that influence the acceptance, intention to use and usage of technology (Marshall, 2007). In this study, the Quadratic Usage Framework was modified by replacing factors with challenges that were thought to be suitable to reflect the study. The Quadratic Usage Framework guided the study to find the level of awareness of OAIRs among academic staff and the extent to which academic staff engage in depositing or self-archiving their locally produced content in OAIRs (see Figure 1).

There are several assumptions implied in this model; one is that real usage of a certain technology requires both ability and motivation (Mardis et al., 2008; Marshall, 2007; Mtega et al., 2014). The first element in this model is the technology, which refers to the functionality of a system – for example, the hardware, software and physical setting of usage. The second is competence, which lies in the knowledge and skills necessary to operate that technology. The third element is cultural value, which involves challenges related to policy, values, beliefs, culture, voluntariness and social influences. These challenges can influence the use of technologies. The fourth element is personal value. This is the user's attitude towards participation – for example, intention, desire, pleasure, enjoyment, fulfillment, anxiety and all the other challenges that distinguish one user from another and the user from their environment are linked to the individual user's motivation and choice.

In the context of this study, technology means the tool – the OAIR – which henceforth is an information and communications technology (ICT) component. Competence relates to the knowledge, skills and ability to use OAIRs to deposit locally produced content.

Cultural and personal values are the challenges influencing the depositing of locally produced content in OAIRs, either positively or negatively, as they affect people's ability to deposit local content in OAIRs.

## Literature review

### *Level of awareness of OAIRs among academic staff*

An OAIR is a digital system that captures and preserves the intellectual output of a single university or multi-university community (Bamigbola and Adetimirin, 2017; Omeluzor, 2014). Worldwide, OAIRs are growing very quickly, but some faculty members in universities do not know of their existence (Dutta and Paul, 2014; Rehman et al., 2019). However, recent studies carried out at Annamalai University, Tamil Nadu, India, and in Nigeria report that despite efforts by universities to establish OAIRs, there were some academic staff who were not aware of the existence of OAIRs in their universities (Aghwotu and Ebiere, 2016; Dhanavandan and Tamizhchelvan, 2013). Despite the fact that some academic staff are aware of the presences of OAIRs in their universities, the amount of content deposited in OAIRs is low, especially in Tanzania (Chilimo, 2016; Mnzava and Chirwa, 2018; Samzugui, 2017). Therefore, this study was conducted to find out the level of awareness of the presence of OAIRs in universities and the process of self-archiving locally produced content in university OAIRs.

### *Extent to which academic staff are engaged in self-archiving locally produced research content in OAIRs*

The objective of OAIRs in universities is to capture and collect different publications, research output and teaching documents, which can then be accessed and used by the university community. However, building an effective OAIR collection requires the involvement of both academic staff and library staff in depositing or self-archiving locally produced content. The involvement of academic staff is very important because they are the ones who produce content from their research and academic activities. This was also revealed by Musa et al. (2016: 41) who reported the most critical issue that lies behind the success of any institutional repository is self-archiving among academic staff.

There are several advantages to engaging academic staff in self-archiving locally produced content in OAIRs. Abuabdallah (2014) mentions accessibility, publicity, academic rewards and professional recognition, and sharing scientific knowledge for the benefit of others. Despite the good number of OAIRs that

have been established and benefit from the depositing or self-archiving of locally produced content, there are still challenges involved in self-archiving by academic staff. Most academic staff do not engage in self-archiving or give their academic work to be deposited in university OAIRs (Aghwotu and Ebiere, 2016; Dutta and Paul, 2014; Ezema and Okafor, 2015; Halder and Chandra, 2012; Omeluzor, 2014). Other studies have also found that there are several challenges with regard to depositing or self-archiving locally produced content in OAIRs, such as lack of awareness of the process, time limitations, lack of technical skills, an unstable network and electricity problems (Halder and Chandra, 2012; Mnzava and Chirwa, 2018; Omeluzor, 2014). Different studies have been carried out in Tanzania (Chilimo, 2016; Mnzava and Chirwa, 2018; Samzugui, 2017) but it is still not clear how academic staff engage in self-archiving, which drove the researchers to embark on this study.

### *Challenges encountered when self-archiving locally produced content in OAIRs*

Several studies have reported on the low uptake of self-archiving locally produced content in OAIRs. Even though OAIRs provide room to deposit, store and disseminate locally produced content, faculty members are reluctant to take advantage of this. In a study carried out by Kim (2011) and reported by Yang et al. (2015) on the factors that frustrated faculty contributions to OAIRs, copyright issues, time and effort were seen as challenges hindering participation in self-archiving. Singeh et al. (2013) share a Malaysian case; they found that fear of plagiarism prevented authors from self-archiving in OAIRs. Moreover, Singson et al. (2015) indicate that the lack of a good understanding of publishers' licensing policy was a challenge that faced academic staff and librarians when self-archiving. Ezema (2011), Okoye and Ejikeme (2011), and Saini (2018) share the Nigerian experience and found that lack of interest, fear of copyright violation and plagiarism (Nwokedi and Nwokedi, 2018) were the main challenges in self-archiving. It is not known whether the same challenges apply to academic staff in the Tanzanian context, therefore this study present study is empirically set to investigate.

## Methodology

This study was conducted at four selected public universities in Tanzania – namely, MUHAS, MU, SUA and the UDSM. These four public universities were selected based on the criteria that they have operational OAIRs and their OAIRs are old enough to offer

**Table 1.** Sampling frame.

| University                                               | Academic staff (n) | Proportion from the required n = (N / 2894)* 413 |
|----------------------------------------------------------|--------------------|--------------------------------------------------|
| MUHAS                                                    | 693                | 99                                               |
| MU (main campus)                                         | 236                | 34                                               |
| SUA (only main campus and Solomon Mahlangu Campus (SMC)) | 427                | 61                                               |
| UDSM (main campus)                                       | 1538               | 219                                              |
| Total                                                    | 2894               | 413                                              |

insights and data for the present study. Moreover, these OAIRs have been registered by OpenDOAR, which was thought to offer substantial secondary data for the study.

The study used a cross-sectional research design because it allowed data to be collected at a single point in time and also allowed for a questionnaire survey (Sedgwick, 2014). This was possible because the study was limited to one year only to obtain important data.

The total population for this study was 2894 academic staff (senior lecturers, lecturers and assistant lecturers). The sample size was obtained by using Slovin's formula:  $n = N / (1 + Ne^2)$ , where  $n$  = sample size,  $N$  = total population (2894) and  $e$  = margin of error (0.05). Therefore  $n = 2894 / (1 + 2894 \times 0.05^2) = 2894 / 2895 \times 0.0025 = 2894 / 7 = 413$ .

A systematic random sampling technique was used to obtain representatives from each university. The lists of academic staff were collected at the university concerned and a systematic random selection of every sixth academic staff member on the lists was carried out to obtain the respondents for the study. Therefore, out of the 413 academic staff, 34 were drawn from MU, 219 from the UDSM, 61 from SUA and 99 from MUHAS (see Table 1).

Purposive sampling was used to obtain key informants (heads of department, ICT technicians and library technicians), who were involved in managing OAIRs, knowledgeable and experts in the area of study.

The quantitative data was collected using a structured questionnaire. Before going into the field, the questionnaire was tested by using Cronbach's alpha to find the reliability of the tool. According to Taherdoost (2016), a Cronbach's alpha of .70 is a minimum recommendation to indicate that the items are reliably constructed. For the present study, the Cronbach's

alpha was .66, which is close to the recommended 0.70, indicating that the constructs were reliable.

After testing, the questionnaire was distributed to the 413 academic staff in the four universities according to the sampling frame in Table 1, and 292 questionnaires were filled in correctly and returned, resulting in a return rate of 78.5%. These questionnaires were used for the analysis.

The qualitative data was collected by using the questionnaires from the 14 key informants (six heads of department, four ICT technicians and four library technicians). Documentary sources such as policy documents, existing literature on OAIRs, the Directory of Open Access Repositories (OpenDOAR, 2020) and the Registry of Open Access Repositories (ROAR) were used to collect qualitative data on the number of content items available in the OAIRs.

The quantitative data was analysed using the Statistical Package for the Social Sciences (SPSS), version 16. Descriptive statistics were calculated to generate frequencies and percentages. Inferential statistics were calculated by cross-tabulating the variables to generate  $p$ -values and determine the relationships among the variables and ascertain the presence or absence of any statistically significant difference in the results. The data obtained from the interview were presented inform of explanations according to themes related to the research questions.

## Findings

### Demographic characteristics of the respondents

Figure 2 shows that 60.3% of the respondents were male and 39.7% were female.

Figure 3 presents the age of the respondents. It shows that 37.7% of the respondents were aged between 36 and 45, and 4.8% of the respondents were 61 and above in all four universities.

Figure 4 presents the academic qualifications of the respondents. It shows that 45.5% of the respondents had a Master's degree, 33.6% a PhD, 19.5% a Bachelor's degree and 1.4% a postgraduate diploma.

Table 2 shows that most of the respondents at MUHAS (44.9%) had 1–5 years of work experience. At MU, 30.7% of the respondents had 11–15 years of work experience; at SUA, 18.7% had 11–15 years of work experience and at the UDSM, 44.0% had 11–15 years of work experience. This shows that many of the respondents had work experience of 1–15 years.

Table 3 shows the research disciplines of the respondents. For the discipline of pure sciences, 27.9% of the respondents were from MUHAS. For the field of social sciences, 33.3% were from MU, 17.3% were from SUA and 37.0% were from the UDSM.

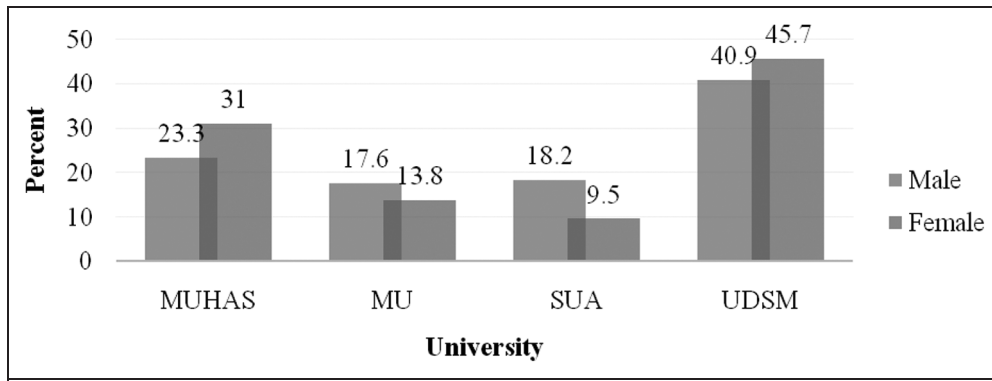


Figure 2. Distribution of the respondents by sex (n = 292).

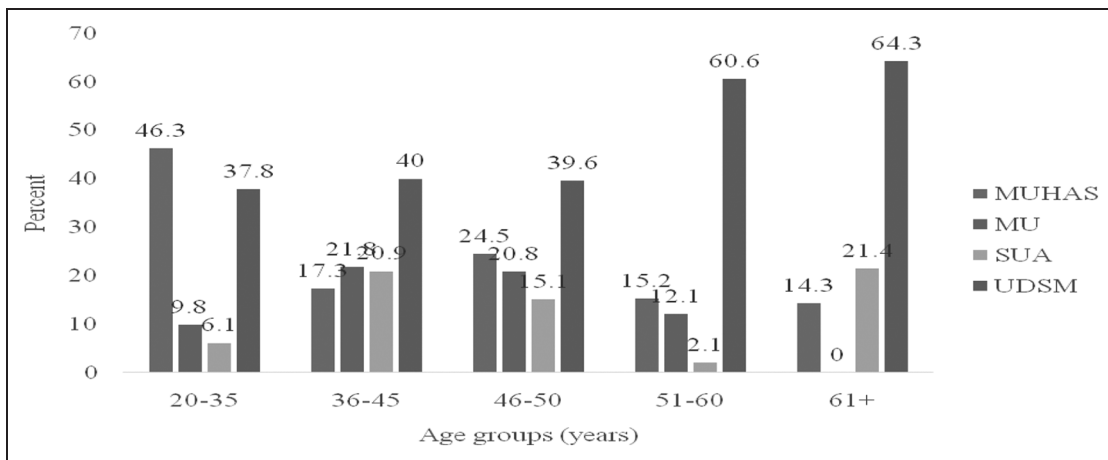


Figure 3. Age of the respondents (n = 292).

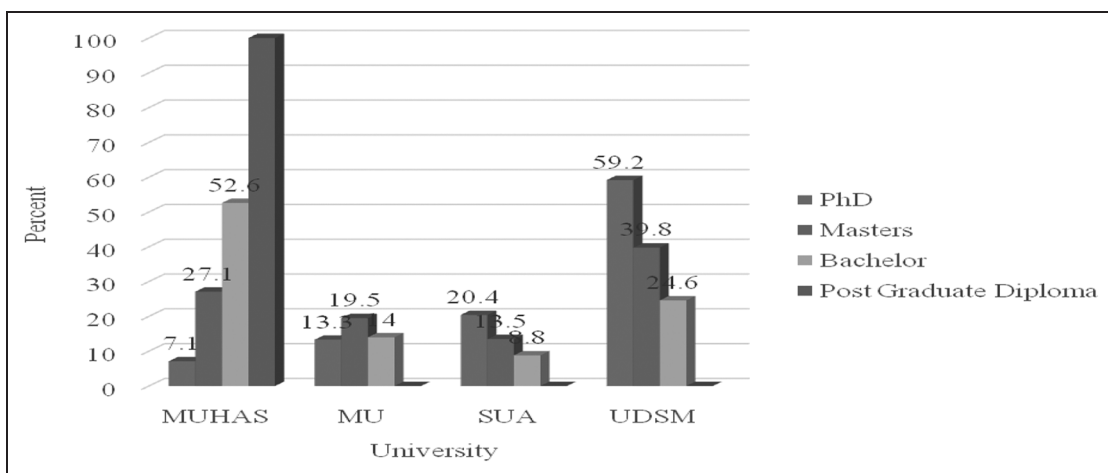


Figure 4. Academic qualifications of the respondents (n = 292).

**Awareness of the presence of OAIRs**

The study sought to confirm if academic staff were aware of the presence of OAIRs in their universities. Table 4 shows the respondents’ awareness of OAIRs in their universities. The results show that 92.5%

of the respondents were aware of the existence of OAIRs.

Table 5 shows awareness of the presence of OAIRs by academic qualifications of the respondents. The results show that 46% of those with a Master’s degree



**Table 2.** Work experience (years) of the respondents (n = 292).

| Variable                | University |      |    |      |     |      |      |      |
|-------------------------|------------|------|----|------|-----|------|------|------|
|                         | MUHAS      |      | MU |      | SUA |      | UDSM |      |
|                         | F          | %    | F  | %    | F   | %    | F    | %    |
| Work experience (years) |            |      |    |      |     |      |      |      |
| 1–5                     | 35         | 44.9 | 7  | 9.0  | 5   | 6.4  | 31   | 39.7 |
| 6–10                    | 17         | 25.0 | 12 | 17.6 | 10  | 14.7 | 29   | 42.6 |
| 11–15                   | 5          | 6.7  | 23 | 30.7 | 14  | 18.7 | 33   | 44.0 |
| 16–20                   | 11         | 30.6 | 5  | 13.9 | 5   | 13.9 | 15   | 41.7 |
| 21–25                   | 6          | 35.3 | 0  | 0.0  | 3   | 17.6 | 8    | 47.1 |
| 26+                     | 3          | 16.7 | 0  | 0.0  | 6   | 33.3 | 9    | 50.0 |

**Table 3.** Research disciplines of the respondents (n = 292).

| Variable                                       | University |      |    |      |     |      |      |      |
|------------------------------------------------|------------|------|----|------|-----|------|------|------|
|                                                | MUHAS      |      | MU |      | SUA |      | UDSM |      |
|                                                | F          | %    | F  | %    | F   | %    | F    | %    |
| Research discipline                            |            |      |    |      |     |      |      |      |
| Pure sciences                                  | 12         | 27.9 | 4  | 9.3  | 6   | 14.0 | 21   | 48.8 |
| Social sciences                                | 10         | 12.3 | 27 | 33.3 | 14  | 17.3 | 30   | 37.0 |
| Law                                            | 3          | 15.8 | 7  | 36.8 | 2   | 10.5 | 7    | 36.8 |
| Economics                                      | 5          | 29.4 | 3  | 17.6 | 0   | 0.0  | 9    | 52.9 |
| Education                                      | 3          | 10.3 | 1  | 3.4  | 2   | 6.9  | 23   | 79.3 |
| Medicine                                       | 2          | 25.0 | 2  | 25.0 | 0   | 0.0  | 4    | 50.0 |
| Engineering                                    | 1          | 3.7  | 2  | 7.4  | 0   | 0.0  | 24   | 88.9 |
| Information and Communication Technology (ICT) | 1          | 6.2  | 0  | 0.0  | 1   | 6.2  | 14   | 87.5 |
| Librarianship                                  | 3          | 27.3 | 0  | 0.0  | 8   | 72.7 | 0    | 0.0  |

**Table 4.** Respondents’ awareness of the presence of OAIRs (n = 292).

| Awareness of the presence of OAIRs | F          | %          |
|------------------------------------|------------|------------|
| Yes                                | 270        | 92.5       |
| No                                 | 21         | 7.2        |
| Don’t know                         | 1          | 0.3        |
| <b>Total</b>                       | <b>292</b> | <b>100</b> |

**Table 5.** Awareness of the presence of OAIRs by respondents’ academic qualifications (n = 270).

| Highest academic qualification | F          | %          | p    |
|--------------------------------|------------|------------|------|
| PhD                            | 90         | 33         | .909 |
| Master’s degree                | 124        | 46         |      |
| Bachelor’s degree              | 52         | 19         |      |
| Postgraduate diploma           | 4          | 1          |      |
| <b>Total</b>                   | <b>270</b> | <b>100</b> |      |

were aware of the existence of OAIRs in their institutions, followed by 33% of those with a PhD, 19% of those with a Bachelor’s degree and 1% of those with a postgraduate diploma.

**Table 6.** Awareness of the presence of university OAIRs by respondents’ work experience (years) (n = 270).

| Work experience (years) | F          | %          | p    |
|-------------------------|------------|------------|------|
| 1–5                     | 71         | 26.3       | .607 |
| 6–10                    | 59         | 21.9       |      |
| 11–15                   | 72         | 26.7       |      |
| 16–20                   | 35         | 13.0       |      |
| 21–25                   | 16         | 5.9        |      |
| 26+                     | 17         | 6.3        |      |
| <b>Total</b>            | <b>270</b> | <b>100</b> |      |

Table 6 shows awareness of the existence of OAIRs by work experience of the respondents. The results show that those with work experience of 1–20 years were more aware of the presence of OAIRs in their institutions (87.9%) than those with work experience of 20 and above years (12.2%). However, it also shows that awareness is not statistically significant across the demographic profiles of the respondents.

Table 7 shows awareness of the presence of OAIRs by the research disciplines of the respondents. The results show that 28.1% of the academic members

**Table 7.** Awareness of the presence of OAIRs by respondents' research disciplines ( $n = 270$ ).

| Research discipline                            | F          | %          |
|------------------------------------------------|------------|------------|
| Agriculture                                    | 21         | 7.8        |
| Pure sciences                                  | 37         | 13.7       |
| Social sciences                                | 76         | 28.1       |
| Law                                            | 17         | 6.0        |
| Economics, accountancy and finance             | 16         | 6.0        |
| Education                                      | 27         | 10.0       |
| Medicine                                       | 8          | 3.0        |
| Engineering                                    | 26         | 10.0       |
| Information and Communication Technology (ICT) | 12         | 4.4        |
| Librarianship                                  | 11         | 4.0        |
| Not applicable                                 | 19         | 7.0        |
| <b>Total</b>                                   | <b>270</b> | <b>100</b> |

**Table 8.** Academic staff who self-archived their locally produced research content in OAIRs ( $N = 135$ ).

| University   | Yes        |             | No         |             |
|--------------|------------|-------------|------------|-------------|
|              | F          | %           | F          | %           |
| MUHAS        | 44         | 15.1        | 33         | 11.3        |
| MU           | 24         | 8.2         | 23         | 7.9         |
| SUA          | 29         | 9.3         | 14         | 4.8         |
| UDSM         | 38         | 13.0        | 87         | 29.8        |
| <b>Total</b> | <b>135</b> | <b>46.2</b> | <b>157</b> | <b>53.8</b> |

of staff in the social sciences were aware of the presence of OAIRs in their institutions. Moreover, 13.7% of those in the pure sciences, 10.0% of those in education and 10.0% of those in engineering were aware of the existence of OAIRs. The level of awareness was less than 10.0% for the other disciplines.

#### *Engagement of academic staff in self-archiving of locally produced content in OAIRs*

The study sought to find out if academic staff self-archived their academic work in university OAIRs. Table 8 shows the number of staff who self-archived their locally produced research content in OAIRs. The results show that 15.1% of the respondents from MUHAS, 13.0% from the UDSM, 9.3% from SUA and 8.2% from MU self-archived the content they produced.

This was found by researcher during the interview with some key informants. For example, one of the key informants from SUA commented. For example, one of the key informants from SUA commented: 'Generally, academic staff do not self-archive their academic work in OAIRs; most of academic staff started to selfarchive their work when the university

**Table 9.** Personnel who assisted in self-archiving locally produced content in university OAIRs ( $n = 135$ ).

| Personnel          | F          | %           |
|--------------------|------------|-------------|
| No assistance      | 46         | 15.8        |
| Library staff      | 57         | 19.2        |
| Colleague          | 13         | 4.5         |
| ICT technician     | 13         | 4.5         |
| Library technician | 6          | 2.1         |
| <b>Total</b>       | <b>135</b> | <b>46.2</b> |

**Table 10.** Self-archived locally produced content by academic qualifications of the respondents ( $n = 135$ ).

| Highest academic qualification | F          | %           |
|--------------------------------|------------|-------------|
| PhD                            | 53         | 18.2        |
| Master's degree                | 54         | 18.4        |
| Bachelor's degree              | 27         | 9.2         |
| Postgraduate diploma           | 1          | 0.3         |
| <b>Total</b>                   | <b>135</b> | <b>46.2</b> |

imposed the mandate policy to deposit academic works in the university's OAIRs'.

The study also sought to determine the sources of assistance for self-archiving among the academic members of staff. Table 9 shows the personnel who assisted in self-archiving locally produced content in university OAIRs. The results show that library staff (19.2%), colleagues (4.5%), ICT technicians (4.5%) and library technicians (2.1%) were the personnel who assisted in the self-archiving of locally produced content in the university OAIRs; however, 15.8% of the academic members of staff reported to self-archived their locally produced research output in the university OAIRs without requesting any assistance.

This was found by researcher during the interview with some key informants. For example, one of the respondents from MU commented: 'Library staff are the ones who self-archive academic works in OAIRs'.

Table 10 shows the number of locally produced content items that were self-archived in OAIRs by the academic qualifications of the respondents. The results show that those with a Master's degree (18.4%) and PhD (18.2%) had self-archived more documents than those with a Bachelor's degree (9.2%) or postgraduate diploma (0.3%).

Table 11 shows the number of locally produced content items that were self-archived in OAIRs by the work experience of the respondents. The results show that those with work experience of 11–15 years had self-archived more content than the others.

This was found by researcher during the interview with some key informants. For example, respondents

**Table 11.** Self-archived locally produced content by work experience of the respondents ( $n = 135$ ).

| Work experience (years) | F          | %           |
|-------------------------|------------|-------------|
| 1–5                     | 25         | 8.6         |
| 6–10                    | 27         | 9.2         |
| 11–15                   | 38         | 13.0        |
| 16–20                   | 20         | 6.8         |
| 21–25                   | 11         | 3.8         |
| 26+                     | 14         | 4.8         |
| <b>Total</b>            | <b>135</b> | <b>46.2</b> |

**Table 12.** Self-archived locally produced content by research disciplines of the respondents ( $n = 135$ ).

| Research disciplines                           | F          | %           |
|------------------------------------------------|------------|-------------|
| Agriculture                                    | 8          | 2.7         |
| Pure sciences                                  | 20         | 6.8         |
| Social sciences                                | 35         | 12.0        |
| Law                                            | 10         | 3.4         |
| Economics, accountancy and finance             | 6          | 2.1         |
| Education                                      | 10         | 3.4         |
| Medicine                                       | 4          | 1.4         |
| Engineering                                    | 14         | 4.8         |
| Information and Communication Technology (ICT) | 6          | 2.1         |
| Librarianship                                  | 10         | 3.4         |
| Not applicable                                 | 12         | 4.1         |
| <b>Total</b>                                   | <b>135</b> | <b>46.2</b> |

from SUA and the UDSM commented along the lines of: ‘Academic staff who have more work experience archive or deposit more local content themselves in OAIRs’.

Table 12 shows the number of locally produced content items that were self-archived in OAIRs by the research disciplines of the respondents. The results show that there were more self-archived documents from the following disciplines: social sciences (12.0%), pure sciences (6.8%), engineering (4.8%), education (3.4%), librarianship (3.4%) and agriculture (2.7%).

#### *Categories of locally produced content self-archived in OAIRs by academic staff*

The study sought to find out which categories of locally produced content were self-archived in OAIRs. Table 13 shows the categories of the documents that were self-archived in OAIRs. The results show that the categories that were self-archived the most were journal articles (21.6%), research reports (17.5%), dissertations (10.6%) and theses (10.0%).

This was found by researcher during the interview with some key informants. For example, respondents

**Table 13.** Self-archived locally produced content by category ( $n = 135$ ).

| Categories       | F  | %    |
|------------------|----|------|
| Journal article  | 63 | 21.6 |
| Research report  | 51 | 17.5 |
| Book chapter     | 15 | 5.1  |
| Thesis           | 29 | 10.0 |
| Conference paper | 18 | 6.2  |
| Dissertation     | 31 | 10.6 |
| Lecture notes    | 1  | 0.3  |

Note. This was a multiple-response question.

**Table 14.** Sources of skills for self-archiving academic work in OAIRs ( $n = 135$ ).

| Sources of skills  | F          | %           |
|--------------------|------------|-------------|
| Library            | 45         | 15.4        |
| Seminars/workshops | 39         | 13.4        |
| Colleagues         | 26         | 9.0         |
| OAIR guides        | 25         | 8.6         |
| <b>Total</b>       | <b>135</b> | <b>46.6</b> |

from MUHAS and the UDSM commented along the lines of: ‘academic staff are only allowed to self-archive local content in the form of abstracts in the OAIR’.

#### *Sources of skills for self-archiving academic work in OAIRs*

The study sought to find out where academic staff obtained the skills of self-archiving documents in OAIRs. Table 14 shows the sources of the skills for self-archiving academic work in OAIRs. The results show that 15.4% of the respondents indicated that they obtained their skills from the library, 13.4% obtained them from seminars and workshops, 9.0% from colleagues and 8.6% from OAIR guides.

This was found by researcher during the interview with some key informants. For example, the respondents from SUA, MU, the UDSM and MUHAS commented along the lines of: ‘The majority of academic staff obtain their skills from the library and library staff through training and seminars, and from guidelines that are available on the library’s website’.

#### *Challenges in self-archiving locally produced content in university OAIRs*

The study sought to determine the challenges encountered by academic staff when self-archiving their locally produced content in university OAIRs.

**Table 15.** Challenges encountered during self-archiving of locally produced content in university OAIRs ( $n = 135$ ).

| Variables                                                               | F          | %           |
|-------------------------------------------------------------------------|------------|-------------|
| <b>Philosophical and personal values</b>                                |            |             |
| Copyright issues                                                        | 18         | 6.2         |
| No work to deposit                                                      | 15         | 5.1         |
| <b>Technical factors</b>                                                |            |             |
| Slow Internet connectivity and low bandwidth                            | 50         | 17.1        |
| Outdated version of DSpace                                              | 7          | 2.4         |
| Technical problems like an error on the server                          | 5          | 1.7         |
| The interface of the institutional repository is difficult to recognize | 4          | 1.4         |
| Difficulties converting Word documents to PDF format                    | 4          | 1.4         |
| Unstable power supply                                                   | 12         | 4.1         |
| <b>Competency</b>                                                       |            |             |
| Time-consuming                                                          | 6          | 2.1         |
| Conflicting with other university activities                            | 5          | 1.7         |
| Lack of knowledge and skills                                            | 4          | 1.4         |
| Uploading procedure is not user-friendly                                | 5          | 1.7         |
| <b>Total</b>                                                            | <b>135</b> | <b>46.3</b> |

Table 15 shows the challenges encountered during self-archiving locally produced content in university OAIRs. The results indicate that most of the challenges were technical in nature. It is shown that 17.1% of the respondents indicated that slow Internet connectivity and low bandwidth were the big challenges encountered during self-archiving their locally produced content in university OAIRs. The other challenges were categorized as philosophical and personal values, such as copyright issues (6.2%) and having no work to deposit (5.1%), or competency issues, such as it being a time-consuming process (2.1%), it conflicting with other university activities (1.7%), non-user-friendly uploading procedures (1.7%), and a lack of knowledge and skills (1.4%).

This was found by researcher during the interview with some key informants. For example, a respondent from MU remarked: 'Slow Internet connectivity is a major problem when self-archiving locally produced content in the university OAIR. Other challenges are the lack of skills and an inadequate number of library staff'.

#### *Strategies to improve the involvement of academic staff in self-archiving locally produced content in university OAIRs*

The study also established strategies that can help to improve the involvement of academic staff in self-archiving their locally produced content in university OAIRs. Table 16 shows the suggested strategies. The

**Table 16.** Suggested strategies to improve the involvement of academic staff in self-archiving their locally produced content in university OAIRs ( $n = 135$ ).

| Strategies                                                 | F          | %           |
|------------------------------------------------------------|------------|-------------|
| Motivate staff to deposit content                          | 15         | 5.1         |
| Availability of ICT facilities                             | 20         | 6.8         |
| Enforce regulations and mandatory follow-up of OAIR policy | 12         | 4.1         |
| International recognition                                  | 2          | 0.7         |
| Create awareness                                           | 40         | 13.7        |
| Conduct training and seminars or workshops                 | 25         | 8.6         |
| Add updated content                                        | 1          | 0.3         |
| Deposit should be mandatory                                | 1          | 0.3         |
| Easy access                                                | 4          | 1.4         |
| Encourage publishers to share their work                   | 5          | 1.7         |
| Provide research funds                                     | 8          | 2.7         |
| Register more OAIR users who can upload content            | 1          | 0.3         |
| Other                                                      | 1          | 0.3         |
| <b>Total</b>                                               | <b>135</b> | <b>46.0</b> |

results indicate that creating awareness (13.7%), conducting training and seminars or workshops (8.6%), the availability of ICT facilities (6.8%), staff motivation (5.1%), enforcing regulations and mandatory follow-up of OAIR policy (4.1%), and providing research funds (2.7%) would be useful strategies to improve the involvement of academic staff in self-archiving their locally produced content in university OAIRs.

This was found by researcher during the interview with some key informants. For example, the respondents from MU, SUA, MUHAS and the UDSM commented along the lines of:

The strategies that can be used to improve the depositing of local content in OAIRs are improving Internet facilities and bandwidth. Also, universities and libraries should promote OAIR awareness and reward those academic staff with more publications in OAIRs, and libraries should buy large servers to prevent the disappearance of content that has been deposited.

## **Discussion**

### *Demographics of the respondents*

The study found that the majority of the respondents were young academic staff who were well educated and experienced researchers. This implies that this is a crucial group, which is expected to be engaged in self-archiving locally produced content in university OAIRs. Therefore, universities and other academic

organizations should encourage academic staff to deposit or self-archive their academic work in OAIRs.

### *Level of awareness of the presence of OAIRs*

This study's findings reveal that the respondents in these four universities in Tanzania were aware of the presence of OAIRs, and some of them indicated that they had self-archived or deposited their academic work in OAIRs. This implies that there has been an improvement in academic staff's awareness of the presence of OAIRs in Tanzanian universities compared to the findings reported in previous studies (Dulle and Minishi-Majanja, 2011; Lwoga and Questier, 2014; Muneja, 2010). In fact, without full awareness of the existence of OAIRs, the self-archiving of local content may not be realized.

Also, the study investigated awareness of the presence of OAIRs by gender. The results reveal that male academic staff were more aware of OAIRs than female academic staff. This implies that men are better adopters and users of technology and electronic resources than women. This is supported by the studies conducted and Goswami and Dutta (2016). Therefore, there should be more deliberate efforts to create awareness among female academic staff by offering workshops, training and seminars to these staff members.

However, the results show that academic staff in the age between 20 and 50, respondents with high-level academic qualifications and work experience, and respondents in the social sciences research discipline were more aware of the presence of OAIRs in the university. This implies that junior academic staff are more eager to try out new technologies and innovations than the older age group. This is supported by Alemayehu (2010) and Oguz and Assefa (2014), who reveal that junior staff were more aware of the presence of OAIRs in universities. Also, in other universities, academic staff are aware of OAIRs because they are mandated by policy to deposit their theses and dissertations in the university OAIR after completing their studies. Therefore, there should be more deliberate efforts to create awareness among the older age group of academic staff by conducting workshops, training and seminars for these staff members.

### *Engagement of academic staff in depositing locally produced content in OAIRs*

The findings show that the majority of academic staff were not very engaged in depositing or self-archiving their locally produced content in university OAIRs. This implies that academic staff are not aware of the process and procedure of self-archiving or depositing

local content in OAIRs, and the reasons for this include conflicts with other university activities, copyright issues, insufficient digital content to deposit, and a lack of knowledge and skills. It is discouraging to find that academic staff, who are the major contributors to OAIRs, are not self-archiving local content in their universities' OAIRs. Therefore, awareness campaigns, workshops and seminars could be a practical means to inform academic staff about the benefits of depositing their research output in university OAIRs. Also, strategies to eliminate the challenges to self-archiving should be implemented.

On the other hand, the study found that the self-archiving of locally produced content in OAIRs was influenced by academic qualifications and work experience. This implies that those with a PhD or Master's degree, and those with more years of work experience, self-archived more than the other academic staff members. This is because they have theses, dissertations, research reports and journal articles to deposit in OAIRs after they have completed their studies. They also have more experience in research and opportunities to secure more funds for research than those who have relatively few years of work experience in their institutions. This is supported by Dulle and Minishi-Majanja's (2011) study, which notes that male respondents were more likely to publish in open access outlets than female respondents. Also, Eger et al. (2015) and Lwoga and Questier (2014) found that maturity was associated with greater participation, and Dulle (2010) found that older researchers were expected to have attained high qualifications and accumulated more research experience. Therefore, for all groups to be engaged in depositing local content in OAIRs, they should be provided with enough research training and opportunities to secure funds for research.

The study also investigated the categories of documents that were deposited. It was found that journal articles, research output, dissertations and theses were the categories of documents that were deposited most in OAIRs. This implies that these documents are deposited more often and preferable for most academic staff. This is supported by Lippincott's (2006) and Siegel's (2010) studies, which indicate that electronic theses and dissertations were being frequently deposited in OAIRs, and Nunda and Elia's (2019) research, which found that the preferred categories deposited in OAIRs were theses or dissertations, journal articles, conference papers and seminar papers. Therefore, more emphasis should be placed on the fact that all locally created academic work should be deposited in OAIRs.

In addition, the study investigated where academic staff obtained the skills to deposit local content. It is implied that only library staff are encouraging academic staff to deposit their academic work in university OAIRs. This is because library staff are the custodians of OAIRs, possess the necessary skills and are more expert than other groups. Therefore, provide training sessions to librarians and member of academic staff and also the university should link f the institutional repository to the university and faculties' websites.

### *Challenges in depositing locally produced content in university OAIRs*

The study found that slow Internet connectivity and low bandwidth were big challenges encountered during the depositing of local content in university OAIRs. These are common challenges that hinder the depositing of local content in OAIRs in most universities across Africa, especially Tanzania. This is supported by Eromosele's (2019) and Ivwighrehweta's (2012) studies, which indicate that if the technological facilities associated with OAIRs are designed in a way that is perceived as easy to use by academic staff in the university, there are opportunities to motivate and hence improve staff engagement in depositing local content in OAIRs in Tanzanian universities. Therefore, it is important to ensure the availability of good Internet connectivity and sufficient bandwidth.

### *Implications of the conceptual framework of the study*

The study found that several assumptions which are implied in the quadratic usage framework have been supported. For instance, the study found that academic staff were not able to follow the procedures on how to deposit their locally produced content in OAIRs as a technology. The second element was competence, which is the knowledge and skills necessary to operate that technology. The study found that many challenges lay in the third element, cultural value, which is related to policy, values, beliefs, culture, voluntariness and social influences. These were also found to be influential in self-archiving locally produced content in OAIRs. The fourth element, personal value, was found to have an influence on users' attitude towards participation in self-archiving locally produced content in OAIRs. For example, motivation, intention, desire, pleasure, enjoyment, fulfilment, anxiety and all of the other challenges that distinguish one user from another and the user from their environment were found to have a link to individual users' motivation and choice.

## **Conclusion**

It can be concluded that the engagement of academic staff in self-archiving locally produced content in university OAIRs is very important. The self-archiving of locally produced content in OAIRs provides knowledge to the university community, satisfies local information needs, enhances free community access to content, and increases the visibility of the university. Low engagement in self-archiving locally produced content will lead to a lack of content and low university visibility. It is necessary for universities and academic libraries to continue to encourage academic staff to self-archive their locally produced content in OAIRs. If we cannot encourage academic staff to self-archive, our OAIRs will be of no use.

## **Recommendations**

Based on the findings and discussion above, this study offers some recommendations. First, it was found that many academic staff were aware of the presence of OAIRs in their universities but only a few of them engaged in self-archiving. Therefore, universities and other academic organizations should encourage academic staff to use OAIRs to self-archive their academic work.

The findings indicate that many academic staff were not aware of the benefits that may be obtained when they self-archive their output in OAIRs. Consequently, universities and other academic organizations should inform academic staff of the practical benefits of depositing their research output in university OAIRs. Moreover, it was found that many universities do not provide incentives for academic staff who self-archive their locally produced content in OAIRs. Universities and other academic organizations should therefore make sure that they provide academic staff with enough research funds and opportunities for securing funds for research.

Furthermore, the findings indicate that some publishers do not give prompt feedback to academic staff when they send their manuscripts for publication. Publishers should be advised to give quick feedback and make swift decisions so as to motivate academic staff who are aiming to publish locally produced output that can also serve as material for self-archiving.

It was revealed that there are no training sessions on how to self-archive content in OAIRs. Universities and other academic organizations should provide regular training sessions to members of academic staff on how to upload local content in OAIRs. Lastly, many academic staff stated that slow Internet speed was a big challenge when they self-archived articles. Universities and other academic organizations should

ensure the availability of good Internet connectivity by increasing the bandwidth, which will motivate staff to use OAIRs.

### Contributions of the study to the scientific community

This study contributes to the body of knowledge around self-archiving local content using OAIRs. It has offered pertinent recommendations which, if adopted by universities, will enhance the self-archiving of locally produced content and hence increase the visibility and usage of that content.

### Areas for further study

There is a need to carry out a further in-depth study to explore additional incentives that may be offered to academic staff to intensify their efforts and attitude towards self-archiving in established OAIRs.

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# Technological scenarios for the new normality in Latin American academic libraries

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## Abstract

The technological scenarios that have arisen in Latin American universities have been substantially changing in recent months as a result of the international health emergency caused by COVID-19. The lockdown policy revealed the need to develop digital and informational skills to adapt to the environment and the demands of distance learning required for integral online education. In order to observe and systematize the transformation of the technological environment in academic libraries during these months, the recent situation was identified based on data analysis obtained from a questionnaire applied in Latin American countries. The results reported significant changes in the use of digital applications, services, user assistance and librarian training during the pandemic, as well as the libraries' mid-term commitments.

## Keywords

Information and communications technologies, new normality, academic libraries, Latin America, quantitative research, virtual learning environments

## Introduction

As a result of globalization, the world is constantly advancing by leaps and bounds through innovations and transformations in the economic, political and social sectors. Added to this, in the educational context, there is evidence of a growing increase in digital information and the accelerated progress of information and communications technologies (ICTs), which have contributed to consolidating the role of university libraries and the positioning of librarians (Saharkhiz et al., 2017; Sandhu, 2018; Voutssas Marquez, 2015). Within this framework, unexpected situations have arisen for the world, such as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) health emergency— a situation that has come to transform the way of daily life.

University libraries are among the organizations that were forced to make urgent adjustments to adapt

their various activities and continue to offer services and resources virtually. Librarians had to take responsibility for and face the challenges of paradigm changes in the different academic, technological and administrative processes of their institutions, and part of this responsibility was to pay attention to citizens when facing the threat of fake news and infodemics (IFLA, 2020).

For the above reasons, this article reviews the importance of ICTs in universities, their impact on the dynamics and interaction with students and professors, and the need for technological literacy and constant updating. It reflects on the responsibility of

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information professionals and how, at this stage, they had to act more than ever as online embedded librarians in the emerging virtual learning environments. Finally, in order to explore this situation in the Latin American context, the results of a quantitative diagnosis that was carried out through the application of a questionnaire among colleagues in the countries of the region are presented.

### **New technological scenarios in universities**

According to López de la Madrid (2007), the use of ICTs in universities around the world has been one of the main factors inducing change and adaptation to the new ways of doing and thinking initiated from the 1980s onwards, facilitating and significantly modifying the teaching–learning model. On the other hand, Quintero Barrizonte (2020) mentions that ICTs have helped to improve student interaction in class, changing their passive role into one that is more dynamic, active, responsible and creative, contributing to collaboration in projects, and allowing students to solve problems faster and with more accuracy.

ICTs are a powerful tool and their incorporation into teaching is necessary within curricula as a cross-cutting learning issue topic to prepare students for success in the labour market (Picatoste et al., 2018). According to Ashour (2019) and Fajardo et al. (2016), university classrooms are full of digital natives— young people with brains that are structurally different from those of other generations. This is not linked to genetics but has been acquired from the digital environment that has surrounded them from birth. It can be said that, to a greater or lesser extent, they are competent in the use of new technologies as they can process images with greater speed in relation to text that favours their learning preferences.

The overwhelming development of new and better technologies (Ashour, 2019) can lead to even so-called digital natives becoming digital immigrants every time a new technology appears and surpasses the previous one. This evidences a problem for teachers. University professors must adapt to new technologies, which, according to Del Moral Pérez et al. (2014), implies digital literacy and continuous training in the acquisition of different skills and learning that allow the integration of technologies in the classroom. These must be combined with the transversal skills that are also demanded of university students, such as critical thinking, good verbal and written communication skills, teamwork and social-emotional skills (Martínez Villalobos et al., 2016).

As part of the emerging actions during the months of social isolation, the Inter-American Development

Bank and the Instituto Tecnológico y de Estudios Superiores de Monterrey conducted a regional study among teachers from more than 800 universities in the Latin American region, who had experienced an unexpected change from face-to-face to virtual environments (before the pandemic these represented only 19% of the programmes) in their teaching activity. The study reported important indicators, such as the favourable opinion of 90% of teachers with regard to technologies for teaching–learning processes but at the same time a concern about the lack of training and the need for funding. Among the findings, it is significant that only ‘one in every four teachers [felt] fully prepared to incorporate new digital tools into their courses, although 74% said they were aware of them’ (Arias Ortiz et al., 2020: 4).

As a result of the social distancing policies that were implemented due to the pandemic at different times during the first semester of 2020, almost 1.1 billion students and young people around the world were affected by the closure of schools and universities. Agencies such as UNESCO (2020) offered initiatives such as the Global Education Coalition to support learning during this period and ‘establish new approaches to develop more open and flexible education systems for the future’. The continuity of the educational dynamic therefore required academic libraries to participate more actively in this different scenario, and adapt their infrastructures to the new needs of a growing community of remote users.

### **Responsibility of libraries and librarians in virtual learning environments**

In 2013, the International Federation of Library Associations and Institutions (IFLA, 2013) published a visionary report on technological trends, which has become an essential reference tool for the profession. In it, the five trends that were envisioned were access, online education, data mining, social networks, and innovation in economics and business. Among these, that corresponding to distance or online education was seen as an interesting possibility. In addition, in its 2019–2024 strategy, the IFLA (2019) proposed the development of a strong library sector that contributes to the construction of more informed and better prepared communities; in this sense, it proposed a platform of 16 action lines, including the generation of best practices, the integration of tools that optimize and strengthen libraries, and promotion of the education and updating of those who work in the library field.

Over these years, although it was possible to observe growth and innovation in this field, it was not

until the months of lockdown that those who had not taken concrete steps along this path were forced to do so, due to the social isolation situation. University teachers, students and administrative staff had to develop new skills, as well as learn about applications (apps) and instruments they had not yet explored. Over the course of a few days, their immersion in technology became a fact— a new reality, in which it would no longer be possible to turn back, favouring robust virtual learning environments beyond online conferences or videos, and generating structured content and connected information, multimedia support, interactivity and communication tools between users.

The objective of an online educational space is to provide students and teachers with a better learning experience and actions, and it therefore requires a clear definition of the competencies to be developed; the contents, apps, software and digital platforms to be used; and, of course, the didactic organization— that is, the timing, groups, spaces and evaluation. This implies developing activities to reinforce digital skills such as structuring wikis, creating blogs, writing articles, solving problems, developing an e-portfolio, and organizing and managing debates, and having integrated models and methodologies for teaching and learning. In this context, the library and its services are a key element, and therefore online experiences of using information have to be designed by librarians together with teachers. The question, however, is: Are we prepared in Latin America?

The answer is not simple because it has to do with making adjustments to administrative processes (both academic and technological) and, given that the diversity of libraries is enormous and the conditions of each country are different, we need to think of methodologies that serve as a guide and can be adapted to each circumstance and contribute value in universities. In this sense, it is important to develop programmes that support teachers and students in the development of their technological skills.

### Librarians in action

In her book *The invisible librarian: a librarian's guide to increasing visibility and impact* (2016: 1), Aoife Lawton stated “librarians are not trendy anymore. It is unclear if they ever were or ever will be. The new problem facing librarians is that they are losing visibility”. She presents a statistical chart showing the decline in visibility in the period 2004–2015. By repeating and updating the exercise in Google Trends, the chart continues to trend downward in the following years.

One way to transform this reality has been through the initiatives of information professionals to keep themselves updated and strengthen their capacities for adaptation, research and innovation, with a constant focus on their user communities. They have strengthened their presence as ‘embedded librarians’, a term that has been increasingly used to define the profile of one who ‘becomes a constant collaborator for students and instructors in the face-to-face, hybrid, and virtual spaces to expand contemporary library services’, where ‘students— utilizing embedded librarians in online course shells— gain confidence, comfort, and a higher perception of abilities from the collaborative projects’ (Spangler, 2019: 30, 37). The turning point would come from the unexpected global social isolation, which produced unprecedented conditions in formal education at all levels. Given the necessary measures of social distancing and staying at home, the additional challenge was to take the next step and become online embedded librarians, with the responsibility ‘to provide distance learners equivalent access to the myriad of campus-based resources that residential students receive’ (Lysiak et al., 2018: 15).

In this sense, and in the midst of the COVID-19 lockdown, many initiatives were launched in libraries around the world, from small actions to more complex ones, both at the individual and group levels. Library associations and professional groups launched new services and online training, or incorporated valuable information into their portals, which has been constantly updated. The IFLA (2020), for example, created a section on ‘COVID-19 and the global library field’ on its official website, which so far has 13 sections that can be enriched by members who wish to provide new links.

In the Spanish-speaking world, the offer of digital information services was also boosted in response to the growing demand from users. In a study carried out in Spanish libraries, various online integration actions were identified, including bibliographic recommendations and other information resources such as digital libraries, specific platforms or databases, subject guides or OpenCourseWare materials (Arroyo-Vázquez and Gómez-Hernández, 2020). Teams of professionals from different Latin American institutions have generated hundreds of webinars, workshops and conferences, reading circles, specialized documents and protocols for the return to the new normality. Even significant high-level management decisions have been taken in macro-universities such as the Universidad Nacional Autónoma de México, where the rector himself announced, as part of the resilience actions, a major organizational restructuring of the library system (Graue, 2020). Those of us

who live in these Spanish-speaking countries have witnessed all these efforts and have also benefited from them. Hence the decision to recover them, review them and have a first approach to the phenomenon in the region.

### **Actions and learning in Latin American libraries during the period of social isolation in 2020**

A webinar on ‘The impact of information technologies on libraries in times of the pandemic’, facilitated on 26 June 2020 by Turnbull (2020), offered a review of the technological options that resulted from the emergency situation. Global trends in their impact were discussed, such as large-scale data analysis (big data) and predictive analytics, data curation, information technology applied to the use of content such as online book loans and the use of electronic books by students, and digital libraries as portals to knowledge. The fact that most publishers were open to offering some of their access and services free of charge, adapting to the emerging remote-working model to promote the development of remote apps and services, was also mentioned. Moreover, actions for creating websites with open access resources were emphasized, and the digitization of academic production, information repositories on the pandemic, and repositories related to world and regional cultural heritage were addressed.

Special mention was made regarding the impact on education, pointing out, among other things, the proliferation of free and/or massive open online courses; the accelerated conversion of face-to-face courses to online versions, particularly courses for developing information skills; the adaptation of study materials, examinations and evaluation mechanisms to the digital environment, providing digital documents and on-demand digitization for printed documents; and the management of actions for the temporary licensing of some software platforms due to the necessary closure of libraries’ computer rooms (Turnbull, 2020).

This attractive panorama does not entirely represent the reality of Latin America, where technological conditions in libraries are somewhat heterogeneous. While in some libraries it is common to see three-dimensional printers, free high-speed Wi-Fi, mobile apps and important software collections for scientific research, in others there are only a few computers and limited connectivity. Despite this, the period of lockdown and the physical distance between libraries and their users was not an obstacle to continuing to provide services. Creativity took over, and librarians were present on the virtual scene as counsellors and

advisors, facing misinformation, attending to users and learning more about the copyright of digital documents. For this reason, and based on the technological and service offerings identified and analysed by Turnbull (2020), we proceeded to structure a questionnaire, which was made available online so that it could be answered by representatives of academic libraries in Latin American countries, to get an idea of the experiences in the region.

### **Methodology and results**

The study began with the definition of the research question: What are librarians’ perceptions of digital resources and services during and after lockdown? For the literature review, a bibliography was collated from scientific databases such as Scopus, Web of Science, ERIC– Education Resources Information Center and the Directory of Open Access Journals, and search engines like Google Scholar, Semantic Scholar and Microsoft Academic.

A questionnaire was designed for data collection, taking as a reference framework the webinar by Turnbull (2020) mentioned in the previous section, which provides an overview of the technological options that have emerged as a result of the pandemic situation within libraries. The instrument consisted of 15 general questions related to technologies, services, users, librarian training and, finally, their future perspectives. It was distributed to librarians who participated in a webinar called ‘From automation to discovery: Information technologies in the academic library’ (Feria Basurto, 2020), held by the Universidad Nacional Autónoma de México (see Appendix 1). Due to the large number of attendees (2500) from different parts of Latin America, of which 1144 completed the survey, a filter was made by type of library (university library) as there were attendees from public libraries, national libraries and other types of libraries, which resulted in a total of 749 responses (see Table 1). QuestionPro was chosen as the software for information processing, and the data collected was hosted in Mendeley Data in different formats in order to make it replicable for further research (Feria Basurto et al., 2020).

As shown in Figure 1, the majority of the 749 respondents (23.60%) agreed that the technology that gained the greatest momentum in their libraries during the months of lockdown was video conferencing. This was followed by technologies to provide user support services, such as library portal chat, social networking and instant messaging (22.24%). In third place came adjustments and improvements to their libraries’ websites (20.33%), which was followed by

**Table 1.** Percentage of responses by country.

| Number | Country            | Number of answers | %     |
|--------|--------------------|-------------------|-------|
| 1.     | Argentina          | 59                | 7.88  |
| 2.     | Bolivia            | 8                 | 1.07  |
| 3.     | Brazil             | 2                 | 0.27  |
| 4.     | Chile              | 2                 | 0.27  |
| 5.     | Colombia           | 33                | 4.41  |
| 6.     | Costa Rica         | 2                 | 0.27  |
| 7.     | Ecuador            | 44                | 5.87  |
| 8.     | El Salvador        | 22                | 2.94  |
| 9.     | Guatemala          | 14                | 1.87  |
| 10.    | Honduras           | 3                 | 0.40  |
| 11.    | Mexico             | 486               | 64.89 |
| 12.    | Nicaragua          | 1                 | 0.13  |
| 13.    | Panama             | 8                 | 1.07  |
| 14.    | Peru               | 42                | 5.61  |
| 15.    | Dominican Republic | 8                 | 1.07  |
| 16.    | Uruguay            | 1                 | 0.13  |
| 17.    | Venezuela          | 6                 | 0.80  |
| 18.    | Other              | 8                 | 1.07  |

the use of cloud storage (11.87%), the digitization of collections considering intellectual property (7.87%), the recommendation and use of mobile and desktop apps (7.41%), leveraging the learning management system (3.50%) and, finally, the use of other technologies (3.18%).

When asked about the video platforms that were used in their information units to disseminate courses, conferences and workshops, a clear preference was noted for the use of Zoom (29.72%), which was followed by Google Meet (15.30%), Facebook Live (14.89%), Microsoft Teams (10.42%), YouTube Live (7.65%), Cisco Webex (7.18%) and Skype (3.83%); 1.82% of the librarians suggested other platforms. It is important to note that 9.18% of the librarians mentioned that they had not offered any type of courses, workshops or conferences via streaming.

When questioned about which communication channels were used most to provide reference service to users, most of the respondents answered that it was social networks (32.84%), which was followed by instant messaging (26.49%), the library portal chat (20.37%) and other channels (12.01%); 8.28% stated that they did not provide reference services during lockdown (see Figure 2).

The vast majority (42.24%) of the respondents noted that WhatsApp was used as the primary tool for instant messaging to support users, followed by Messenger (22.52%), text messages via SMS (Short Message Service; 16.92%), Hangouts (6.01%) and, finally, other channels (12.31%).

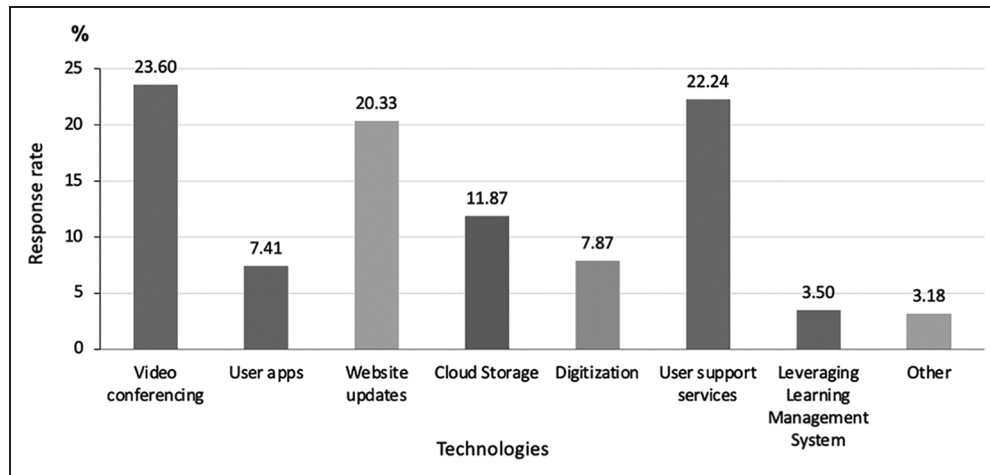
As shown in Figure 3, in terms of services, the librarians concluded that those that had increased among their users were, firstly, access and downloading of e-books and articles from scientific databases (32.43%). In second place were virtual reference services (30.35%), followed by document retrieval services (17.38%), services providing more app options to access and use content (10.47%), on-demand digitization (6.66%) and, finally, other services (2.71%).

The librarians were questioned about the actions carried out to promote users' information skills. In this respect, 32.51% considered the creation of tutorials, quick guides and video clips as alternatives to enhance user skills. This was followed by virtual courses, conferences and workshops on information products, software and platforms (28.41%); courses on information literacy skills for users (20.00%); the transition to virtual events and exhibitions; and, finally, other actions (5.84%).

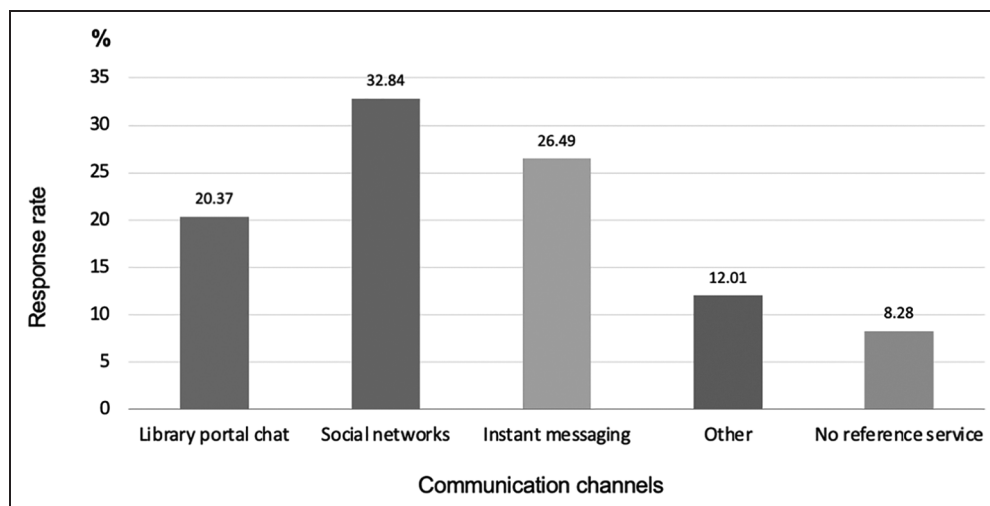
As highlighted in Figure 4, more than 95% of the respondents confirmed that they had received some kind of training, with the main type being virtual courses and workshops on information products, software and platforms (38.98%), followed by online courses on other topics such as content creation or the development of virtual learning environments (28.95%), online courses for library employees on remote working and the use of digital media (26.37%), and other types of training (5.69%).

The final question on the questionnaire had to do with the librarians' perceptions of this new reality in the mid term. They considered that the first priority would be given to the acquisition of electronic as opposed to print materials. Secondly, greater importance would be assigned to the library because of the large quantity and quality of its digital contents and services (12.96%). This was followed by the belief that there would be greater reinforcement of online training and an increase in the use of virtual collaboration tools (10.39%); a belief in the necessity to maintain continuity of training in digital tools, products and services (9.81%); social networks would be reinforced and given greater protection for closer communication with users (6.79%); and there would be a reorganization of offices (6.13%) and a greater migration of services and content to the cloud (5.02%).

In synthesis, the analysis of these responses showed that the prevailing technologies were video conferencing and the enhancement of library websites and cloud storage. Among the most in-demand services were access to electronic publications (e-books and scientific articles), virtual reference services and document retrieval. Libraries were addressing the



**Figure 1.** Technologies promoted in libraries during pandemic.



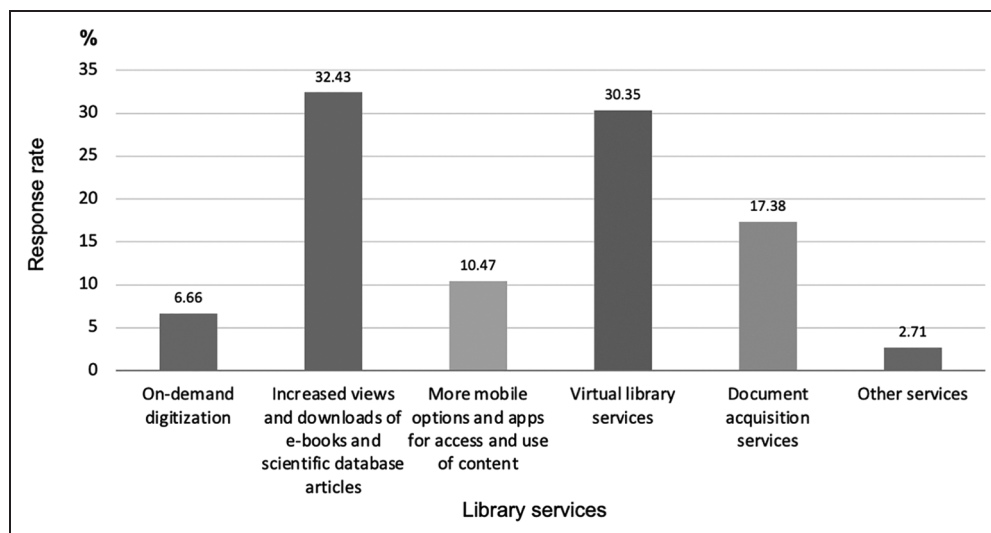
**Figure 2.** Preferred communication channels to support users during pandemic.

emerging needs through the creation of tutorials on using software and information products, as well as the provision of online information literacy courses. A high proportion of the librarians (95%) indicated that they had received training during the period of lockdown, highlighting, first, information product management and digital platforms, followed by remote working and digital media, and lastly other types of training such as virtual learning environments and content creation, among others. Facing this new reality, the librarians agreed that training, the use of digital tools and the digitalization of documents would increase, and they stated that the circumstances favoured greater acknowledgement of the importance of libraries on the part of academic communities.

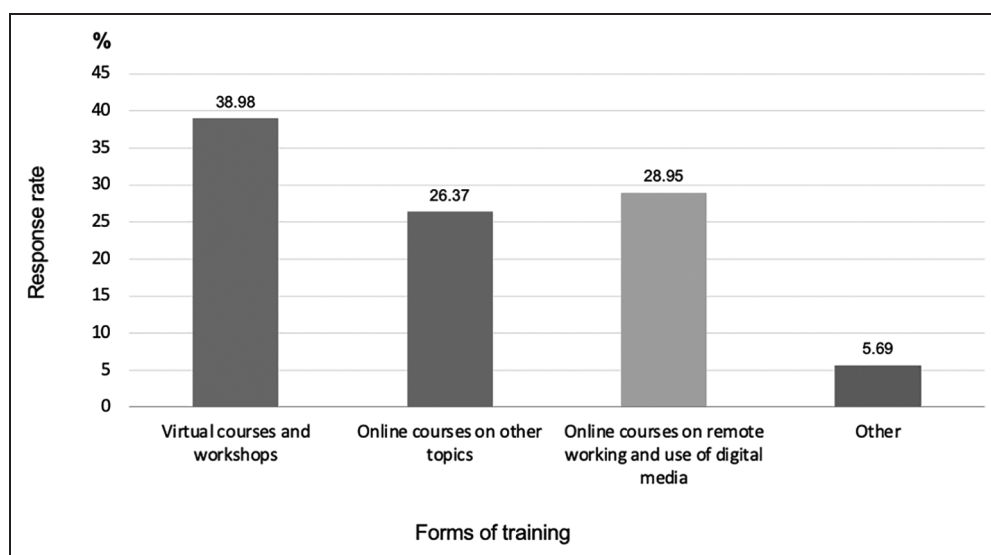
## Discussion

After systemizing and analysing the data provided by the questionnaire, it was observed that libraries were

participating in a digital transformation process where both librarians and users were more active and the presence of technologies was more evident. Spanish-speaking libraries strengthened their capacities, developed resources and restructured their services. Some of those identified in the questionnaire are consistent with those mentioned by Marquina (2020). Examples include an increased presence in social networks and greater access to the library's website (including updating it), the development of tutorials, information training and the digitization of collections. Other actions, such as device loan services (e.g. tablets) and assistance in using such devices (Rodríguez León, 2020), were not mentioned by the respondents. However, some of the services that were offered on a daily basis increased, such as virtual reference services and document retrieval, and, due to high demand, the use of instant messaging also increased.



**Figure 3.** More relevant library services for users during pandemic.



**Figure 4.** Forms of training for librarians during pandemic.

A great willingness on the part of the librarians to complete the survey was observed, since approximately 70% of those who received the questionnaire answered it. An interesting observation concerned the empowerment and appropriation of the role of the librarian, since when questioned about their expectations of how the return to on-site library operations would be, they indicated not only that there would be an increase in the acquisition of digital collections, but also that the institution of the library itself would be of higher importance because the large quantity and high quality of libraries' contents and digital services had been valorized.

Finally, although this study allowed us to learn about colleagues' perceptions of their experiences in

the first months of isolation, it was limited to exclusively quantitative information. A more sensitive view based on in-depth interviews would have undoubtedly provided important data regarding the human factor. Moreover, it would be interesting to investigate the innovative and original solutions that some libraries generated in a creative approach. Both of these issues could be reviewed and developed in future research.

## Conclusion

The unprecedented circumstances of the 2020 COVID-19 experience generated unexpected scenarios. Librarians had to work remotely with users who



were involved in teaching, doing homework and even undertaking scientific research from their homes. The library was reinstated and revalued as the provider of information and recognized by academic communities. Technology was a great ally for librarians, since they intensively used Zoom, Google Meet and Facebook Live platforms for real-time video transmissions, while for user services WhatsApp was coupled with Messenger, and there was even an interesting reappearance of text messages as an option for some academic sectors.

One of the best practices that were triggered among the Latin American library community during social isolation was online training. The high percentage of librarians who undertook training, updated their knowledge and learned about new topics to improve their work is worthy of recognition because it speaks to their commitment to a matter of fundamental importance among knowledge professionals: lifelong learning. Working from home and the time gained from not having to travel to their workplaces made webinars and online courses options for their natural vocation for learning. Although these had always been available, these options became more relevant during lockdown.

The fact that the most in-demand service was the ability to download e-books and scientific articles is perhaps to be expected. However, the use of such materials intensified and, facing the circumstance of building closures, library websites became gateways to quality information. In Latin America, reference librarians also had an intense task, given that reference services were in high demand, as well as document retrieval services, perhaps because both offer, even in the virtual world, the feeling of closeness and personalized assistance— factors that are widely valued in the culture that distinguishes the countries of this region.

The conditions generated by the crisis highlighted the value of the library, and librarians became more aware of the importance of their work. The lessons learned by both, librarians and library users favoured new scenarios for the appropriation of information that will impact education and research in the future. From these experiences, a new normal and greater awareness have begun to be built in Latin American libraries and academic communities.

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### Supplemental material

Supplemental material for this article is available online.

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## Appendix I. Perception of Latin American Academic Librarians and the new normal in libraries.

- Q1. Introduction to the survey  
 Q2. What is your name?  
 Q3. What's your email?  
 Q4. What is the name of the institution where you work?  
 Q5. Select the country where the library in which you work is located:

1. Argentina
2. Bolivia
3. Brazil
4. Chile
5. Colombia
6. Costa Rica
7. Cuba
8. Ecuador
9. El Salvador
10. Guatemala
11. Haiti
12. Honduras
13. Mexico
14. Nicaragua
15. Panama
16. Paraguay
17. Peru
18. Dominican Republic
19. Uruguay
20. Venezuela
21. Other

- Q6. Of the following technologies, select those that have been promoted in your library during the months of the pandemic:

1. Video conferencing (Facebook Live, Meet, Zoom, Teams, Webex, etc.)
2. Apps for users (mobile and desktop)
3. Adjustments and improvements to the library portal (web page)
4. Cloud storage (Dropbox, Google Drive, OneDrive, etc.)
5. Digitization of collections while respecting copyright

6. Consultation activity for users (phone call, library portal chat, social networks, instant messaging)
7. Use of the learning management system (LMS)
8. Other– please indicate which:

Q7. From the following video platforms, select those that were used in your library for lectures, courses and workshops:

1. Cisco Webex
2. Facebook Live
3. Google Meet
4. Microsoft Teams
5. Skype
6. YouTube Live
7. Zoom
8. Other– please indicate which:
9. There were no lectures, courses or workshops

Q8. Select the communication channels most frequently used to provide consultation service for users:

1. Library portal chat
2. Social networking, instant messaging (WhatsApp, Hangouts, Messenger, SMS)
3. Other
4. No consultation service was provided during lockdown

Q9. By which means of instant messaging did you serve users? You can select more than one option:

1. Hangouts
2. SMS
3. Messenger
4. WhatsApp
5. Other– please indicate which:

Q10. Of the following services, choose those that have had an upturn in users in the months of lockdown:

1. On-demand digitization
2. Increased viewing and downloading of e-books and articles from scientific databases
3. More mobile options and apps to access and use content
4. Virtual consultation services
5. Document retrieval services
6. Other– please indicate which:

Q11. To foster user skills, please indicate if your library has developed any of the following action(s) in an emergent manner:

1. Creation of tutorials, quick guides and video clips
2. Virtual courses and workshops on information products, software, platforms, etc.
3. Migration to virtual events and exhibitions
4. Information skills development courses (ALFIN) for users
5. Other– please indicate which:

Q12. Have you received training during this contingency period?

1. Yes
2. No

Q13. Indicate how you have been trained:

1. Virtual courses and workshops on information products, software, platforms, etc.
2. Online courses for library workers (on remote working and use of digital media)
3. Online courses on other topics (e.g. content creation, development of virtual learning environments)
4. Other– please indicate how:

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# Users' experiences of reference services in Thai academic libraries

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## Abstract

This research aimed to analyse the user experiences of reference services in academic libraries based on the marketing mix 7Ps concept. The sample was instructors and students from eight national research universities in Thailand. Questionnaires were returned by 337 instructors (86.41%) and 399 students (100%). The results show that the component of the marketing mix 7Ps that was most important for reference services according to the users was people ( $\beta = .881$ ), followed by place ( $\beta = .868$ ), promotion ( $\beta = .863$ ), product ( $\beta = .856$ ), price ( $\beta = .854$ ), process ( $\beta = .805$ ) and physical environment ( $\beta = .789$ ). When considering product, the most important services were counselling, research information seeking, instruction and answering, respectively. The results of this marketing mix 7Ps study reveal users' attitudes with regard to various aspects that can be integrated with service design and create a model for developing library service innovation.

## Keywords

Reference services, user experiences, marketing mix, academic libraries, Thailand

## Introduction

Reference services are services that connect users and resources to enable the retrieval of knowledge inside and outside a library. In other words, reference services aim to allow users to access and retrieve information from various information resources (Katz, 2002). This definition means that the focus of reference services is users. The circumstances of library services have been changing rapidly because fewer users are visiting libraries, more academic resources are available outside libraries, and faster information retrieval is available on the Internet. However, reference services continue to play a critical role in libraries, and their main purpose continues to be supporting users' needs. As a result, the form and role of reference services have also changed. According to Ferguson (2000), librarians must retain three core values of reference services: equity of service, personal service and services tailored to individual needs. Consequently, librarians must search for appropriate methods, tools and services, and provide them to users effectively and consistently in an actual situation.

Reference services have also changed according to users' needs and the advancement of information and communications technology (ICT). Librarians and reference services now require various tools and technologies to support and communicate with users, such as email, web forms, chat, video conferences and multi-user dimension (MUD) object oriented (MOO) for virtual environments (Hussien and Mokhtar, 2018; James, 2002). The role of reference services includes providing services such as questions and answers (Q&A), reference book searching, and library introduction and instruction. These additional tasks are specialized real-time support that can be integrated with marketing concepts – namely, customer relations activities, events and promotions (Siriprasoetsin et al., 2011).

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In Thailand, academic libraries have also changed and developed their services because of the influence of advanced ICT. Suthiprapa and Tuamsuk (2019) studied the reference services of Thai academic libraries and found that they have been developed innovatively by integrating information technology and digital technology. For instance, their development has been achieved through the use of artificial intelligence technology integrated with Q&A services via chatbots, customer voice systems to manage user complaints, clinic-like services to support information resource access and academic development, and information literacy instruction using video clips and online workshop sessions. The Khon Kaen University Library has also developed reference services, including those integrated with ICT, such as live chat research support, embedded librarians, human books and library applications, to increase the number of online channels and facilitate customers' use. This approach demonstrates substantial development in the reform of library services in terms of the capacity and readiness of the academic library to respond to users' needs.

Previous studies have proposed library service development following user studies. Broady-Preston and Felice (2006) designed a university library service integrated with customer relationship management to develop user profiles and improve information preparation, and respond to users' needs based on their experience. Sadeh (2008) studied the use of the Internet in the daily lives of library users and designed a retrieval system to gain easy, fast and effective access. Additionally, Gross and Sheridan (2011) studied a library search tool named 'Summon' to verify the accessibility, ease and quality aspects of the use of the tool among participants. The results show that the interface of the home page, which was designed as a single search box, could improve the effectiveness of the retrieval system. Moreover, the participants mentioned that a single search was easy, and this increased their willingness to receive further services from the library. Ahenkorah-Marfo and Akussah (2016) found that social media had a substantial influence on reference service management because it participated as a facilitator in Q&A services and was used as a tool to communicate with users. Curtis and Greene (2004) developed a reference service using the 'chat with us' option, which was linked to an 'ask a librarian' function on a university library website. The results show that users could access services via mobile phones to receive real-time consultations and obtain help from the library. These studies have shown that reference services have

been designed and developed in several libraries to create more tools and channels for their users.

The literature review also shows that most studies have focused on the use of reference services (e.g. Faix et al., 2014; Magi and Mardeusz, 2013; Pourpong et al., 2016; Thongaim, 2018) and that some have used marketing concepts such as customer relationship management and the marketing mix 4Ps (product, price, place and promotion; e.g. Baron, 2010; Broady-Preston and Felice, 2006; Siriprasoetsin et al., 2011). However, no study has analysed users' experiences of reference services based on the marketing mix 7Ps (product, price, place, promotion, people, process and physical environment; The Marketing Mix, 2012). This research therefore aimed to analyse user experiences of academic libraries to understand their behaviours and attitudes. In order to enhance the quality of reference services and meet users' needs, the marketing mix 7Ps were selected as the conceptual framework for analysing reference services. This framework is an important tool for researchers to design research instruments based on its seven components and explore the perspectives of users in a well-rounded manner, and then improve reference services with different and entire elements from the marketing mix 7Ps. In accordance with the findings of another study (Suthiprapa and Tuamsuk, 2019), the four reference services provided by most Thai academic libraries were emphasized in this study: (1) answering services, (2) counselling services, (3) research information-seeking services and (4) instruction services. This article answers questions relating to how to enhance users' experiences of reference services in Thai academic libraries based on the marketing mix 7Ps concept.

## Research questions

This research answers two research questions:

1. What are users' attitudes towards reference services in the 7Ps components at Thai university libraries?
2. How do Thai academic libraries improve their reference services to enhance users' experience?

## Research objectives

This research aimed to analyse the experience of users who received reference services in Thai academic libraries based on the concept of the marketing mix 7Ps in order to develop reference services in academic libraries further to fulfil users' needs. The scope of the study was the users – university instructors and

students – of Thai academic libraries. User experience is a technique that has commonly been used to study and develop service innovations as user-oriented services (Rohrer, 2014; Stern, 2014). In this study, user experience was operationalized as user attitude, which referred to users' opinions about the reference services they evaluated based on their experiences, and indicated the significant components and factors influencing library reference services. Moreover, this research used the marketing mix 7Ps (The Marketing Mix, 2012) as a framework to determine reference services, with the main concept that reference services are important services in an academic library that have to be operated and provided based on user experience.

### Literature review

This study focused on the analysis of users' experience with reference services based on the marketing mix 7Ps concept. Therefore, a literature review of the components of the marketing mix 7Ps in the library context and the factors relating to user experience is discussed in the following sections.

#### *Marketing of reference services*

Marketing is a promotion strategy that aims to persuade customers to buy products and services. In business, marketing is a key task because it concerns customers, sales and the choice of business strategies to develop the quality of products and services, internal and external corporate communication, and the business direction (Baron, 2010). Moreover, marketing is described as the science and art of searching for, creating and providing the value of products and services corresponding to the target customers' needs (Kotler, 2005). Further, marketing refers to the ability to analyse the weaknesses and flaws of products and services, and redesign or improve them to obtain higher quality. However, Kotler and Armstrong (2017) expand the definition of marketing to a social and managerial process in which individuals and groups obtain what they need and want through creating and exchanging products and value with others. In the narrower business context, marketing involves building profitable and value-exchange relationships with customers. Therefore, applying marketing strategies to business concerns, such as market research, market segmentation, market communications, and product and service development, is important. The outcome of marketing strategies may focus on profit and may also include the increasing numbers of users who are aware of the products and services, and the

long-term relationship between the business and its customers (Wymer et al., 2006).

Other studies concerning library reference services have demonstrated that academic libraries apply various marketing concepts to promote their services. However, they have mostly used marketing concepts to emphasize their customer relationships and have only targeted internal customers to increase their service quality evaluation results (Baron, 2010). The marketing mix is another concept that has been applied to library services. Walters (2004) reports that the marketing mix 4Ps have commonly been selected to determine library strategies focusing on product and service development. For example, product development has been performed by considering price in terms of the value of the budget and the time and energy used in management; place in terms of the availability and accessibility of the users; and promotion in terms of promoting activities and publicizing the introduction of information resources. Moreover, the development of information technology has created a variety of information sources on the Internet (Kaur, 2009), and freely accessible digital resources that are available at any time and anywhere help broaden the perspectives of user experience analysis and reference service conditions, and increase the efficiency and improve the quality of services. Subsequently, the marketing mix 4Ps were adapted into the marketing mix 7Ps, which suit service industries.

As mentioned previously, the additional 3Ps are people, process and the physical environment. 'People' refers to service providers, which are considered as intermediaries and an important channel for users. If an organization has staff members who trust their products and services, they can provide the products and services effectively and be ready to listen to customers' voices. Therefore, in the library context, librarians play an important role in creating and delivering services for users. As a result, it is necessary for librarians to improve their competence concerning knowledge, experience and skills for providing library services. The 'process' affects the execution of services; thus, the organization must be sure that the process can be run smoothly and effectively because the process of providing services is important, from service design to service delivery to users. Finally, the 'physical environment' concerns the surrounding environment of the service provider, which must correspond to the process and provide suitable service areas to create a good image and convenience for the customer, including the location, counter and atmosphere; these factors can further reflect trust in products and services (The Marketing Mix, 2012).

There are indications from previous research that the marketing mix 7Ps have been used for service improvements – for example, studies of customers' inclinations to enhance the competitiveness of food companies (Mutsikiwa et al., 2012); identification of the failures of luxury hotel services (Loo and Leung, 2018); sustainable development of the hotel and tourism industry (Raja, 2020); Hong Kong students' perceptions in selecting transnational higher education (Lau, 2020); consumer satisfaction with railway transportation services (Do and Vu, 2020); and the satisfaction of clients with products (Saidani and Sudiarditha, 2019). In addition, there has been research that has applied the marketing mix 7Ps to enhance the effectiveness of start-up businesses (Tibaingana, 2019) and study customers' satisfaction with and selection of banking services (Bekele, 2020; Kumar and Almoula, 2020), retail businesses (Ramadani, 2020) and tourists' expectations (Luekveerawatana, 2019). Many previous studies have also used the marketing mix 7Ps in health management and services, for example, identification of customers' tendency of hospitals' selection (Abedi et al., 2015, 2019; Ravangard et al., 2020), massage services (Pichetweerachai, 2018), and satisfaction with and loyalty in using beauty clinics (Khumnualthong, 2015; Ponsawat, 2016). It can be said that the marketing mix 7Ps are a popular tool for customer studies to improve services in the business context.

However, studies of the marketing mix 7Ps in library services, especially research focusing on user experiences with reference services, are limited – for example, there have been studies on the 7Ps components for reference and information services and their achievement in the marketing activities of different libraries (Kim and Park, 2006); the provision and promotion of library products and services on websites (Fraser-Arnott, 2020); marketing library services (Mohammed, 2019); and librarians' attitudes towards marketing library products and services (Lamprey, 2016). There has been no study that has directly focused on the user experience of reference services based on the adoption of the 7Ps marketing mix in academic libraries.

Interestingly, Mohammed (2019: 14) emphasizes that the adoption of the marketing mix in a library plays a crucial role in identifying the effectiveness of services, accessibility and the satisfaction of user requirements, as well as helping 'address the most important aspects of the daily operations of the library'. It can be considered that the product component helps enhance the perceptions of existing services and how best to market these services to users. The promotion element can be used to communicate

effectively about the available products and services. Meanwhile, 'people, process and physical evidence [play] an important role since they have potentials of influencing the decision of users to patronize products and services' (Mohammed, 2019: 14). Hence, the adoption of the marketing mix 7Ps is critical to managing and providing quality services 'which could attract and retain existing users to optimally use the services in the library' (Mohammed, 2019: 14). Moreover, Akroush (2011) also emphasizes that the 7Ps are a useful and suitable set of tools and techniques for library services, which could be used to achieve the marketing practice, target markets and specified objectives, and attain customer satisfaction.

Leonard and Tedford (2006) suggest that the marketing mix 7Ps suit reference and information services in a library because the 'products' are the available services and resources; the 'price' concerns recognizing what a user must give up when choosing a library service; 'promotion' is the mix of activities that increases the awareness or use of a service; the 'place' is where the service is made available; 'packaging' is the appearance of the product or service; 'positioning' is creating a value proposition for a service that acknowledges the competition; and 'people' means focusing on training and recruiting the appropriate people within the organization. Other studies have applied the marketing mix 7Ps in business and non-profit organizations with various definitions of the marketing mix 7Ps. However, the marketing mix 7Ps have mostly been defined as product, price, place, promotion, people, process and physical environment (Baron, 2010; Kotler, 2005; *The Marketing Mix*, 2012; Walters, 2004; Wymer et al., 2006). This research therefore set the 7Ps by following other studies and integrated the reference service concept of Leonard and Tedford (2006) into the definition of the 7Ps (see Table 1).

### *Libraries' value and reference services*

A library is a non-profit organization that is responsible for providing information for users. Generally, an academic library is not an independent organization but is under the control of an institute (Tyckoson, 2016). Therefore, the mission of an academic library depends not on how much profit it makes but on how it contributes value to the institute. A library is considered as the centre for providing information services to support teaching, learning and research. Most of libraries focus on the building of the library values to enhance their reputation and well user experience (Brown, 2011). A library is normally evaluated through the quality of its services and operations, and

**Table 1.** The marketing mix 7Ps for library reference services.

| Marketing mix 7Ps        | Question                                                                                                                                                                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P1. Product              | What is the library providing?                                                                                                                                                 | For reference services, this refers to the types of services provided to users and how they are provided.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| P2. Price                | What does the user give up in using the services?                                                                                                                              | For library users, this includes time and the value of the services they receive in response to the role and responsibility of the library.                                                                                                                                                                                                                                                                                                                                                                                                    |
| P3. Place                | Where can users use the services? How can they access the services?                                                                                                            | This may include places inside the library, such as the reference desk, and virtual reference services via online or other channels.                                                                                                                                                                                                                                                                                                                                                                                                           |
| P4. Promotion            | How is the library going to tell users about their services and persuade them to use those services?                                                                           | This includes techniques such as events, direct mail, and banners on web pages and in databases.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| P5. People               | Who will provide the services? Do they have the right disposition? Do they have the right training?                                                                            | This focuses on the roles and responsibilities of the service providers (reference librarians), and their competency to do their work effectively. Moreover, it is the necessity for service providers to be proactive and have cheerful attitude towards users, and to have a marketing culture when providing various information services to the user to achieve the goals of the library. Other aspects relating to the competencies of personnel – including their knowledge, skills and personal attributes – should be also focused on. |
| P6. Process              | What are the processes and systems for service management to ensure efficiency and effectiveness?                                                                              | This can be the service management process, such as planning, user studies, operation and evaluation. User satisfaction and feedback on the services are also critical processes.                                                                                                                                                                                                                                                                                                                                                              |
| P7. Physical environment | What does the library do regarding its physical and online appearance? How does the library organize its infrastructure and facilities to support users in using the services? | This includes service spaces in the library, its appearance, its atmosphere and technological support for the services. Moreover, library space in a form of online service via computers, mobile devices and the Internet, also provides the users' experiences of using reference service.                                                                                                                                                                                                                                                   |

Source: Adapted from Leonard and Tedford (2006) and The Marketing Mix (2012).

its value is considered from the perspectives of users' behaviour and satisfaction. Libraries are evaluated by their university; thus, libraries use marketing to determine their service-provision strategies. Most importantly, libraries are currently being threatened by advanced ICTs, resulting in a decreasing number of users visiting the library and changes in user behaviours and needs. Therefore, libraries require new strategies to attract and satisfy users (Baron, 2010; Schmidt, 2006).

Reference services are important services that are provided to help the library user to access the information they need and improve the library's value. Reference services comprise four functions:

answering questions, information services, guidance and counselling services, and instruction services. They provide many advantages for users in satisfying their needs and demands. According to related studies, many libraries have incorporated technologies to develop and improve their reference services to respond to user needs in the digital era by incorporating technology concepts in their services (Burke, 2008; Cassell and Hiremath, 2011; Prongmaneeekul, 2014). Thus, in order to improve the effectiveness of reference services, it is important for libraries to add new value to reference services or enhance the quality of the available reference services without influencing the relevance of their services.



### *User experience*

User experience refers to the feelings and attitudes of customers or users towards real experiences or testing, and the effect after use. User experience can therefore demonstrate a deep understanding of users regarding products or services, and reflect real users' needs, real products' value, and the real ability and limitations of users when they use products and receive services (McNamara and Kirakowski, 2006; Schmidt, 2006; Sutcliffe, 2009). Good practices regarding user experience can thus influence the development of products and services, including increasing long-term customer relationships.

Marketing is directly related to user experience. When libraries adapt marketing concepts to their service development, they must also study user experience through user attitude (Weingand, 2001). Attitude refers to the knowledge, beliefs and feelings of users regarding whether they are satisfied with products or services. Understanding the attitude of users is important in understanding their motivation and preferences regarding the use of products or services from each service provider. Moreover, when a library understands user experience, it can further analyse user goals (Rohrer, 2014; Stern, 2014).

Various methods have been used to study user experience. Studies have mainly used qualitative and quantitative research methods. Typically, to understand the context of use, data is collected to answer the following common questions: Who are the users? What are their needs? What do they want? How do they currently do things? How would they like to do these things? Qualitative data shows how users think, how they feel, and their opinions, problems, reasons and motivations for using products or services. Quantitative data is data that may have been collected via the service system, such as the number of users, downloads or requests for consultations, which the library can use for statistical analyses. Quantitative data concerning users' attitudes and needs is also useful for product and service development (Rohrer, 2014).

Rohrer (2014) proposes a landscape of user experience research, which shows the correlation of the three aspects of user experience research: attitude versus behaviour, qualitative versus quantitative research, and the context of use (see Figure 1). In the landscape diagram, 20 research methods related to the three aspects are suggested. For example, interviews (qualitative) and surveys (quantitative) suit attitude studies in a decontextualized context or a context in which the users are not using the products or services. The purpose of this research was to study users'

attitudes in a decontextualized context; therefore, quantitative research using a survey was selected for the data collection.

### **Research design**

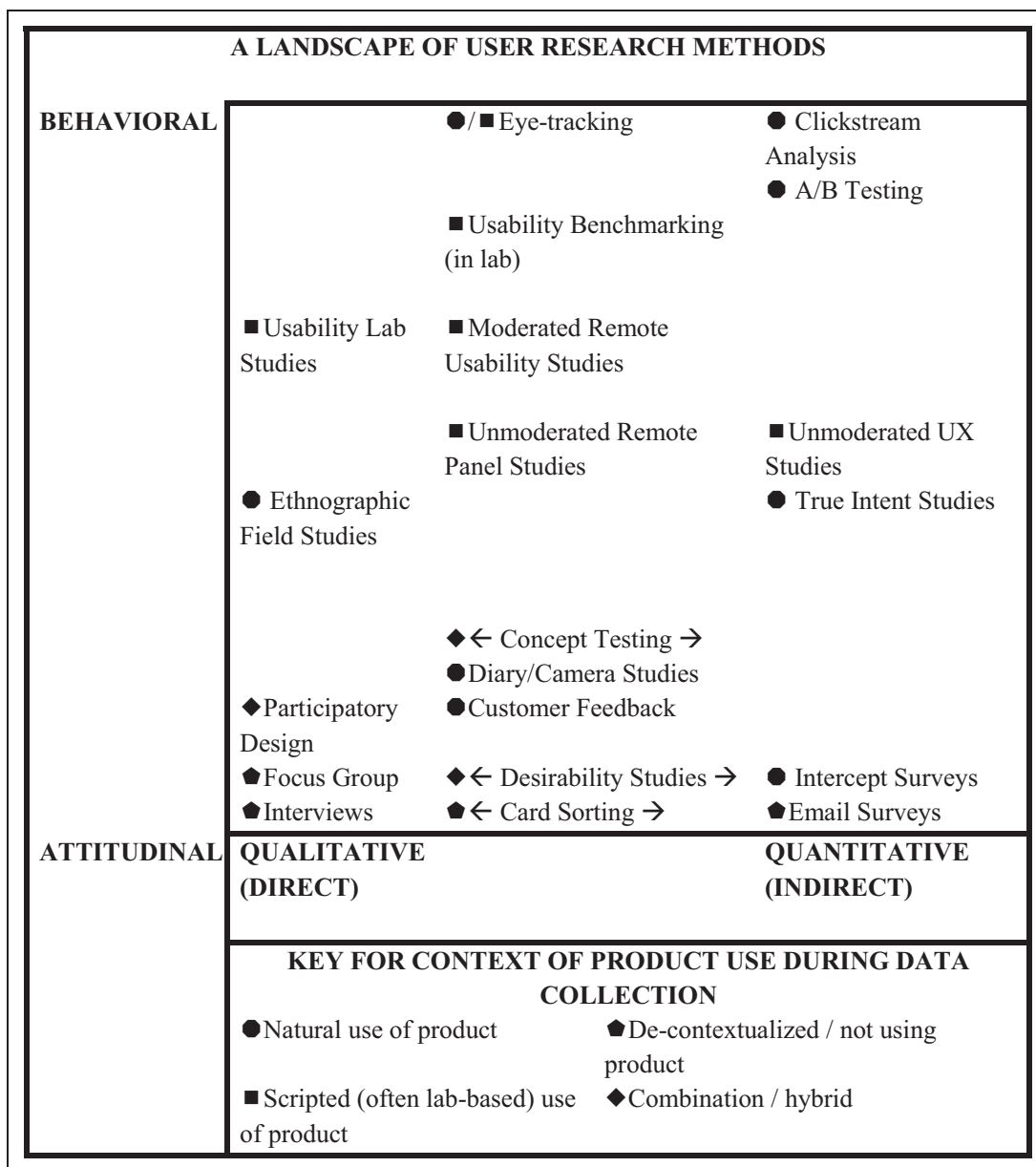
The design of this study was based on the marketing mix 7Ps for library reference services adopted from Leonard and Tedford (2006) and Rohrer's (2014) landscape of user research methods. According to Rohrer's (2014) model, 'the purpose of attitudinal research is usually to understand or measure people's stated beliefs, which is why attitudinal research is used heavily in marketing departments'. Rohrer (2014) indicates that the quantitative method is appropriate for studies of user attitudes. Therefore, this study focused on designing research tools to explore the user experience of reference services by integrating the relevant issues of user attitude into the marketing mix 7Ps from Leonard and Tedford's (2006) study. Then, a questionnaire was used to survey the participants' attitudes towards the reference services in Thai academic libraries.

### *Research instrument*

According to the theories of Leonard and Tedford (2006) and Rohrer (2014), a questionnaire was designed to measure users' attitudes towards reference services (see Appendix 1). This research instrument was validated by three specialists: an academic library administrator, a statistics specialist, and an instructor in a library and information science programme. The questionnaire was administered in a pilot study to 30 university instructors and students. The reliability of the questionnaire was analysed using the Cronbach's alpha coefficient. The results showed that the reliability was high (0.98).

### *Sampling*

A user experience study can be conducted using various methods. The recommended method for an attitude study is a survey (Rohrer, 2014). Based on Rohrer's (2014) research design, the participants of this study were users of services at Thai academic libraries in national universities that are promoted as national research universities (Office of the Higher Education Commission, 2017) and ranked 1st to 200th in the 2018 QS World University Rankings for Asia, as this demonstrated their academic reputation. This article focuses on surveying the current users of academic libraries in Thailand, without non-library users. Eight universities were selected: Chulalongkorn University, Mahidol University, Thammasat University, Chiangmai



**Figure 1.** A landscape of user research methods.  
Source: © Christian Rohrer (2014).

University, Kasetsart University, King Mongkut University of Technology Thonburi, Khon Kaen University and Prince of Songkhla University (QS Asia University Rankings, 2018). The subjects of the study were instructors ( $N = 390$ ) and students ( $N = 399$ ) at the eight universities, and the size of the sample was determined by Yamane's (1973) sample size method with errors at 0.5. The subjects were selected from the whole population without separating by degree, years of study, programmes and institutions.

#### Data collection and analysis

The questionnaire was distributed to instructors whose names were listed as frequent reference service

users via email and to students who walked in to use the reference services during February and March 2019.

Completed questionnaires were received from 337 instructors (86.41%) and 399 students (100%) (see Table 2). The data was analysed by using percentages, means and standard deviations. A confirmatory factor analysis was conducted to analyse the composition of the marketing mix 7Ps and the factors influencing the user experiences of reference services in an academic library to identify the correlation coefficient of the variables. All of the variables with a factor loading value ( $\beta$ ) in the confirmatory factor analysis of less than .4 – which is lower than the standard value (between .514 and .956) – were removed (Hair et al., 2006).

**Table 2.** Population, samples and respondents.

| Universities                                      | Instructors   |            |                     | Students       |            |                   |
|---------------------------------------------------|---------------|------------|---------------------|----------------|------------|-------------------|
|                                                   | Population    | Sample     | Respondents         | Population*    | Sample     | Respondents       |
| Chulalongkorn University                          | 2767          | 60         | 54                  | 35,150         | 64         | 64                |
| Mahidol University                                | 3545          | 77         | 62                  | 29,537         | 53         | 53                |
| Thammasat University                              | 1890          | 41         | 37                  | 32,161         | 58         | 58                |
| Chiangmai University                              | 2347          | 51         | 45                  | 27,226         | 49         | 49                |
| Kasetsart University                              | 3186          | 69         | 56                  | 35,575         | 64         | 64                |
| King Mongkut University of<br>Technology Thonburi | 678           | 15         | 12                  | 16,836         | 30         | 30                |
| Khon Kaen University                              | 2023          | 44         | 44                  | 32,421         | 59         | 59                |
| Prince of Songkhla University                     | 1511          | 33         | 27                  | 11,740         | 22         | 22                |
| <b>Total</b>                                      | <b>17,947</b> | <b>390</b> | <b>337 (86.41%)</b> | <b>220,646</b> | <b>399</b> | <b>399 (100%)</b> |

Source: Office of the Higher Education Commission (2018).

**Table 3.** Demographic data of the respondents.

| Demographic data                                | Instructors |       | Students   |       |
|-------------------------------------------------|-------------|-------|------------|-------|
|                                                 | n(N = 337)  | %     | n(N = 399) | %     |
| <b>Age (years)</b>                              |             |       |            |       |
| < 31                                            | 46          | 13.65 | –          | –     |
| 31–40                                           | 130         | 38.58 | –          | –     |
| 41–50                                           | 121         | 35.91 | –          | –     |
| > 50                                            | 40          | 11.87 | –          | –     |
| <b>Education/level of study programme</b>       |             |       |            |       |
| Undergraduate                                   | 11          | 3.26  | 163        | 40.85 |
| Master's                                        | 107         | 31.75 | 135        | 33.83 |
| PhD                                             | 218         | 64.69 | 98         | 24.56 |
| Other (e.g.<br>Diploma,<br>Graduate<br>Diploma) | 1           | 0.30  | 3          | 0.75  |
| <b>Teaching experience (years)</b>              |             |       |            |       |
| < 5                                             | 97          | 28.78 | –          | –     |
| 5–10                                            | 79          | 23.44 | –          | –     |
| 11–15                                           | 60          | 17.80 | –          | –     |
| 16–20                                           | 40          | 11.87 | –          | –     |
| > 20                                            | 61          | 18.10 | –          | –     |
| <b>Teaching/study subjects</b>                  |             |       |            |       |
| Humanities and<br>social sciences               | 149         | 44.21 | 160        | 40.10 |
| Science and<br>technology                       | 77          | 22.85 | 152        | 38.10 |
| Health sciences                                 | 111         | 32.94 | 87         | 21.80 |

## Results and discussion

Among the participants, there were 130 instructors aged 31–40 (38.58%) and 121 instructors aged 41–50 (35.91%). Most of these instructors had a PhD (64.69%) and less than 5 years of teaching experience (28.78%) or 5–10 years of teaching experience (23.44%). They were instructors in the humanities

**Table 4.** Summary of the factors influencing reference services categorized by the marketing mix 7Ps.

| Rank | Reference services categorized by the marketing mix 7Ps | Total (N = 736) |      | Factor loading $\beta$ |
|------|---------------------------------------------------------|-----------------|------|------------------------|
|      |                                                         | $\bar{x}$       | SD   |                        |
| 1    | P5. People                                              | 4.21            | 0.60 | .881                   |
| 2    | P3. Place                                               | 4.12            | 0.63 | .868                   |
| 3    | P4. Promotion                                           | 4.06            | 0.63 | .863                   |
| 4    | P1. Product                                             | 4.07            | 0.59 | .856                   |
| 5    | P2. Price                                               | 4.22            | 0.64 | .854                   |
| 6    | P6. Process                                             | 4.12            | 0.63 | .805                   |
| 7    | P7. Physical                                            | 4.27            | 0.59 | .789                   |

and social sciences (44.21%), health sciences (32.94%), and science and technology (22.85%). The 399 student subjects were undergraduate students (40.85%), Master's degree students (33.83%) and PhD students (24.56%) from the humanities and social sciences (40.10%), health sciences (38.10%), and science and technology (21.80%) (see Table 3).

### Analysis of reference service users' attitudes based on the marketing mix 7Ps

In Tables 4 and 5, the results of the study of users' attitudes towards reference services show that the most significant value for reference services was obtained for people ( $\beta = .881, \bar{x} = 4.21$ ), followed by place ( $\beta = .868, \bar{x} = 4.12$ ), promotion ( $\beta = .863, \bar{x} = 4.06$ ), product ( $\beta = .856, \bar{x} = 4.07$ ), price ( $\beta = .854, \bar{x} = 4.22$ ), process ( $\beta = .805, \bar{x} = 4.12$ ) and the physical environment ( $\beta = .789, \bar{x} = 4.27$ ). The reason for people being the most valuable factor is that the key to reference services is user communication (Saunders, 2012). Therefore, reference librarians are

**Table 5.** Attitudes towards reference services in Thai academic libraries based on the marketing mix 7Ps ranked by the factor-loading values.

| Reference services categorized by the marketing mix 7Ps                            | Instructors<br>(N = 337) |             | Students<br>(N = 399) |             | Total<br>(N = 736) |             | Factor<br>loading |
|------------------------------------------------------------------------------------|--------------------------|-------------|-----------------------|-------------|--------------------|-------------|-------------------|
|                                                                                    | $\bar{x}$                | SD          | $\bar{x}$             | SD          | $\bar{x}$          | SD          | $\beta$           |
| <b>1. PRODUCT</b>                                                                  | <b>4.12</b>              | <b>0.57</b> | <b>3.95</b>           | <b>0.58</b> | <b>4.07</b>        | <b>0.59</b> | <b>.856</b>       |
| <b>1.1 Counselling</b>                                                             | <b>4.15</b>              | <b>0.64</b> | <b>3.99</b>           | <b>0.67</b> | <b>4.06</b>        | <b>0.66</b> | <b>.955</b>       |
| 1.1.1 Request for ISBN and cataloging in publication                               | 3.94                     | 0.86        | 3.89                  | 0.82        | 4.05               | 0.82        | .651              |
| 1.1.2 Selection of scholarly journal for publication                               | 4.11                     | 0.81        | 4.21                  | 0.78        | 4.01               | 0.87        | .634              |
| 1.1.3 Bibliography and reference writing                                           | 4.10                     | 0.87        | 4.02                  | 0.79        | 4.16               | 0.83        | .634              |
| 1.1.4 Plagiarism prevention                                                        | 4.18                     | 0.81        | 4.05                  | 0.83        | 3.96               | 0.85        | .623              |
| 1.1.5 Use of a specific programme tool (e.g. Turnitin or EndNote)                  | 4.17                     | 0.81        | 3.78                  | 0.84        | 4.01               | 0.87        | .602              |
| 1.1.6 Textbook writing and preparation                                             | 4.08                     | 0.83        | 3.95                  | 0.90        | 4.11               | 0.82        | .583              |
| 1.1.7 Retrieval of research information                                            | 4.25                     | 0.75        | 3.94                  | 0.85        | 4.08               | 0.82        | .578              |
| <b>1.2 Research information seeking</b>                                            | <b>4.10</b>              | <b>0.65</b> | <b>4.07</b>           | <b>0.64</b> | <b>4.09</b>        | <b>0.69</b> | <b>.901</b>       |
| 1.2.1 Interlibrary loan                                                            | 4.21                     | 0.80        | 4.11                  | 0.78        | 3.98               | 0.81        | .697              |
| 1.2.2 Electronic database                                                          | 4.29                     | 0.75        | 4.14                  | 0.78        | 3.92               | 0.87        | .677              |
| 1.2.3 Journals by subject                                                          | 4.12                     | 0.82        | 4.10                  | 0.77        | 4.21               | 0.77        | .671              |
| 1.2.4 Institutional repository                                                     | 4.08                     | 0.78        | 3.89                  | 0.83        | 4.00               | 0.87        | .656              |
| 1.2.5 New books, textbooks, theses                                                 | 4.27                     | 0.79        | 4.23                  | 0.78        | 4.25               | 0.78        | .652              |
| 1.2.6 Sources of research funding                                                  | 3.86                     | 0.90        | 3.96                  | 0.84        | 4.16               | 0.79        | .603              |
| 1.2.7 Experts in research by subject                                               | 3.89                     | 0.94        | 4.08                  | 0.80        | 4.11               | 0.79        | .598              |
| <b>1.3 Instruction</b>                                                             | <b>4.13</b>              | <b>0.68</b> | <b>4.04</b>           | <b>0.70</b> | <b>4.08</b>        | <b>4.22</b> | <b>.852</b>       |
| 1.3.1 Information searching                                                        | 4.26                     | 0.81        | 4.00                  | 0.83        | 4.12               | 0.83        | .687              |
| 1.3.2 Copyright and intellectual property                                          | 4.07                     | 0.84        | 4.06                  | 0.80        | 4.11               | 0.84        | .677              |
| 1.3.3 Use of a specific programme tool (e.g. Turnitin or EndNote)                  | 4.16                     | 0.83        | 4.07                  | 0.85        | 4.06               | 0.82        | .671              |
| 1.3.4 Information literacy                                                         | 4.18                     | 0.79        | 3.97                  | 0.88        | 4.06               | 0.85        | .656              |
| 1.3.5 Topic in regular course teaching (e.g. research methods)                     | 3.96                     | 0.94        | 4.11                  | 0.86        | 4.04               | 0.90        | .582              |
| <b>1.4 Answering</b>                                                               | <b>4.13</b>              | <b>0.60</b> | <b>4.02</b>           | <b>0.63</b> | <b>4.07</b>        | <b>0.62</b> | <b>.852</b>       |
| 1.4.1 Reference resources                                                          | 4.16                     | 0.76        | 4.04                  | 0.75        | 4.08               | 0.76        | .634              |
| 1.4.2 Help-desk service                                                            | 4.25                     | 0.71        | 4.03                  | 0.78        | 4.13               | 0.76        | .632              |
| 1.4.3 Online answering                                                             | 4.10                     | 0.81        | 3.89                  | 0.82        | 3.99               | 0.82        | .585              |
| 1.4.4 Selective dissemination of information                                       | 3.94                     | 0.86        | 4.16                  | 0.79        | 4.10               | 0.76        | .559              |
| 1.4.5 Referral service                                                             | 4.19                     | 0.73        | 4.00                  | 0.77        | 4.06               | 0.83        | .558              |
| <b>2. PRICE</b>                                                                    | <b>4.28</b>              | <b>0.64</b> | <b>4.17</b>           | <b>0.65</b> | <b>4.22</b>        | <b>0.64</b> | <b>.854</b>       |
| 2.1 Services are valuable to users                                                 | 4.29                     | 0.74        | 4.18                  | 0.80        | 4.23               | 0.77        | .725              |
| 2.2 Services fulfil the needs of users                                             | 4.31                     | 0.74        | 4.16                  | 0.78        | 4.23               | 0.77        | .703              |
| 2.3 Services are provided regularly and continuously                               | 4.35                     | 0.78        | 4.23                  | 0.77        | 4.29               | 0.78        | .687              |
| 2.4 Services are useful for users                                                  | 4.32                     | 0.73        | 4.13                  | 0.78        | 4.22               | 0.76        | .679              |
| 2.5 Appropriate service time arrangement                                           | 4.25                     | 0.74        | 4.07                  | 0.84        | 4.15               | 0.80        | .637              |
| 2.6 Service charge rate (if any) is acceptable                                     | 4.18                     | 0.79        | 4.26                  | 0.81        | 4.22               | 0.80        | .598              |
| <b>3. PLACE</b>                                                                    | <b>4.15</b>              | <b>0.59</b> | <b>4.09</b>           | <b>0.66</b> | <b>4.12</b>        | <b>0.63</b> | <b>.868</b>       |
| 3.1 Online and social networks                                                     | 4.31                     | 0.70        | 3.98                  | 0.87        | 4.13               | 0.81        | .682              |
| 3.2 Reference service counter                                                      | 4.30                     | 0.77        | 4.24                  | 0.75        | 4.26               | 0.76        | .678              |
| 3.3 Instruction and guidance in training classes                                   | 4.08                     | 0.79        | 4.16                  | 0.74        | 4.12               | 0.76        | .648              |
| 3.4 Instruction and guidance in regular classrooms                                 | 3.91                     | 0.81        | 3.98                  | 0.84        | 3.95               | 0.82        | .613              |
| <b>4. PROMOTION</b>                                                                | <b>4.13</b>              | <b>0.60</b> | <b>4.06</b>           | <b>0.65</b> | <b>4.06</b>        | <b>0.63</b> | <b>.863</b>       |
| 4.1 Use social media for reference service public relations                        | 4.21                     | 0.70        | 4.12                  | 0.79        | 4.16               | 0.75        | .708              |
| 4.2 Use new technology/digital applications for reference service public relations | 4.25                     | 0.69        | 4.21                  | 0.80        | 4.23               | 0.76        | .704              |
| 4.3 Library service quality should be certified                                    | 4.09                     | 0.82        | 4.11                  | 0.78        | 4.10               | 0.80        | .687              |
| 4.4 Offer best information resources to users                                      | 4.34                     | 0.69        | 3.99                  | 0.80        | 4.15               | 0.77        | .672              |
| 4.5 Provide training courses based on user requests                                | 4.21                     | 0.75        | 3.97                  | 0.85        | 4.08               | 0.81        | .660              |
| 4.6 Provide training courses on current topics on a regular basis                  | 4.11                     | 0.78        | 4.00                  | 0.81        | 4.05               | 0.80        | .651              |

(continued)

Table 5. (continued)

| Reference services categorized by the marketing mix 7Ps                                                                  | Instructors<br>(N = 337) |             | Students<br>(N = 399) |             | Total<br>(N = 736) |             | Factor<br>loading |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------|-----------------------|-------------|--------------------|-------------|-------------------|
|                                                                                                                          | $\bar{x}$                | SD          | $\bar{x}$             | SD          | $\bar{x}$          | SD          | $\beta$           |
| 4.7 Use rewards and awards for service promotion                                                                         | 3.71                     | 1.03        | 4.07                  | 0.82        | 3.90               | 0.94        | .562              |
| 4.8 Provide special services by subject                                                                                  | 3.98                     | 0.86        | 3.90                  | 0.90        | 3.94               | 0.88        | .544              |
| <b>5. PEOPLE</b>                                                                                                         | <b>4.28</b>              | <b>0.58</b> | <b>4.18</b>           | <b>0.63</b> | <b>4.21</b>        | <b>0.60</b> | <b>.881</b>       |
| <b>5.1 Knowledge</b>                                                                                                     | <b>4.23</b>              | <b>0.60</b> | <b>4.14</b>           | <b>0.68</b> | <b>4.18</b>        | <b>0.65</b> | <b>.926</b>       |
| 5.1.1 Knowledge of service marketing                                                                                     | 4.04                     | 0.80        | 4.23                  | 0.77        | 4.14               | 0.79        | .664              |
| 5.1.2 Knowledge of library professionals                                                                                 | 4.32                     | 0.68        | 4.18                  | 0.78        | 4.24               | 0.74        | .662              |
| 5.1.3 Knowledge of user experiences                                                                                      | 4.27                     | 0.72        | 4.00                  | 0.79        | 4.12               | 0.77        | .632              |
| 5.1.4 Knowledge of library organization                                                                                  | 4.12                     | 0.76        | 4.22                  | 0.79        | 4.17               | 0.78        | .608              |
| 5.1.5 Knowledge of information resources and access                                                                      | 4.39                     | 0.72        | 4.10                  | 0.82        | 4.23               | 0.79        | .594              |
| <b>5.2 Skills</b>                                                                                                        | <b>4.24</b>              | <b>0.60</b> | <b>4.16</b>           | <b>0.65</b> | <b>4.21</b>        | <b>0.63</b> | <b>.956</b>       |
| 5.2.1 Communication                                                                                                      | 4.34                     | 0.70        | 4.11                  | 0.81        | 4.22               | 0.77        | .564              |
| 5.2.2 Management and planning                                                                                            | 4.12                     | 0.74        | 4.30                  | 0.75        | 4.22               | 0.75        | .564              |
| 5.2.3 Teaching and training                                                                                              | 4.17                     | 0.74        | 4.21                  | 0.81        | 4.19               | 0.78        | .556              |
| 5.2.4 Information technology                                                                                             | 4.36                     | 0.68        | 4.11                  | 0.79        | 4.22               | 0.75        | .544              |
| 5.2.5 Analytical skills                                                                                                  | 4.12                     | 0.72        | 4.20                  | 0.79        | 4.16               | 0.76        | .514              |
| 5.2.6 Service skills                                                                                                     | 4.38                     | 0.68        | 4.11                  | 0.72        | 4.24               | 0.71        | .489              |
| <b>5.3 Personal attributes</b>                                                                                           | <b>4.32</b>              | <b>0.61</b> | <b>4.20</b>           | <b>0.69</b> | <b>4.26</b>        | <b>0.66</b> | <b>.928</b>       |
| 5.3.1 Patience                                                                                                           | 4.30                     | 0.77        | 4.26                  | 0.84        | 4.28               | 0.81        | .760              |
| 5.3.2 Service-minded                                                                                                     | 4.45                     | 0.69        | 4.23                  | 0.81        | 4.33               | 0.77        | .739              |
| 5.3.3 Self-development                                                                                                   | 4.26                     | 0.79        | 4.24                  | 0.84        | 4.25               | 0.81        | .729              |
| 5.3.4 Good human relations                                                                                               | 4.43                     | 0.69        | 4.22                  | 0.83        | 4.32               | 0.78        | .725              |
| 5.3.5 Leadership                                                                                                         | 4.05                     | 0.77        | 4.27                  | 0.82        | 4.17               | 0.81        | .624              |
| <b>6. PROCESS</b>                                                                                                        | <b>4.10</b>              | <b>0.64</b> | <b>4.14</b>           | <b>0.62</b> | <b>4.12</b>        | <b>0.63</b> | <b>.805</b>       |
| 6.1 Evaluate user feedback and satisfaction                                                                              | 4.12                     | 0.79        | 4.29                  | 0.73        | 4.22               | 0.76        | .767              |
| 6.2 Studies of user experiences and needs                                                                                | 3.99                     | 0.82        | 4.15                  | 0.77        | 4.08               | 0.08        | .750              |
| 6.3 Conform to laws, regulations and guidelines for services                                                             | 4.16                     | 0.73        | 4.10                  | 0.76        | 4.13               | 0.75        | .731              |
| 6.4 Plan for each specific service in detail regarding the target group,<br>date, time, topic, activities and evaluation | 3.98                     | 0.80        | 4.16                  | 0.74        | 4.08               | 0.78        | .700              |
| 6.5 Deliver the service in a timely manner                                                                               | 4.14                     | 0.76        | 4.04                  | 0.77        | 4.09               | 0.77        | .659              |
| 6.6 Always have clear service processes                                                                                  | 4.20                     | 0.72        | 4.12                  | 0.76        | 4.15               | 0.74        | .654              |
| <b>7. PHYSICAL ENVIRONMENT</b>                                                                                           | <b>4.28</b>              | <b>0.57</b> | <b>4.25</b>           | <b>0.60</b> | <b>4.27</b>        | <b>0.59</b> | <b>.789</b>       |
| 7.1 Pleasant service space and atmosphere                                                                                | 4.36                     | 0.68        | 4.22                  | 0.84        | 4.28               | 0.78        | .790              |
| 7.2 Media for service support and self-learning are well prepared<br>and useful                                          | 4.05                     | 0.79        | 4.39                  | 0.65        | 4.23               | 0.74        | .771              |
| 7.3 Channels for service access are attractive and easy to use                                                           | 4.29                     | 0.72        | 4.23                  | 0.82        | 4.26               | 0.78        | .713              |
| 7.4 Technology, tools and equipment for using services are<br>sufficient and up to date                                  | 4.31                     | 0.74        | 4.20                  | 0.83        | 4.25               | 0.79        | .678              |

the key people who make a first impression on users. Communication and the ability to provide information, help and instruction were considered to be their most important attributes. A good personality, a service-oriented mindset and good interpersonal relations were the other main skills that all reference librarians should possess (Luo, 2016; Saunders, 2012; Wang et al., 2010).

*Pl. Product.* Product, in this study, referred to library reference services and comprised four main services. The most valuable service according to the users'

attitudes was the counselling service ( $\beta = .955$ ,  $\bar{x} = 4.06$ ), followed by the research information-seeking service ( $\beta = .901$ ,  $\bar{x} = 4.09$ ), the instruction service ( $\beta = .852$ ,  $\bar{x} = 4.08$ ) and the answering service ( $\beta = .852$ ,  $\bar{x} = 4.07$ ). The subtask that the users thought was the most valuable and useful was interlibrary loans ( $\beta = .697$ ), followed by the information-searching instruction service ( $\beta = .687$ ), electronic database service ( $\beta = .677$ ), and copyright and intellectual property instruction service ( $\beta = .677$ ) (see Table 5). This finding indicates that the main services that instructors and students still needed were

counselling and a channel through which to access internal and external information resources for academic and research purposes. As a result, libraries should manage and provide access to academic resources and information-seeking instruction to help users access academic resources by themselves. Moreover, libraries should provide copyright and intellectual property instruction services so that users are aware of the regulations concerning copyright that may affect them later if they use the information (Burke, 2008; Faix et al., 2014; Giordano et al., 2001).

**P2. Price.** Price, from the provider's point of view, refers to the cost of the service operation, whereas, from the users' point of view, it refers to the advantages gained from receiving a service. Although libraries are non-profit organizations, the instructors and students considered the library to be an organization that received a budget from the institute, and some of them paid for membership or other facility costs as part of their tuition fees. For this reason, price had to be considered in user experience in relation to reference service provision. The results of this study show that library reference services were valuable to users ( $\beta = .725$ ), met the needs of users ( $\beta = .703$ ), and were provided regularly and continuously ( $\beta = .687$ ). However, for the users, the service time arrangements and the service charge rates were the issues of least concern (see Table 5).

**P3. Place.** Place referred to the locations and channels that provided reference services. The results of the study show that online and social networks ( $\beta = .682$ ) and reference service counters ( $\beta = .678$ ) were the most important channels for the users of reference services. Notably, the results regarding the instructors' attitudes show that they preferred to receive online and social network services ( $\bar{x} = 4.31$ ) and services at the reference service counter ( $\bar{x} = 4.30$ ) at almost the same level. However, the students preferred to receive services at the reference service counter ( $\bar{x} = 4.24$ ) rather than online and social network services ( $\bar{x} = 3.98$ ) because face-to-face communication conveys more information, including verbal language and body language, enabling librarians to communicate and express themselves more effectively (see Table 5). It can also enhance relationships with users, who feel as if they have been supported by staff in reaching their goals (Selby, 2007). They may feel that face-to-face communication is more effective than online communication as well. In addition, based on the suggestions of the participants, other channels, such as social media and information technology platforms, should be used to

increase the diversity of service delivery channels, as well as the development of applications and artificial intelligence in providing reference services for users.

**P4. Promotion.** Promotion referred to the means of motivating users to receive reference services. The results of the study show that users had the greatest preference for the use of social media for reference service public relations ( $\beta = .708$ ), followed by the use of new technology or digital applications ( $\beta = .704$ ). Moreover, they preferred certified service quality ( $\beta = .687$ ) and training courses for user request services ( $\beta = .672$ ). Using rewards and awards for service promotion and providing other special services by subject had the smallest factor loadings (see Table 5). These findings show that users considered promotion as emphasizing public relations rather than quality, which is consistent with the use of branding and badging to promote library services at various universities (Shaffer, 2002). This concept indicates the difference from traditional library promotion which focused on library collections. These days, public relations are integrated with information technology and involve design and straightforward language that can motivate users through online channels (McLam et al., 2007; Mahajan and Chakravarty, 2007; Pratil and Pradhan, 2014).

**P5. People.** People, in this study, referred to the capacities required by librarians, which comprise three aspects: knowledge, skills and personal attributes (Sanghai, 2016). The results show that users focused on librarians' skills the most ( $\beta = .956$ ), followed by their knowledge ( $\beta = .926$ ) and personal attributes ( $\beta = .928$ ). The skills that the users considered to be the most important were communication skills ( $\beta = .564$ ), management and planning skills ( $\beta = .564$ ), and teaching and training skills ( $\beta = .556$ ). When the subcapacities are considered, personal attributes were also viewed as important for librarians, with high factor loadings: patience ( $\beta = .760$ ), service-mindedness ( $\beta = .739$ ), self-development ( $\beta = .729$ ) and good human relations ( $\beta = .725$ ) (see Table 5). These results are consistent with other studies concerning the capacities of librarians. Wang et al. (2010) reveal the five most important capacities that librarians need, with the following scoring higher than 90% of the survey responses: verbal communication, listening, approachability, comfort with instruction, and adaptability/flexibility. Moreover, the Professional Competencies for Reference and User Services Librarians Task Force (2017) states that reference librarians should be able to interact with colleagues and others

to provide consultation, mediation and guidance in the use of knowledge and information, and to develop appropriate expertise in information literacy and instruction skills, including textual, digital, visual, numerical and spatial literacy. The respondents of this study also suggested that reference librarians should be knowledgeable and have specific expertise in other fields to be able to consult research trends and manage research data for users. Additionally, Saunders (2012) suggests that reference librarians should have interpersonal, communication, human relations and inquiry skills.

**P6. Process.** Process referred to the steps, methods and activities used to provide services. The results show that the most important process was the step to evaluate user feedback and satisfaction ( $\beta = .767$ ), followed by the step to study user experiences and needs ( $\beta = .750$ ). The steps to conform to laws, regulations and guidelines for services; plan for each specific service in detail regarding the target group, date, time, topic, activities and evaluation; and deliver the service in a timely manner were less important (see Table 5). These findings indicate that the key process of reference services concerns user experiences, both before the service (e.g. studying user experiences and needs) and after the service (e.g. satisfaction evaluation). According to the participants' suggestions, libraries should focus on developing proactive services and have a clear service schedule based on user need. These processes describe marketing concepts as successful service management that must start with an understanding of user experiences and needs (Baron, 2010).

**P7. Physical environment.** Physical environment referred to the surroundings of the service provider. The results of the study show that the most important factor was a pleasant service space and atmosphere ( $\beta = .790$ ), followed by well-prepared and useful media for service support and self-learning ( $\beta = .771$ ) and attractive and easy-to-use channels ( $\beta = .713$ ) (see Table 5). From users' point of view, the physical environment of the library is now similar to that of other service providers, such as airports, banks, shops, cafés or Internet cafés. Therefore, a modern image and friendly atmosphere with access to facilities and the Internet are the most significant factors for a library. However, a library must still consider its target audience, who may use the library as individuals or in groups, and should create an environment that supports learning rather than relaxation (Shaffer, 2002; Walters, 2004).

## Conclusions

The results of the study show that reference services are still necessary in Thai academic libraries, although people in the library community may feel that they have been affected by advanced ICTs that enable easy access to information resources without library help. It was also found that most instructors and students still require reference services, especially for counselling and instruction for academic and research purposes. Many academic libraries in Thailand now provide research support services as part of their reference services, such as seeking for research information, finding sources of research funding, instruction of research writing, plagiarism checking, reference writing (Leenaraj and Tuamsuk, 2016).

When comparing user experiences based on the marketing mix 7Ps between the business context and the context of reference services in academic libraries, the results show that, in the business context, product and promotion are the most significant factors (Kumar, 2010), whereas a library, as a non-profit organization, should emphasize people (i.e. librarians) and place (i.e. location and channels) rather than promotion. Therefore, the development of academic library reference services should focus on reference librarians' development to equip them with counselling and instruction abilities, and good communication skills, personalities and human relations skills. Additionally, they should have knowledge and experience related to performing research and be able to conduct quality research.

Regarding their preferred channels, the users expressed equal preference for offline and online channels; thus, on-site services and virtual online services should be developed simultaneously. On-site services should be activities that may need face-to-face communication, where users can receive information or advice immediately when they come to the library for a service. Therefore, a reference desk in the university library is still needed, especially for answering and counselling services. At the same time, because there are users who prefer to access services online, virtual reference services can be offered via several channels, such as email, Messenger and social media communication tools. Online services are also critical for distance education students, who may need to access library resources and online learning tools for their research and studies (Granfield and Robertson, 2008). Reference services on the library's website and other social media applications should be offered in the same way as on-site services as much as possible.

In conclusion, reference services connect with users directly; therefore, service marketing concepts are necessary for planning and developing reference service strategies. User experience studies can provide further insights into users' behaviours and attitudes, and can be used further for analysing users' profiles as individuals or groups. This will eliminate the idea that reference services are unnecessary in libraries.

### Implications for practice

This analysis of users' experiences of reference services based on the marketing mix 7Ps can help academic libraries to identify the important issues for improving their reference service practices in two ways.

First, the findings of this study show that consulting services ( $\beta = .955$ ,  $\bar{x} = 4.06$ ) and instruction services ( $\beta = .852$ ,  $\bar{x} = 4.08$ ) are the most valuable services according to the users. It is evident that users need consulting and instruction services, especially for research support and information literacy development, so reference services in academic libraries should be proactive regarding these services. Consulting is not just answering a question; it requires engagement in activities to give expert advice to the user for specific purposes. Therefore, the library should understand the needs of its users and be ready as an expert in the key areas of the required consulting services. As for instruction services, a regular training programme on information literacy should be implemented. In addition, a digital platform for information literacy development could be prepared for independent learning.

Second, it may be wise for libraries to create a virtual reference service platform that is separate from other library services on their website, where too much information is generally displayed. A virtual reference service platform could include the key functions of the reference services that are familiar to users, such as an answering service (reference desk) provided via different online channels, a counselling service categorized by the key aspects of users' needs, an information-seeking service that links to research resources, and an instruction service that may include videos or other kinds of media for users' self-development.

The findings of this research can be used as a guideline for libraries to explore the users' experience by using the marketing mix 7Ps. The information from users' experience can also be used for evaluating the quality and effectiveness of the reference service, and designing the new service to meet the users' needs and expectations.

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## Appendix I

*Questionnaire for research on users' experiences of reference services in an academic library based on the marketing mix 7Ps*

### Information and instructions

1. This questionnaire was designed to study user experiences in an academic library. The questionnaire comprises three parts:
  - Part 1. Demography of the respondent
  - Part 2. User attitudes to reference services based on the marketing mix 7Ps
  - Part 3. Suggestions of the respondent
2. Definition of terms:
  - 2.1 Reference services refer to the following four types of services in Thai academic libraries: (1) answering, (2) counselling, (3) research information seeking and (4) instruction services.
  - 2.2 User experiences refer to a user's attitude towards the reference services based on their experience, which indicates the value or the importance of the services for their use.
  - 2.3 The marketing mix 7Ps refers to the marketing framework used in this research to determine the key components of reference services in Thai academic libraries: product, price, place, promotion, people, process and physical environment.
3. Please answer the following questions in this questionnaire based on your experiences of using the reference services in your university library. Your answers to this questionnaire will be confidential and only used for this research. The name of each respondent and their affiliated institution will not be specifically presented in the report of the study.

### Part I. Demography of the respondent

#### 1. For instructor

- 1.1 Age  < 31  31–40  41–50  > 50
- 1.2 Education  Undergraduate  Master's  PhD  Other . . . . .
- 1.3 Teaching experience (years)  < 5  5–10  11–15  > 20  > 50
- 1.4 Teaching subject  Humanities and social sciences  Science and technology  Health sciences

#### 2. For student

- 2.1 Study level  Undergraduate  Master's  PhD  Other . . . . .
- 2.2 Study subject  Humanities and social sciences  Science and technology  Health sciences

## Part 2. User attitudes to reference services based on the marketing mix 7Ps

Please provide your opinion on the reference services based on your experience, which indicates the value or the importance of the services for your use. Each item in the following table is rated using five rating scales: 1 = not very important/valuable; 2 = not important/valuable; 3 = neutral; 4 = important/valuable; and 5 = very important/valuable.

| Reference services categorized by marketing mix 7Ps |                                                                                            | Please rate your opinion |   |   |   |   |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------|---|---|---|---|
|                                                     |                                                                                            | 1                        | 2 | 3 | 4 | 5 |
| <b>1.</b>                                           | <b>Product</b> Please indicate your opinion of the following types of reference services:  |                          |   |   |   |   |
| <b>1.1</b>                                          | <b>Answering service</b>                                                                   |                          |   |   |   |   |
| 1.1.1                                               | Reference resources                                                                        |                          |   |   |   |   |
| 1.1.2                                               | Help-desk service                                                                          |                          |   |   |   |   |
| 1.1.3                                               | Online answering                                                                           |                          |   |   |   |   |
| 1.1.4                                               | Selective dissemination of information                                                     |                          |   |   |   |   |
| 1.1.5                                               | Referral service                                                                           |                          |   |   |   |   |
| 1.1.6                                               | Other . . . . .                                                                            |                          |   |   |   |   |
| <b>1.2</b>                                          | <b>Counselling service</b>                                                                 |                          |   |   |   |   |
| 1.2.1                                               | Request for ISBN and CIP                                                                   |                          |   |   |   |   |
| 1.2.2                                               | Selection of scholarly journal for publication                                             |                          |   |   |   |   |
| 1.2.3                                               | Bibliography and reference writing                                                         |                          |   |   |   |   |
| 1.2.4                                               | Plagiarism prevention                                                                      |                          |   |   |   |   |
| 1.2.5                                               | Use of a specific programme tool (e.g. Turnitin or EndNote)                                |                          |   |   |   |   |
| 1.2.6                                               | Textbook writing and preparation                                                           |                          |   |   |   |   |
| 1.2.7                                               | Retrieval of research information                                                          |                          |   |   |   |   |
| 1.2.8                                               | Other . . . . .                                                                            |                          |   |   |   |   |
| <b>1.3</b>                                          | <b>Research information seeking</b>                                                        |                          |   |   |   |   |
| 1.3.1                                               | Interlibrary loan                                                                          |                          |   |   |   |   |
| 1.3.2                                               | Electronic database                                                                        |                          |   |   |   |   |
| 1.3.3                                               | Journals by subject                                                                        |                          |   |   |   |   |
| 1.3.4                                               | Institutional repository                                                                   |                          |   |   |   |   |
| 1.3.5                                               | New books, textbooks, theses                                                               |                          |   |   |   |   |
| 1.3.6                                               | Sources of research funding                                                                |                          |   |   |   |   |
| 1.3.7                                               | Experts in research by subject                                                             |                          |   |   |   |   |
| 1.3.8                                               | Other . . . . .                                                                            |                          |   |   |   |   |
| <b>1.4</b>                                          | <b>Instruction</b>                                                                         |                          |   |   |   |   |
| 1.4.1                                               | Information searching                                                                      |                          |   |   |   |   |
| 1.4.2                                               | Copyright and intellectual property                                                        |                          |   |   |   |   |
| 1.4.3                                               | Use of a specific programme tool (e.g. Turnitin or EndNote)                                |                          |   |   |   |   |
| 1.4.4                                               | Information literacy                                                                       |                          |   |   |   |   |
| 1.4.5                                               | Topic in regular course teaching (e.g. research methods)                                   |                          |   |   |   |   |
| 1.4.6                                               | Other . . . . .                                                                            |                          |   |   |   |   |
| <b>2.</b>                                           | <b>Price</b> Please give your opinion on the advantaged you gain from receiving a service: |                          |   |   |   |   |
| 2.1                                                 | Services are valuable to users                                                             |                          |   |   |   |   |
| 2.2                                                 | Services fulfil the needs of users                                                         |                          |   |   |   |   |
| 2.3                                                 | Services are provided regularly and continuously                                           |                          |   |   |   |   |
| 2.4                                                 | Service are useful for users                                                               |                          |   |   |   |   |
| 2.5                                                 | Appropriate service time arrangement                                                       |                          |   |   |   |   |

(continued)

(continued)

| Reference services categorized by marketing mix 7Ps |                                                                                                                                                 | Please rate your opinion |   |   |   |   |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---|---|---|---|
|                                                     |                                                                                                                                                 | 1                        | 2 | 3 | 4 | 5 |
| 2.6                                                 | Service charge rate (if any) is acceptable                                                                                                      |                          |   |   |   |   |
| 2.7                                                 | Other. . . . .                                                                                                                                  |                          |   |   |   |   |
| <b>3.</b>                                           | <b>Place</b> Please give your opinion on the locations and channels that provide reference services:                                            |                          |   |   |   |   |
| 3.1                                                 | Online and social networks                                                                                                                      |                          |   |   |   |   |
| 3.2                                                 | Reference service counter                                                                                                                       |                          |   |   |   |   |
| 3.3                                                 | Instruction and guidance in training classes                                                                                                    |                          |   |   |   |   |
| 3.4                                                 | Instruction and guidance in regular classrooms                                                                                                  |                          |   |   |   |   |
| 3.5                                                 | Other. . . . .                                                                                                                                  |                          |   |   |   |   |
| <b>4.</b>                                           | <b>Promotion</b> Please give your opinion on the means to promote motivation for users to receive reference services:                           |                          |   |   |   |   |
| 4.1                                                 | Use social media for reference service public relations                                                                                         |                          |   |   |   |   |
| 4.2                                                 | Use new technology/digital applications for reference service public relations                                                                  |                          |   |   |   |   |
| 4.3                                                 | Library service quality should be certified                                                                                                     |                          |   |   |   |   |
| 4.4                                                 | Offer best information resources to users                                                                                                       |                          |   |   |   |   |
| 4.5                                                 | Provide training courses based on user requests                                                                                                 |                          |   |   |   |   |
| 4.6                                                 | Provide training courses on current topics on a regular basis                                                                                   |                          |   |   |   |   |
| 4.7                                                 | Use rewards and awards for service promotion                                                                                                    |                          |   |   |   |   |
| 4.8                                                 | Provide special services by subject                                                                                                             |                          |   |   |   |   |
| 4.9                                                 | Other. . . . .                                                                                                                                  |                          |   |   |   |   |
| <b>5.</b>                                           | <b>People</b> Please give your opinion on the capacity of librarians to provide reference services – knowledge, skills and personal attributes: |                          |   |   |   |   |
| <b>5.1</b>                                          | <b>Knowledge</b>                                                                                                                                |                          |   |   |   |   |
| 5.1.1                                               | Knowledge of service marketing                                                                                                                  |                          |   |   |   |   |
| 5.1.2                                               | Knowledge about service innovation                                                                                                              |                          |   |   |   |   |
| 5.1.3                                               | Knowledge about research                                                                                                                        |                          |   |   |   |   |
| 5.1.4                                               | Knowledge of library professionals                                                                                                              |                          |   |   |   |   |
| 5.1.5                                               | Knowledge of user experiences                                                                                                                   |                          |   |   |   |   |
| 5.1.6                                               | Knowledge of library organization                                                                                                               |                          |   |   |   |   |
| 5.1.7                                               | Knowledge of information resources and access                                                                                                   |                          |   |   |   |   |
| 5.1.8                                               | Knowledge about intellectual property law                                                                                                       |                          |   |   |   |   |
| 5.1.9                                               | Other. . . . .                                                                                                                                  |                          |   |   |   |   |
| <b>5.2</b>                                          | <b>Skills</b>                                                                                                                                   |                          |   |   |   |   |
| 5.2.1                                               | Communication                                                                                                                                   |                          |   |   |   |   |
| 5.2.2                                               | Management and planning                                                                                                                         |                          |   |   |   |   |
| 5.2.3                                               | Change management                                                                                                                               |                          |   |   |   |   |
| 5.2.4                                               | Problem solving and decision making                                                                                                             |                          |   |   |   |   |
| 5.2.5                                               | Teamwork                                                                                                                                        |                          |   |   |   |   |
| 5.2.6                                               | Teaching and training                                                                                                                           |                          |   |   |   |   |
| 5.2.7                                               | Information technology                                                                                                                          |                          |   |   |   |   |
| 5.2.8                                               | Analytical skills                                                                                                                               |                          |   |   |   |   |
| 5.2.9                                               | Service skills                                                                                                                                  |                          |   |   |   |   |
| 5.2.10                                              | Foreign languages                                                                                                                               |                          |   |   |   |   |
| 5.2.11                                              | Other. . . . .                                                                                                                                  |                          |   |   |   |   |

(continued)

(continued)

| Reference services categorized by marketing mix 7Ps |                                                                                                                                             | Please rate your opinion |   |   |   |   |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---|---|---|---|
|                                                     |                                                                                                                                             | 1                        | 2 | 3 | 4 | 5 |
| <b>5.3</b>                                          | <b>Personal attributes</b>                                                                                                                  |                          |   |   |   |   |
| 5.3.1                                               | Patience                                                                                                                                    |                          |   |   |   |   |
| 5.3.2                                               | Service-minded                                                                                                                              |                          |   |   |   |   |
| 5.3.3                                               | Self-development                                                                                                                            |                          |   |   |   |   |
| 5.3.4                                               | Good human relations                                                                                                                        |                          |   |   |   |   |
| 5.3.5                                               | Reliable                                                                                                                                    |                          |   |   |   |   |
| 5.3.6                                               | Enthusiastic                                                                                                                                |                          |   |   |   |   |
| 5.3.7                                               | Leadership                                                                                                                                  |                          |   |   |   |   |
| 5.3.8                                               | Adheres to professional ethics                                                                                                              |                          |   |   |   |   |
| 5.3.9                                               | Other.....                                                                                                                                  |                          |   |   |   |   |
| <b>6.</b>                                           | <b>Process</b> Please give your opinion on the steps, methods and activities that the library uses for the provision of reference services: |                          |   |   |   |   |
| 6.1                                                 | Evaluate user feedback and satisfaction                                                                                                     |                          |   |   |   |   |
| 6.2                                                 | Studies of user experiences and needs                                                                                                       |                          |   |   |   |   |
| 6.3                                                 | Conform to laws, regulations and guidelines for services                                                                                    |                          |   |   |   |   |
| 6.4                                                 | Plan for each specific service in detail regarding the target group, date, time, topic, activities and evaluation                           |                          |   |   |   |   |
| 6.5                                                 | Deliver the service in a timely manner                                                                                                      |                          |   |   |   |   |
| 6.6                                                 | Always have clear service processes                                                                                                         |                          |   |   |   |   |
| 6.7                                                 | Other.....                                                                                                                                  |                          |   |   |   |   |
| <b>7.</b>                                           | <b>Physical environment</b> Please give your opinion on the physical environment of reference services in the library:                      |                          |   |   |   |   |
| 7.1                                                 | Pleasant service space and atmosphere                                                                                                       |                          |   |   |   |   |
| 7.2                                                 | Media for service support and self-learning are well prepared and useful                                                                    |                          |   |   |   |   |
| 7.3                                                 | Channels for service access are attractive and easy to use                                                                                  |                          |   |   |   |   |
| 7.4                                                 | Technology, tools and equipment for using services are sufficient and up to date                                                            |                          |   |   |   |   |
| 7.5                                                 | Other.....                                                                                                                                  |                          |   |   |   |   |

**Part 3. Suggestions for the reference services in your university library**

Please provide your suggestions for the reference services for the following aspects:

1. Product: .....
2. Price: .....
3. Place: .....
4. Promotion:.....
5. People:.....
6. Process: .....
7. Physical environment: .....



# Inviting and/or inclusive: A study of the Flemish public library sector

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## Abstract

Comparing the results of two large-scale user surveys conducted in Flanders in 2004 and 2018 shows that the Flemish public library sector has successfully adapted to challenging circumstances, such as increasing budgetary stringency and the pervasive digitalization of society. However, it is also clear that attendance numbers have decreased in Flemish public libraries in the last two decades, especially among visitors with lower education levels, which is cause for concern. In this article, the authors present an overview of exploratory analyses that try to ascertain how many of the public libraries that took part in their study were considered to be significantly more (or less) ‘inviting’ by specific subgroups (age, gender, education level, etc.) of the visiting public. Moreover, regression analyses are presented, showing which library characteristics have a positive effect on the attendance of two under-represented groups among Flemish library users: men and the lower educated.

## Keywords

User survey, inclusion, invitingness, education level, effectiveness

## Introduction

A large-scale user survey conducted in Flemish libraries in 2018, which was largely the replication of a study conducted in 2004, showed that the public library sector in Flanders has successfully adapted to new and difficult circumstances. Increasing budgetary constraints are not the only challenge that public libraries in Flanders have been confronted with in recent years. In the 14 years between 2004 and 2018, the world underwent a drastic and pervasive digitalization. Printed books, compact discs (CDs), DVDs and other analogue materials have become far less relevant at a time when society is consuming a considerable percentage of its culture digitally and online. Much has changed since the early 2000s: YouTube, Spotify and other streaming services that have become ubiquitous simply did not exist back then; video rental shops have all but disappeared; and media that was previously synonymous with print (novels, magazines, newspapers) is increasingly being consumed digitally and online. Nonetheless, reports from the user survey

showed that public libraries, which are sometimes considered outdated in this new digital landscape, were found to have improved their image, with many evolving into community hubs that function as meeting spaces, while also retaining their traditional role of content provider (Mathysen, 2019). Public libraries in Flanders appear to have shown great resolve and adaptability – something for which they should be commended. However, not every development during the last years is encouraging – in particular, how well certain groups in society are represented among the visitors to public libraries. This is important, since the inclusiveness of public libraries is a crucial aspect in evaluating their effectiveness and success.

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**Table 1.** Percentages of men and women who visit public libraries in Flanders.

| Gender | 2003–2004<br>(N = 2548) | 2009<br>(N = 3144) | 2014<br>(N = 3927) | Difference between<br>2004 and 2014 |
|--------|-------------------------|--------------------|--------------------|-------------------------------------|
| Women  | 41.3                    | 37.5               | 34.3               | –7.0                                |
| Men    | 32.1                    | 28.5               | 25.5               | –6.6                                |
| Total  | 36.6                    | 33.0               | 30.0               | –6.6                                |

Source: Data derived from different iterations of the participation survey (2003–2004, 2009 and 2014).

**Table 2.** Percentages of people by age category who visit public libraries in Flanders.

| Age   | 2003–2004 (N = 2548) | 2009 (N = 3144) | 2014 (N = 3927) | Difference between 2004 and 2014 |
|-------|----------------------|-----------------|-----------------|----------------------------------|
| 18–34 | 41.7                 | 40.0            | 34.3            | –7.4                             |
| 35–54 | 40.8                 | 35.7            | 36.1            | –4.7                             |
| 55–64 | 26.9                 | 20.3            | 22.9            | –4.0                             |
| 65+   | 16.9                 | 16.9            | 15.0            | –1.9                             |
| Total | 36.6                 | 33.0            | 30.0            | –6.6                             |

Source: Data derived from different iterations of the participation survey (2003–2004, 2009 and 2014).

**Table 3.** Percentages of people by education level who visit public libraries in Flanders.

| Education level  | 2003–2004 (N = 2548) | 2009 (N = 3144) | 2014 (N = 3927) | Difference between 2004 and 2014 |
|------------------|----------------------|-----------------|-----------------|----------------------------------|
| None or lower    | 11.8                 | 11.6            | 7.6             | –4.2                             |
| Lower secondary  | 26.3                 | 19.3            | 17.8            | –8.5                             |
| Higher secondary | 33.8                 | 27.8            | 26.1            | –7.7                             |
| Higher           | 48.9                 | 44.1            | 45.8            | –3.1                             |
| Total            | 36.6                 | 33.0            | 30.0            | –6.6                             |

Source: Data derived from different iterations of the participation survey (2003–2004, 2009 and 2014).

Fewer people in Flanders visit public libraries today compared to 2004, and the composition of the visiting public has changed. This is best illustrated by looking at data stemming from different iterations of the Flemish participation survey – large-scale research in which a standardized questionnaire on the use of recreational time is presented to a representative sample of the Flemish population.<sup>1</sup> Table 1, for instance, compares the percentages of male and female respondents to the participation surveys of 2003–2004, 2009 and 2014 who said that they had visited a public library in the previous six months. It is apparent that men continue to be under-represented as library visitors. When looking at the final column, it also becomes clear that considerably fewer respondents visited public libraries in 2014 in comparison to 2004.<sup>2</sup>

While the diminution in library visitors is comparable between men and women, the same cannot be said for how different age categories or education levels are represented in public libraries when comparing 2014 to 2004. Table 2 clearly shows that, while

they are still the second largest age group, the decrease of library visitors in the 18–34 age category is much larger than that of library visitors who are aged 65 or older. The possibility that this evolution continued between 2014 and 2018 could be part of the explanation for why there is such an over-representation of elderly respondents in the 2018 user survey (see Appendix 1, Table A2). Perhaps the most interesting evolution is visible in Table 3. The higher educated still visit public libraries far more often, and increasingly fewer lower-educated people visit public libraries.<sup>3</sup>

Comparing how the attendance of certain groups at public libraries changed between 2004 and 2014 is important for a nuanced interpretation of many of the results stemming from the 2018 user survey. For instance, 98.2% of all users were still found to borrow books in 2018, and DVDs seemed to be more popular than in 2004. There is, of course, a very real possibility that the people who have since turned to online services for books and DVDs simply do not visit public libraries any more, and so



were not questioned about this aspect of the public library.

Another interesting finding is that a considerably higher percentage of users said that their library was an inviting place in 2018 (66.4%) compared to 2004 (55.8%). Taking into consideration the importance of ‘invitingness’ for public library effectiveness and the altered composition of library users in Flanders (as illustrated by the results from the Flemish participation survey), we feel that an exploratory analysis of this item is necessary. The perceived ‘invitingness’ of Flemish public libraries, while rising as a whole, is not that easily understood. While ‘invitingness’ is undoubtedly a multifaceted and complex notion, which is arguably not sufficiently captured by a single-item construct (something we will discuss in the methodology section), this analysis can serve as a starting point in discerning whether public libraries have perhaps become more tailored to their main audience – that is, members of the (higher) middle class.

### Problem statement

Since public libraries are supposed to be inviting and highly inclusive institutions but are seemingly attracting certain types of visitors less easily in recent years, it is interesting to delve deeper into the subject of ‘invitingness’ and try to understand whether different subgroups of visitors answered the item regarding ‘invitingness’ (mentioned above) in a significantly different way in 2004 and 2018. The data gathered in both user surveys also makes analyses possible with regard to which library characteristics stimulate the attendance of under-represented groups. These types of analyses were conducted based on the data gathered in 2004, the results of which were published in 2007 (Glorieux et al., 2007). In the latter study, both men and the lower educated were rightly identified as being under-represented in public libraries: ‘the socially disadvantaged are gravely underrepresented... People with low levels of education are much less likely to visit public libraries than people who are highly educated... Men are also underrepresented in Flemish public libraries’ (Glorieux et al., 2007: 191). This led to the following research questions:

1. Which (Flemish) public libraries attract many lower educated visitors, when controlling for the social and demographic characteristics of the municipality?
2. Which (Flemish) public libraries manage to attract a lot of men, when controlling for the sociodemographic profile of the municipality?

Since it is clear that the under-representation of both groups still exists, and because the situation has even appeared to have worsened with regard to public library users with lower levels of education, it is interesting to answer the same questions again using the 2018 data and compare the results with those of 2004.

### Literature review

It is cause for concern that public libraries seem to be becoming increasingly less appealing for the lower educated, especially when considering that this aspect of the public library’s functioning has always been suboptimal – something which was underlined in 2007:

At their origin in the United States and the United Kingdom in the 19th century, public libraries were explicitly aimed at educating all citizens, including the lower classes (De Cock, 2000; Muddiman, 1999). Public library founders and advocates considered reading to be a useful pastime. In spite of this humanistic philosophy, Muddiman (1999) notes that English public libraries experienced problems in reaching the lower classes right from the start... Public libraries developed into institutions directed at the skilled and the middle class. (Glorieux et al., 2007: 201)

This humanistic philosophy has continued to inspire what policymakers say regarding the function of public libraries. A discourse analysis of legislative texts issued by Flemish Ministers of Culture (De Pauw, 2005) regarding public libraries shows one constant: a focus on what Huysmans (2006) calls the ‘social-pedagogic motive’ or the notion that public libraries exist to offer every individual the chance to develop themselves through culture and, in so doing, increase opportunities for societal advancement. This emancipating role of the public library is often underlined when defending public spending and, compared to other subsidized institutions (such as the opera or theatre), public libraries do quite well in reaching people with low education and/or low income levels. That being said, the overwhelming majority of library visitors are still members of the middle class, both in Flanders and other western countries (Huysmans and Hillebrink, 2008; Manzuch and Maceviciute, 2014; Sei-Ching and Kyung-Sun, 2008). In other words, the Matthew effect (Merton, 1968) is in play: as with many other institutions in the welfare state that are primarily targeted towards the more vulnerable in society, it is the middle class that benefits most from the existence of these institutions. This continuing discrepancy between intent (public libraries for all,

including and perhaps especially the most vulnerable members of society) and result (the fact that the majority of public library users are members of the middle class) calls for inquiry into the causes of and possible solutions to this problem.

## Methodology

### *Study population*

In 2004, 165 public libraries in Flanders participated in the research, with a little over 32,000 library users filling out the questionnaire. In 2018, 105 libraries signed up (roughly one-third of all public libraries in Flanders, including also Dutch-speaking libraries in Brussels). Despite having fewer participating libraries in 2018, considerably more respondents participated in the user survey. Exactly 45,228 usable questionnaires were filled out by library visitors in 2018. There are two reasons why more questionnaires were gathered, despite there being fewer participating libraries. First, unlike in 2004, the respondents could fill out the questionnaire online at home and at their convenience, instead of having to fill it out in person at their library. Second, the decision was made not to take a sample of registered users, as had been done in 2004. It should be stressed that this decision was not taken lightly. A steering group consisting of librarians who represented all of the participating libraries insisted on allowing every visitor to participate in the research if they so desired. The reason for this was merited by the fact that public libraries in 2018 also attracted a sizable number of visitors who were not necessarily registered members. This was far less common in 2004. Potential respondents were required to meet two criteria in order to be allowed to participate in the research: they had to be aged 18 or older and had to have visited their library at least once in the previous year. The decision to exclude patrons who only used their library virtually or online was also made in concurrence with the steering group, the reasons for this being that the most notable 'virtual use' of public libraries in Flanders is restricted to consulting online catalogues and the fact that the questionnaire mostly dealt with on-site library use. The distributions of age, gender and education level among the survey's respondents (showing that the respondents tended to be older, female and higher educated) are presented in Appendix 1.

### *Data collection methods*

As mentioned briefly in the previous paragraph, the respondents were recruited differently in 2004 and

2018. In 2004, every participating library provided the researchers with a spreadsheet containing the account numbers of every library member who was aged 18 or older. A random sample of members was selected using statistical software, the size of which varied according to the number of active users of a library. This list of selected members was then communicated back to the library, which entered this information into its own software, prompting a notification every time a library member who had been selected to be a respondent borrowed or returned a book. At this point, the user would be invited to participate in the research. If they agreed, they would be given a paper questionnaire, which they were required to fill out in the library.

In 2018, for the reasons already mentioned above, all active users who were aged 18 or older were invited to participate in the research. This was done primarily by sending all eligible users an email containing a link to a website that allowed them to fill out the questionnaire online. The email also mentioned that paper questionnaires would be made available at the library itself, but the vast majority of the questionnaires (97.6%) were filled out online. The user survey was also promoted in other ways – for example, active on-site recruitment by library staff, posters, flyers and mentions in newsletters.

### *Instruments*

The questionnaires put forward to the library users in 2004 and 2018 covered a wide array of themes and topics, allowing the respondents to evaluate and share their (dis)satisfaction with most aspects of their library's functioning, while also providing detailed information on how they used their library. Considering that the questionnaires were long (the 2018 questionnaire featured more than 75 questions, with several questions containing multiple items in scale form) and covered a lot of different themes and subjects, both yielded impressive data sets. While the majority of the questions featured in the 2004 questionnaire were retained, some were removed from the questionnaire in 2018 (e.g. anything pertaining to CD-ROMS, since these are no longer a part of Flemish library collections) and other questions were added or altered to be able to approach certain subjects in greater detail (e.g. the cultural activities that the library organized or how the library was active on social media). Out of the 105 libraries that participated in the research in 2018, 71 had also participated in the research in 2004, which allows for a lot of direct comparison between 2004 and 2018.

That considerably fewer libraries decided to participate in this research in 2018 can likely be understood

in light of the fact that libraries had to contribute financially to the project in order to participate. This was also the case in 2004, but was far less self-evident in 2018 since budgetary constraints had increased in both the cultural sector as a whole and more specifically for public libraries. In 2016, the Flemish regional government decided that it was no longer mandatory for every city or municipality to organize a public library, which also meant that a specific percentage of the cultural subsidiary budget for municipalities was no longer earmarked for local public libraries.

### Data analysis

The data generated by both user surveys was used to study the state of the Flemish library sector as a whole, but the participating libraries also benefitted in a more direct way, receiving a detailed report with library-specific results. Almost all of the questions that were put forward to the respondents eventually ended up in a table in the personalized reports, leading to every participating library receiving a 77-page document in which they could ascertain how their users used, perceived and evaluated their library in 2018. In order to be able to answer the questions put forward in this article, more advanced statistical techniques were used.

In the questionnaire, the respondents could specify to what degree they agreed with the statement 'The library is an inviting place' on a 5-point Likert scale. This item first served as the dependent variable in analysis of variance (ANOVA) tests (the goal of which was to determine whether respondents with different ages, education levels and levels of income answered this item significantly differently) and was also correlated against gender and relevant migration history,<sup>4</sup> both of which were treated as dummy variables.<sup>5</sup>

As mentioned in the introduction, 'invitingness' is a complex concept and likely to be measured incompletely by one single item. However, there are mitigating circumstances that warrant our use of this item here. First, 'invitingness' has received limited attention thus far in social scientific research. The concept of 'invitingness' is used frequently in an unreflexive way, with little to no attention to possible demographic or class-based differences with regard to what it means for a space to be 'inviting'. A notable exception is a study by Van Cauwenberg et al. (2014), where a single-item construct (a score between 0 and 10) measuring 'invitingness' was used as a dependent variable during analysis to good effect. Our approach is similar, and one could even argue that using a Likert scale, as we have done, is even more intuitive for respondents. Moreover, the statement regarding 'invitingness' was also positively worded in both user

surveys, which Alexandrov (2010: 10) argues gives an item 'better predictive ability'. Second, both of the samples that have been used for this exploratory analysis are very large (more than 32,000 respondents in 2004 and more than 45,000 in 2018), which makes systematic errors less likely. Third, while the use of single-item constructs for operationalizing attitudes is less prevalent, it is acceptable if their limitations are acknowledged. Fuchs and Diamantopoulos (2009: 205) argue that a single-item construct can suffice if the goal is 'obtaining a general view of the construct' and when the research objective is to capture 'an overall feeling, judgment, or impression'. Furthermore, single-item constructs are repeatedly used to capture complex and multifaceted concepts such as 'quality of life' (De Boer et al., 2004). Keeping this in mind, it should also be noted that while 'invitingness' may be a somewhat vague concept in itself, the subject that it pertains to in this study is not: we are asking respondents how they feel about a space they frequently visit. Lastly, constructing a multiple-scale item to measure 'perceived invitingness' calls into question what actually constitutes 'invitingness', and our preparatory research into the concept of 'invitingness' unearthed no examples of how to operationalize 'perceived invitingness' as a multi-item construct. There were variables (e.g. time spent in the library during the last visit or frequency of visits over a specific time span) in our data sets that could have been deployed for this, but it is possible that they would have undermined the importance of subjectivity that we wish to capture here. Taking all of the above into consideration, we are confident that the exploratory analyses that we undertake here can provide valid and valuable insights.

With regard to the question of which library characteristics have a positive effect on the attendance of under-represented groups, the analyses that were conducted in 2004 were replicated as closely as possible. Multiple regression analysis, carried out on the level of individual libraries, makes it possible to determine the strength of association between the independent variables (here, the different library characteristics) and the dependent variable (here, the percentages of male and lower-educated respondents). A similar analysis for age will not be conducted because while the percentage of young adults who visit public libraries might be shrinking, they are still not under-represented. Just as in 2007, municipality characteristics and library size were also included in the model to see if they were significantly associated with the dependent variable. If that was found to be the case, they were kept in the model and library characteristics were added later.

**Table 4.** Percentage of libraries that were evaluated significantly differently by subgroups of a background variable.

| Background variable        | 2004<br>% (number<br>of libraries) | 2018<br>% (number<br>of libraries) |
|----------------------------|------------------------------------|------------------------------------|
| Gender                     | 15.2 (25)                          | 31.4 (32)                          |
| Age                        | 16.4 (27)                          | 24.5 (25)                          |
| Education level            | 14.5 (24)                          | 19.6 (20)                          |
| Income                     | 7.9 (13)                           | 11.8 (12)                          |
| Relevant migration history | –                                  | 2.9 (3)                            |

Almost all of the variables that were used in 2007 could be found or reconstructed for the analyses of the 2018 data. When a variable could not be found or reconstructed in exactly the same way as in 2007, a comparable variable was used to replace it. For an overview of all the variables that were used in the regression analyses, see Table A4. Every independent variable used in 2004 is listed, while also specifying whether or not the exact same variable could be found for 2018 and, if that was not the case, which variable was used to replace it. Table A4 also lists the variables that were added to the analyses which were not included in 2004. These new variables reflect certain developments within the Flemish public library sector, such as how many extra library locations there are apart from the main location (which was included because many libraries have been forced to close extra locations due to budgetary constraints); the age of the building (there has been a trend to house public libraries in increasingly new and contemporary-style buildings, not just in Flanders but also worldwide); and whether or not the library has a bar or restaurant (this has become increasingly common in Flemish public libraries).

Just as in 2004, the data used in 2018 stemmed from different sources: information on library characteristics was extracted from both the Bibliotheek Informatie- en OpvolgingsSysteem (BIOS) database (which centralizes data that libraries provide about their collections, registered users, staff and finances) and an additional questionnaire that the librarians at the participating libraries were required to fill out. The information on municipalities was taken from data made available by the Belgian National Institute for Statistics, this time using the data collected in 2011.

## Results

Table 4 summarizes the results of the ANOVA analyses and correlations, and provides an overview of how many libraries were found to be evaluated as

**Table 5.** Distribution of libraries according to percentage of visitors who found their library to be an inviting place.

| %      | 2004                                                                                                                      | 2018                                                                                                                      |
|--------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
|        | % of libraries<br>≥ one significant<br>difference<br>in perceived<br>invitingness<br>(number of libraries<br>in category) | % of libraries<br>≥ one significant<br>difference<br>in perceived<br>invitingness<br>(number of libraries<br>in category) |
| 90–100 | (0)                                                                                                                       | 100.0 (2)                                                                                                                 |
| 80–89  | (0)                                                                                                                       | 85.7 (7)                                                                                                                  |
| 70–79  | 41.2 (17)                                                                                                                 | 68.6 (35)                                                                                                                 |
| 60–69  | 50.0 (50)                                                                                                                 | 50.0 (26)                                                                                                                 |
| 50–59  | 46.0 (50)                                                                                                                 | 45.5 (22)                                                                                                                 |
| 40–49  | 33.3 (30)                                                                                                                 | 28.6 (7)                                                                                                                  |
| 30–39  | 35.7 (14)                                                                                                                 | 33.3 (3)                                                                                                                  |
| 20–29  | 33.3 (3)                                                                                                                  | (0)                                                                                                                       |
| 10–19  | 100.0 (1)                                                                                                                 | (0)                                                                                                                       |

significantly more (or less) inviting by different subgroups of each background variable. When looking at the column displaying the results of the 2004 data, we see that the percentages here are always smaller in comparison to 2018. In the first row, we see that men answered the item regarding ‘invitingness’ in a significantly different way than women in 31.4% of all of the participating libraries in 2018. This percentage is considerably smaller when looking at 2004 (15.2%). We also see that about a quarter of the libraries were evaluated significantly differently by visitors of different age groups in 2018. Education level (of the respondent and/or parent) also seems to play an important role in how a number of libraries were evaluated on ‘invitingness’. Income (12) and especially relevant migration history (3) seem to play less of a role when looking at differences in perceived ‘invitingness’. It is important to note that a considerable number of libraries in 2018 – roughly one-quarter – were evaluated significantly differently by subgroups of (at least) two background variables simultaneously. This percentage is considerably lower in 2004; here, only 9.7% of libraries were evaluated significantly differently by subgroups of (at least) two background variables simultaneously.

Table 5 categorizes all of the libraries that participated in the user surveys according to the percentage of users who found them to be an inviting place. It shows how many libraries fall into each category with regard to the percentage of users who deemed their library to be an inviting place, and what percentage of those libraries display one or more differences in ‘invitingness’ when looking at background variables. The numbers in parentheses indicate how many

**Table 6.** Regression analysis of percentage of male library visitors in 2018.

| Variables                                                    | Regression Coefficient | SE     | B     | t      | p    |
|--------------------------------------------------------------|------------------------|--------|-------|--------|------|
| Intercept                                                    | 27.697                 | 3.098  |       | 8.940  | .000 |
| Unemployment percentage in active population in municipality | 121.466                | 23.428 | .540  | 5.185  | .000 |
| Number of extra library locations apart from main location   | 1.071                  | 0.301  | .403  | 3.557  | .001 |
| Percentage of children's books in collection                 | -32.332                | 7.222  | -.386 | -4.477 | .000 |
| Total number of people living in municipality                | -6.390E-05             | 0.000  | -.323 | -2.248 | .027 |
| Percentage of DVDs in collection                             | 45.049                 | 16.061 | .200  | 2.805  | .006 |
| Total number of opening hours                                | 0.116                  | 0.055  | .199  | 2.098  | .038 |
| Membership fee                                               | 0.432                  | 0.197  | .157  | 2.189  | .031 |

Note:  $R^2$  (explained variance) = 0.55;  $N = 102$ .

libraries in each iteration of the user survey fall into a corresponding category (e.g. in 2004, there were 30 libraries where 40%–49% of users agreed with the statement that their library was an inviting place). This overview shows that libraries tended to be evaluated as more inviting in 2018 than in 2004. For example, seven libraries were considered to be (very) inviting by 80%–89% of their respondents in 2018, while not a single library achieved such a high ‘score’ in 2004. The percentages indicate what percent of the libraries in each cell was evaluated significantly differently (on the item regarding ‘invitingness’) by at least one subgroup of a variable (age, income, education, etc.). This shows us that, in 2018, higher scores on the item of ‘invitingness’ tend to coincide with a higher percentage of libraries where that item was answered in a significantly different way by at least one subgroup of a variable. For instance, in 2018, 68.6% of the libraries that were evaluated as being inviting by 70%–79% of their users display at least one significant difference in the evaluation of ‘invitingness’ when looking at background variables, while this is only 45.5% in libraries that were evaluated as being inviting by 50%–59% of their users. In short, Table 5 illustrates a somewhat surprising fact – namely, that libraries where there are significant differences between subgroups in how the item on ‘invitingness’ was answered actually tend to be evaluated better on this item overall in 2018. This is not the case in 2004, or at least much less clear and outspoken as in 2018.

Table 6 shows the results of the regression analysis performed on the 2018 data that treats the percentage of male respondents of every library as a dependent variable. As mentioned earlier, an analysis in which only the municipality characteristics were included as independent variables was carried out first. Two significant municipality characteristics were found – the

unemployment percentage in the active population (15–64-year-olds) and the total number of people living in the municipality – with the first having a positive effect and the second a negative effect. Looking at the library characteristics that are found to be significant, certain similarities between 2004 and 2018 become apparent: the percentage of DVDs in the collection has a positive effect in 2018, while the percentage of audiovisual materials was found to be relevant in 2004. Also, the opening hours of the library remain relevant. Furthermore, it appears that a higher percentage of children’s books in a collection has a negative effect on the percentage of men who visit the library.

Table 7 shows the results of the regression analysis performed on the 2018 data that treats the percentage of lower-educated respondents of every library as a dependent variable.<sup>5</sup> In the preparation of the analysis, just as in 2004, a strong relationship was found between the percentage of lower-educated residents of the municipality in which a library was located and the percentage of lower-educated library visitors: a 0.76 correlation was found for 2004 and a 0.78 correlation for 2018. This was taken into account in exactly the same way in 2018 as it was in 2004:

In order to control for the influence of the local population composition, the percentage of lowly educated library visitors is partialled out for the percentage of lowly educated residents in the municipality. The new measure indicates whether a library attracts more or fewer lowly educated visitors, compared to other libraries in municipalities with a similar percentage of lowly educated residents... This is done by saving the unstandardized residuals of a regression analysis with the percentage of lowly educated residents as an independent and the percentage of lowly educated library visitors as a dependent variable. (Glorieux et al., 2007: 196)

**Table 7.** Regression analysis of the percentage of library users without a higher education degree in 2018 (partialled out for the percentage of adults in the municipality without a higher education degree).

| Variables                                         | Regression Coefficient | SE    | B     | t       | p    |
|---------------------------------------------------|------------------------|-------|-------|---------|------|
| Intercept                                         | 0.735                  | 0.036 |       | 20.418  | .000 |
| Average income in municipality                    | -2.175E-05             | 0.000 | -.682 | -14.660 | .000 |
| Percentage of foreign inhabitants in municipality | -0.431                 | 0.043 | -.460 | -9.992  | .000 |
| Total number of adult library members             | -2.490E-06             | 0.000 | -.191 | -3.176  | .002 |
| Number of computers available to the public       | 0.001                  | 0.001 | .145  | 2.248   | .027 |
| Percentage of non-fiction works in collection     | 0.158                  | 0.065 | .105  | 2.424   | .017 |

Note:  $R^2$  (explained variance) = 0.23;  $N$  = 102.

When including municipality characteristics in this model, the average income and the percentage of foreign inhabitants in a municipality both have significant and negative effects, meaning that, as the average income and the percentage of foreign inhabitants rise, the library has fewer lower-educated visitors. Comparing the effect sizes of the municipality characteristics with those of the library characteristics in Table 7, it becomes clear that the municipality characteristics play a much greater role in explaining why some libraries attract more lower-educated visitors. This becomes even clearer when including the percentage of lower-educated residents in the regression: at this point, these three indicators (the percentage of lower-educated residents, the average income in the municipality and the percentage of foreign inhabitants) explain 82.7% of the variation in the percentage of lower-educated visitors. However, even when including the two municipality characteristics that were found to be significant, the explained variance of the model that does not include the percentage of lower-educated inhabitants drops to 0.23.

## Discussion

### *Invitingness in Flemish public libraries in 2018 versus 2004*

The exploratory analyses presented in Tables 4 and 5 show that a higher percentage of libraries were evaluated significantly differently by certain subgroups in 2018 than in 2004. It is also suggested that libraries which score higher on the item regarding 'invitingness' in 2018 are not necessarily more inclusive. One could hypothesize that appealing to a specific subgroup will cause that subgroup to give very good evaluations, skewing the overall score and making the library appear to be very inviting for all visitors (even if the library might be less inviting for other types of visitors). In order to understand this better, cross tables have been created (Tables 8, 9 and 10) that allow for comparison of the average percentage of respondents who found their

**Table 8.** Average percentages of users who found their library to be an inviting place in the gender subset.

| Gender    | Libraries with significant differences | Libraries with no significant differences | All libraries |
|-----------|----------------------------------------|-------------------------------------------|---------------|
| Men       | 67.4                                   | 61.6                                      | 63.5          |
| Women     | 75.1                                   | 64.4                                      | 68.0          |
| No answer | 69.4                                   | 53.2                                      | 58.4          |
| Total     | 72.5                                   | 63.4                                      | 66.4          |

**Table 9.** Average percentages of users who found their library to be an inviting place in the education subset.

| Education level  | Libraries with significant differences | Libraries with no significant differences | All libraries |
|------------------|----------------------------------------|-------------------------------------------|---------------|
| None or lower    | 59.1                                   | 68.9                                      | 66.7          |
| Lower secondary  | 69.2                                   | 67.9                                      | 68.2          |
| Higher secondary | 67.9                                   | 64.3                                      | 65.1          |
| Higher           | 72.3                                   | 65.1                                      | 67.1          |
| Total            | 71.0                                   | 65.1                                      | 66.6          |

**Table 10.** Average percentages of users who found their library to be an inviting place in the age subset.

| Age   | Libraries with significant differences | Libraries with no significant differences | All libraries |
|-------|----------------------------------------|-------------------------------------------|---------------|
| 18-29 | 63.9                                   | 58.1                                      | 60.7          |
| 30-44 | 70.5                                   | 65.2                                      | 67.1          |
| 45-59 | 68.1                                   | 64.1                                      | 65.5          |
| 60+   | 70.9                                   | 66.3                                      | 67.9          |
| Total | 69.3                                   | 64.8                                      | 66.4          |

library to be inviting within every category of every variable, for both the group of libraries where significant differences were found and where they were not. Because significant differences were found to be less prevalent in 2004 (and less prevalent in 2018 with

regard to income and relevant migration history), this exercise has been limited to the 2018 data and the variables of gender, education level and age.

Tables 8 and 10 suggest that libraries where the item pertaining to 'invitingness' was evaluated differently by men and women or visitors of different age groups are in fact more inviting overall among both men and women and all age categories. This is especially striking when considering that all libraries where the item on 'invitingness' was answered differently according to gender in 2018 were evaluated significantly better by women. However, men also evaluated the libraries that were evaluated significantly better by women better on average than those where no significant differences were found.

Libraries that were evaluated significantly differently by users with higher or lower education levels are another story altogether. Table 9 shows that this group of libraries was evaluated significantly better by higher-educated visitors than lower-educated visitors. For instance, where, on average, 66.7% of all respondents who (at most) had completed elementary school found their library to be an inviting place, this number drops to 59.1% when looking at libraries where significant differences were found. This means that while certain libraries might be evaluated better by women or the elderly, this will not necessarily negatively impact how men or younger visitors perceive the libraries. However, appealing more to higher-educated visitors does seem to have an adverse effect on how the library is perceived by lower-educated visitors.

### *What determines the under-representation of certain groups in public libraries?*

The results of the 2007 analyses, which sought to determine which, if any, library characteristics had a positive effect on the presence of certain types of visitors who are usually under-represented, were very clear:

When it comes to attracting more male visitors, some measures were clearly associated with the percentage of male visitors . . . However, when it comes to reaching socially disadvantaged groups, in this case the lower educated, the impact of library characteristics appears very limited . . . If a public library appears to be attracting more lower-educated visitors, this is for a large part due to the fact that the community itself has a generally low level of education. (Glorieux et al., 2007: 201)

In short, in 2007, libraries were told that they could make themselves more appealing to male visitors by improving their audiovisual collection and extending

their opening hours, but similar specific advice could not be formulated with regard to the lower educated.

*Male visitors in the library.* The results presented in Table 6 suggest, among other things, that men tend to visit public libraries more often when they are unemployed. This seems to be confirmed when comparing the distribution of employment status between men and women among the library visitors who participated in the research in 2018: 3.4% of the men between the ages of 18 and 64 reported to be unemployed compared to 2.2% of the women aged between 18 and 64. Unemployment in the active population also includes people in that age category who have entered early retirement, and here it becomes clear why the effect is so strong: 15.3% of the men in the research between the ages of 18 and 64 reported to be pensioners, while this was only 8.5% among the women.

The finding that a higher percentage of children's books in the collection has a negative effect on the percentage of men who visited the library in 2018 seems to be confirmed by the fact that men (14.7%) reported visiting the library far less often with or for their children than women (28.5%) when looking at the results of the 2018 user survey. In general, having children seems to have a negative effect on library attendance for men. When comparing the family situation of the male and female respondents, it appears that there are considerably fewer men in every category in which children are part of the family composition.

The library characteristics that were found to be relevant seem to suggest that men will visit libraries more easily if the library has more flexible opening hours, more locations (which are most likely located closer to their home, making visiting easier) and a specific type of collection (a bigger DVD collection and less aimed at children). Just as in 2004, library characteristics do play an important role in attracting men. This becomes clear when comparing the explained variance of the model without library characteristics (0.26) with a model that includes library characteristics (0.55).

*Lower-educated library users.* Some library characteristics were found to have statistically significant but also very limited effects: the number of adult members, the number of computers made available to the public and the percentage of non-fiction works in the collection. These effects suggest that larger libraries attract fewer lower-educated visitors, while libraries that provide more access to computers and have more non-fiction works in their collection do slightly better

in attracting lower-educated visitors. However, the small effect sizes lead us to the same conclusion as in 2007 – namely, that ‘when it comes to reaching socially disadvantaged groups, in this case the lower educated, the impact of library characteristics appears very limited’ (Glorieux et al., 2007: 201).

### *Limitations*

There are three important limitations to our research that are worth mentioning. The first pertains to the data collected in 2018, which is probably not completely representative of the population of library users. This can be explained by both not working with a sample and the fact that the use of a long written questionnaire tends to favour the participation of older and higher-educated respondents. This was accounted for by making a number of checks in order to determine whether the under-representation of certain groups caused skewed results. When weighing the data so that the distribution of respondents more closely reflected the actual attendance of different age groups and education levels, and then repeating the different analyses, it was clear that this led to only marginal changes in the results. Therefore, the findings presented here are those resulting from unweighted data. While it should be acknowledged that this data is perhaps not perfect, all of the checks suggest that the results of this study are valid.

The second limitation pertains to the independent variables that were used in the multiple regression analyses. While they are varied and numerous, trying to capture the functioning of a library in a set of quantifiable variables will always be reductive to a certain degree. Moreover, the independent variables featured in these analyses are mostly of a very practical and economic nature (such as membership fees or opening hours). These proved to be very useful when looking at the under-representation of men in Flemish public libraries but seem to fall short of providing any type of meaningful explanation for the under-representation of the lower educated, both in 2004 and 2018. This can likely be attributed to the fact that differences in participation caused by gender vary substantially from differences in participation caused by education level, which is connected much more closely to a cultural dimension of class membership. This dimension – how the look and feel of public libraries affect the impression that (potential) visitors have about this cultural institution – is not addressed here. Therefore, we will pay particular attention to this in subsequent studies and, more specifically, how the cultural character of a public library is communicated through the architectural

style of its building. One might counter this choice of research by stating that (as shown at the beginning of this article) more libraries display significant differences with regard to what degree they are perceived to be inviting when looking at gender and age differences. However, since lower-educated users are becoming increasingly under-represented in public libraries, it is important to pay attention to this development.

The third limitation pertains to the single-item construct of ‘invitingness’ used in our exploratory analysis. Let it be clear that we see the results of this study as indicative (and not as irrefutable proof) of certain developments in Flemish public libraries. It is necessary to pay more attention to the subject of ‘perceived invitingness’. The study of ‘invitingness’ would most likely benefit from a more qualitative approach.

### **Conclusion**

This research underlines the uneasy fact that, despite 14 years having elapsed and a sector-wide effort to make public libraries more inviting and less elitist, the situation has arguably worsened since 2004. As mentioned several times in this article, public libraries have changed considerably in recent years: they have diversified their activities (integrating coffee shops, organizing more activities, etc.) and often look very different now in comparison to the early 2000s (with fewer branch libraries operating on a smaller scale, more contemporary-style buildings and interiors, etc.). Looking at our findings, we posit that these changes have made public libraries (in Flanders) more attractive but likely also more ‘selective’ in the sense that certain types of visitors feel less at home in these new environments. This is best illustrated by the fact that more discord among different groups (about whether or not libraries are inviting) has gone hand in hand with improvements in how ‘invitingness’ is evaluated in a general sense. Focusing on under-represented groups, as has been done here, casts some light on how we might address this issue. Perhaps the most important finding we have presented is that the greatest challenge lies in finding ways of attracting more visitors with lower levels of education. They are increasingly under-represented, feeling less at home in libraries that appeal more to higher-educated visitors, and it is difficult to identify concrete interventions that might stimulate their attendance in a meaningful way.

Those who are inclined to be critical of public libraries could claim that, in a bid to remain relevant in a digitized society and attract sufficient visitors, public libraries are becoming increasingly more



tailored to the types of users who were already more likely to visit them in the past – namely, members of the (higher) middle class. We feel that this would be gratuitous criticism since it does not account for the genuine desire among those who work in the public library sector to reach the socially vulnerable. The insights presented here also underline the challenging complexity of improving the attendance of lower-educated visitors. To put it in colloquial terms: it is hard keeping everybody happy. Therefore, we hope to have presented a sufficiently nuanced analysis here – one that raises a few concerns but also rightly commends public libraries for the way they are adapting to a changing society.

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### Notes

1. For more information, see <https://steunpuntcultuur.be/en/research-lines/participationsurvey>
2. The data presented here refers to on-site visits. The reason for not considering online use of library services as a ‘visit’ is discussed in the methodology section.
3. ‘Lower educated’ is defined as not having finished higher education.
4. Respondents were considered to have a ‘relevant migration background’ if either they themselves or their parents were not born in Belgium or one of its neighbouring countries and if they predominantly spoke a foreign language at home (i.e. not Dutch). Questions regarding country of birth and language were only asked in 2018. This specific analysis could therefore not be performed on the 2004 data.
5. Spearman’s Rho allows for ordinal data to be correlated against a dummy variable.

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## Appendix I

**Table A1.** Distribution of gender in the data set.

| Gender    | 2018   | Participation Survey (PaS) 2014 |
|-----------|--------|---------------------------------|
| Male      | 36.2%  | 42.2%                           |
| Female    | 63.6%  | 57.8%                           |
| No answer | 0.2%   | –                               |
| Total     | 45,274 | 870                             |

**Table A2.** Distribution of age in the data set.

| Age   | 2018   | Participation Survey (PaS) 2014 | Weighting coefficient <sup>a</sup> |
|-------|--------|---------------------------------|------------------------------------|
| 18–29 | 8.2%   | 21.3%                           | 2.6031                             |
| 30–44 | 21.1%  | 32.3%                           | 1.5303                             |
| 45–59 | 30.9%  | 26.0%                           | 0.8435                             |
| 60+   | 39.8%  | 20.3%                           | 0.5105                             |
| Total | 45,228 | 870                             |                                    |

<sup>a</sup>Weighting coefficients were calculated based on the distributions of respondents who reported to be library visitors in the participation survey.

**Table A3.** Distribution of education levels in the data set.

| Education level  | 2018   | Participation Survey (PaS) 2014 | Weighting coefficient <sup>a</sup> |
|------------------|--------|---------------------------------|------------------------------------|
| None or lower    | 1.7%   | 3.3%                            | 2.6803                             |
| Lower secondary  | 5.1%   | 10.2%                           | 2.8433                             |
| Higher secondary | 24.5%  | 36.7%                           | 1.6688                             |
| Higher           | 67.1%  | 49.8%                           | 0.6802                             |
| Other            | 1.7%   | –                               |                                    |
| Total            | 42,929 | 776                             |                                    |

<sup>a</sup>Weighting coefficients were calculated based on the distributions of respondents who reported to be library visitors in the participation survey.

**Table A4.** Independent variables used in the 2004 and 2018 regression analyses.

| 2004                                                                 | 2018                                                                          |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Membership fee                                                       | Membership fee                                                                |
| Opening hours                                                        | Opening hours                                                                 |
| Lending period for books                                             |                                                                               |
| Fines for books and CDs returned late                                |                                                                               |
| Lending fee for CDs, CD-ROMs, DVDs and videos                        | Lending fee for CDs, CD-ROMs, DVDs and videos                                 |
| Number of cultural activities in library organized in past year      | Number of cultural activities in library organized in past year               |
| Percentage of children's and young adult books in library collection | Percentage of children's and young adult books in library collection          |
| Percentage of fiction books                                          | Percentage of fiction books                                                   |
| Percentage of non-fiction books                                      | Percentage of non-fiction books                                               |
| Percentage of CDs                                                    | Percentage of CDs                                                             |
| Percentage of CD-ROMs                                                | (CD-ROMs are no longer part of library collections)                           |
| Percentage of videos and DVDs                                        | Percentage of DVDs (videos are no longer part of library collections)         |
| Percentage of audiovisual items                                      | Percentage of audiovisual items                                               |
| Number of computers available to visitors                            | Number of computers available to visitors                                     |
|                                                                      | Number of extra library locations apart from the main location                |
|                                                                      | Age of the building                                                           |
|                                                                      | Whether or not the library has facilities for eating and drinking             |
| Number of inhabitants aged 15 or older                               | Number of inhabitants aged 15 or older                                        |
| Percentage of male inhabitants                                       | Percentage of male inhabitants                                                |
| Percentage of inhabitants without a higher education degree          | Percentage of inhabitants without a higher education degree                   |
| Percentage of inhabitants who do not have Belgian nationality        | Percentage of inhabitants who do not have Belgian nationality                 |
| Percentage of inhabitants who live in a house without basic comforts | Percentage of unemployed inhabitants in the active population (aged 15 to 64) |
| Mean income of the municipality                                      | Mean income of the municipality                                               |



# Management of e-resources in academic libraries in Ghana: Copyright implications

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## Abstract

This study investigated the copyright issues surrounding the management of e-resources in academic libraries in Ghana. Forty-seven library staff and head librarians from four academic libraries were engaged using questionnaires and qualitative interviews in a sequential mixed-methods approach to generate data for this study. The findings indicate that in all four institutions copyright issues arose with the provision of distance learning, online courses and e-reserves services. All the respondents stated that they or their colleagues had had faculty ask questions on copyright issues. However, the professional librarians indicated that the library was not consulted and the instructors for online courses or distance education programmes did not cooperate with librarians; rather, the department posting the materials made the decisions on copyright regarding the usage of digital resources for distance learning, online courses or e-reserves. This does not augur well for the management of copyright of e-resources in academic libraries in Ghana.

## Keywords

Academic libraries, copyright issues, distance education programmes, electronic resources management, Ghana, online courses

## Introduction

The increasing popularity of electronic resources ('e-reserves' – i.e. e-books, e-journals, etc.) as a means by which librarians are meeting the information needs of their patrons (i.e. students and faculty) is due to the ease of retrieving, displaying and printing these materials for patrons compared to traditional print reserves. Many academic libraries are therefore making the conversion to this service a priority for sharing knowledge goods. This includes making available to their patrons electronically scanned paper documents and other original electronically formatted content (Copyright Clearance Center, 2011).

Armstrong et al. (2010) state that the popularity of digital materials as the learning tools of choice has largely been driven by the proliferation of information and communications technology (ICT) tools and devices. The deployment of ICT tools in information-sharing has also aided the provision of

education to currently marginalised people and communities, whether on the basis of socio-economic status, ethnicity, gender, remoteness or other factors (Armstrong et al., 2010). ICTs can aid both in overcoming the physical infrastructural challenges that serve as barriers to acquiring learning tools and open access to knowledge not previously obtainable.

The current trend in academic librarianship, according to Carter (2007), is for patrons to be able to access quality information from wherever they find themselves – their homes, coffee shops, their offices and other areas with Internet connectivity. Digitisation and electronic communication offer such a possibility. Academic libraries are therefore under

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pressure to improve their electronic holdings and service delivery (Ferullo, 2004). Laughlin (2010), however, raises two major legal issues regarding the use of electronic resources. As the contents of e-books, unlike printed books, are usually transferred to the purchaser by the vendor without a physical container, the first question that arises is: Can libraries copy the content of their electronic holdings to different e-readers without infringing the exclusionary right of the copyright owner(s) to reproduction? The second question is: Can libraries lend their electronic holdings to clients without infringing the exclusionary right of the copyright owner(s) to distribution? These questions bring to the centre of the copyright debate issues about the management of e-resources in academic libraries.

Over the years, various public and private initiatives have been launched to provide some framework to ensure some degree of balance in stakeholder rights in information provision and utilisation through the application of such clauses as the fair use doctrine in a more predictable manner. For instance, during the enactment of the 1976 Copyright Act in the USA, while the American fair use provision was being debated in the US House of Representatives, Congress approved guidelines for educational users – ‘Classroom Guidelines’ – which are a set of guidelines for classroom copying of books and periodicals negotiated by a group of publishers and educational administrators in an effort to simplify the process of determining whether a classroom use is a fair one (Internet Policy Task Force, 2013). Adler et al. (2010) and Ferullo (2004) have both indicated that, included in the issues that create the greatest copyright concerns for academic librarians, are fair use and e-reserves usage. This study sought to investigate the copyright issues that surround the management of e-resources in academic libraries in Ghana.

## Research objectives

The objectives of the study were to investigate:

1. The authority structure in decision-making about copyright on the usage of digital resources for online courses, distance education or e-reserves;
2. The level of cooperation between instructors of distance education courses in the university and library staff in making materials available for online courses or distance education programmes;

3. The copyright competency of instructors or tutors of distance education courses or users of e-reserves;
4. The dynamics in the evaluation of copyright materials for e-reserves, the planning stages of an online course or distance education programme, and who is held responsible for breach of copyright laws;
5. The role of the library in making materials available for e-reserves and the planning stages of an online course or distance education programme.

## Literature review

### *Library automation, e-resources and copyright*

The advent of the Internet has afforded consumers with the ability to increasingly access different kinds of creative content in different formats. It has also allowed different kinds of creators to reach a wide audience without the services of mainstream intermediaries. Libraries using online services have witnessed a phenomenal growth. Some of the technological developments driving this growth, however, have also brought in their wake new methods of mass infringement (Kende, 2014). The question at the forefront of the policy debate currently is: Can there be a meaningful copyright system that guarantees the continuous production of creative works without hampering the innovative power of the Internet as well as the free flow of information?

It is vital to address this problem in order to maintain a meaningful reward system for producing creative works and to ensure a level playing field for legitimate services, as well as promote the broadest offerings of online content. There is no doubt that, in the current knowledge-based economy, a good grip on how intellectual property rights function is critical to policy formulation in all spheres of human development (Chapdelaine, 2018; Weatherley, 2014). Thus, all stakeholders (i.e. creators, intermediaries and consumers) have an interest in ensuring the development of a robust online ecosystem. The principal question that arises therefore is: What is the best means to achieve this?

Copyright law has, however, been impacted by technology. Finck and Moscon (2019) state that:

Law and technology have a complex relationship. Technology shapes legal development, while it is also shaped by law. The unfolding of copyright law confirms these dynamics as its development and enforcement have always been closely inspired by the technological state of the art. (77)

Finck and Moscon also write: 'Copyright law has long leveraged the power of computer code to create binding norms for those that engage with related enforcement systems' (78).

### *The global public interest and the impact of digitisation*

Chapdelaine (2018), Finck and Moscon (2019) and Neal (2013) all state that the application of new communications technology tools, which have enabled the digitisation of information, has largely destroyed the effects and importance of territorial boundaries, and has enabled owners of knowledge goods to assert rights that are increasingly becoming detrimental to the consumers of goods, at both the international and domestic levels, that otherwise could be classified as a public good.

Ferullo (2004), in an article titled 'Major copyright issues in academic libraries', reports that the most common reasons for violating copyright in the USA include confusion and concern about issues of fair use, licensing, e-reserves and document delivery. Weatherley (2014: 10), in a discussion paper on 'Copyright education and awareness', indicates that the most common reasons for illegally accessing content are 'because it is free', 'convenient' and 'quick'. Another reason given by Weatherley (2014: 10) is that 'it allows users to try before they buy'. Weatherley (2014) also states that young people in the European Union were apathetic towards copyright issues, and tolerant of counterfeiting and illegal downloading. Di Valentino (2015) also cites ignorance of the finer points of copyright law as a reason for violating copyright on academic materials.

Ferullo (2004) and the Internet Policy Task Force (2013) have both indicated that the advantage of fair use is its flexibility and its high adaptability to new technologies. The application of the fair use doctrine has resulted in a number of copyright litigations. However, the courts have applied the doctrine in such a way that it has allowed users to put their accrued talents to work, and to encourage creative 'progress', which is the basic constitutional objective of copyright itself (Internet Policy Task Force, 2013: 21; Supreme Court of the United States, 2021), and this has enabled innovations such as 'the use of thumbnail images in Internet search results, caching of web pages by a search engine, and a digital plagiarism detection service' (Internet Policy Task Force, 2013: 21).

### *Control of digital content usage: the case of digital rights management*

Advances in technology have made the copying of online information sources much easier. However, the

widespread engagement of users in such behaviour has necessitated the creation of 'intentional and artificial information usage barriers' by some rights-holders, known as digital rights management. Puckett (2010) comments that digital rights management refers to a set of technologies that some rights-holders use to control the ways in which some aspects of digital content, such as electronic texts, video or music, can be used by consumers such as library users. Digital rights management usually employs the encryption of digital objects such as text, video or audio files, and the provision of a method by which a user can decrypt the same, in order to have access in ways that the rights-owner specifies. For example, publishers can permit usage only on specified devices or for a set number of times, or allow usage only on-screen but disable printing or reading via screen-reader software.

Digital rights management is a form of cryptography, which is the process of protecting information from unauthorised use by transforming it in such a way that only the authorised receiver can have use of it (Puckett, 2010). The sender (i.e. the vendor or provider of the information in this context) employs some kind of a 'key' to encrypt the digital object, which the recipient (i.e. the information user) may automatically decrypt in order to gain access using a copy of the same key. The information is protected from 'attackers' – unauthorised users or users – without the key (IFLA, 2004). Finck and Moscon (2019) have, however, described digital rights management as a behaviour-constraining force that can enforce existing legal and contractual rules *ex ante*, thus compromising free access to information, as well as infringing on the freedom of users to make their own determinations about how that information can be ethically and appropriately used.

### *The academic librarian and management of copyright*

How an academic library is managed is informed, among other things, by the mission of its parent institution. Academic institutions exist to promote the discovery and self-actualisation of the communities they serve. Academic institutions are therefore critical in the socio-economic development of, first, the citizenry of their local communities and, second, the global community as a whole. Thus, academic libraries exist to support teaching, learning and research in the parent institution they serve by facilitating access to various kinds of knowledge goods (IFLA, 2015).

Technological advances in librarianship are, however, shifting the dynamics of the availability, accessibility and delivery of information in such a way that

electronic resources (e-books, e-journals, etc.) are now popular means of information delivery to information users. Indeed, the increasing use of ICT tools to facilitate the use of electronically formatted information has made it easier to copy online information sources, either from one computer to another or even from an internal hard drive to the external memory of a user's computer. However, the constant engagement of users in such behaviour brings to the fore the importance of copyright in our daily use of information (Puckett, 2010: 12). This situation has necessitated the creation of intentional and artificial information usage barriers, or digital rights management, by some rights-holders (Chapdelaine, 2018; Finck and Moscon, 2019).

In 1998, the USA passed the Digital Millennium Copyright Act. This has made digital rights management even more significant in digital copyright. Rights-holders are only permitting access after the acquisition of an appropriate licence. There is also an emerging trend of librarians increasingly being made responsible for the management of these licensing agreements, to the extent that in some instances these licensing agreements hold the library legally responsible to educate users about the terms of the agreements (Copyright Licensing Agency, 2019). In such cases, librarians are obligated to be well informed, particularly on digital copyright issues, to be able to take on this role (Secker et al., 2019).

## Methods

### Research approach

This study adopted a mixed-methods approach to address the research objectives. Mixed-methods research is defined as the

type of research in which a researcher or team of researchers combine elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration. (Johnson et al., 2007: 123)

This was to help minimise the effects of the inherent biases in both the quantitative and qualitative research approaches, as well as to harness the advantages of the similarities and differences in qualitative and quantitative methods.

According to Creswell (2014), Teddlie and Tashakkori (2010) and Yin (2016), the mixed-methods research approach is a pragmatic alternative to either the qualitative or quantitative approach to research. Molina-Azorin and Fetters (2019) also say

that the strength of the mixed-methods approach is that it is a complete methodological tool kit, and integrates expertise across other methodologies. It also engages stakeholders and involves them in the creation of knowledge, and produces evidence that resonates, as well as disseminating, evaluating and demonstrating the impacts of the research.

To explain the strong quantitative drift in this field, the study used an explanatory sequential mixed-methods research approach in the data collection process. This involved collecting and analysing the quantitative data first, which was followed by the qualitative data collection phase (Creswell, 2014).

### Research design

A survey research design was used in the first phase of this study to collect the quantitative data. Thus, data was collected from individuals using questionnaires. This involved the total population of librarians within each of the selected institutions, since there were generally few librarians within an institution (i.e. between 4 and 24). The advantages in the survey method are its versatility, cost-effectiveness and efficiency. Surveys also make it possible to generalise the results generated using probability sampling from large populations. The study used both open- and closed-ended questions to account for the weaknesses in the survey method, which included a lack of flexibility in the questions asked to accommodate participant biases.

The educational levels of the respondents in this study made it easier to use self-administered questionnaires for the data collection. Self-administered questionnaires have been reported as an excellent tool where the literacy and educational levels of the target population are relatively high, and respondents can complete the questionnaire by themselves without help from any people other than the official research team (Kumekpor, 1999). It took five weeks to complete the questionnaire administration and collection. Out of the total of 47 questionnaires administered, 38 were returned, giving a response rate of 80.9%.

It was assumed that head librarians were better positioned to influence the striking of the right balance in copyright laws among the stakeholders. Thus, head librarians were engaged in one-on-one qualitative interview sessions to collect the qualitative data. Qualitative interviewing has been described as 'an in-depth, semi-structured or loosely structured form of interviewing', and distinguishably different from the use of open-ended questions in an otherwise structured interview schedule such as a survey (Mason, 2002: 62). According to Mason (2002: 83), qualitative interviewing tends to be seen as involving the

construction or reconstruction of knowledge more than the excavation of it. It is also said to be an appropriate and practical way of getting at the 'central ontological components of social reality' (Mason, 2002: 83), and offers an opportunity to clarify ambiguities in the answers obtained during the quantitative phase of the study and, when appropriate, seek clarifications in follow-up questions with the participants.

### Data collection instruments

Both primary data and secondary data were collected for this study. This involved the use of questionnaires and qualitative interviewing sessions. Secondary data was obtained through relevant literature sources such as books, journal articles, newspapers and other documentary evidence at CopyGhana, libraries and various websites. The qualitative interviews were done with head librarians. The interviews, which were held in each head librarian's office, lasted between 45 minutes and 1 hour 30 minutes.

### Data analysis

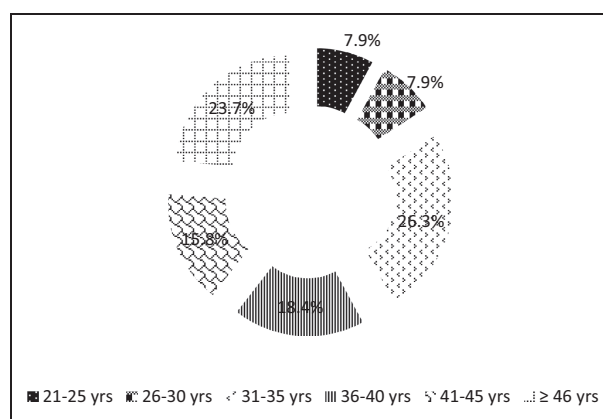
The responses were entered and processed using the statistical package SPSS for Windows, version 23, after the questionnaires were screened for accuracy and completeness, and coded. The quantitative data was analysed using simple frequencies and percentages, with the view to making interpretation of the data easier, and the qualitative data was analysed using the thematic analysis method (Onwuegbuzie et al., 2012). The strength and significance of the relationship between the row and column variables of the cross tabulations were tested using  $\phi$  (for nominal  $\times$  nominal, and nominal  $\times$  ordinal relationships) and Kendall's  $\tau$ -b (for ordinal  $\times$  ordinal relationships) at  $p \leq .05$ .

The thematic content analysis method was used to analyse the qualitative data (Onwuegbuzie et al., 2012). This involved the transcription of the responses from the interview sessions, then coding for emerging themes to give meaning to particular topics. The themes were then assessed for patterns and common attributes to make meaning out of the data.

## Results

### Demographic characteristics of library staff respondents

Figure 1 shows the age distribution of the respondents. The results show that less than 20% of the respondents were aged below 30, with the majority being between 31 and 45 years old. Only 23.7% were aged 46 and above.



**Figure 1.** Age distribution of library staff respondents ( $n = 38$ ).

There was no significant difference in the age distribution of the respondents across institutions ( $\phi = 0.754$ ,  $n = 38$ ,  $p = .118$ ). However, the Methodist University College of Ghana had a higher percentage of respondents who were aged 46 years and above (75%,  $n = 4$ ; see Figure 2).

Females constituted 39.5% of the entire staff respondents ( $n = 38$ ), with the University of Ghana having the highest proportion of female respondents (64.7%) and the University of Cape Coast having the lowest (15.4%;  $\phi = 0.470$ ,  $n = 38$ ,  $p = .039$ ; see Figure 3).

Respondents with Master of Arts (MA) or Master of Philosophy (MPhil) degrees constituted the highest proportion (63.2%), and diploma-holders constituted the lowest (2.6%). Respondents with PhDs constituted only 5.3% of the total population (Figure 4).

Only the Methodist University College of Ghana had equal numbers of staff with degrees from diploma to PhD, while all the respondents from Valley View University had MAs or MPhils. Also, only the University of Cape Coast had respondents with other degrees (Figure 5).

The majority of the respondents (52.6%) had been in their posts for between 6 and 10 years (Figure 6). Only the public institutions had staff who had been in their posts for more than 20 years. No respondent from Valley View University had been in their post for more than 15 years ( $\phi = 0.962$ ,  $p < .001$ ; Figure 7).

Also, the majority of the respondents were either Senior Library Assistants (36.8%) or Assistant Librarians (31.6%). Head Librarians and Deputy Librarians together constituted only 10.5% of the respondents (Figure 8).

However, the distribution of the different positions of staff did not differ significantly between



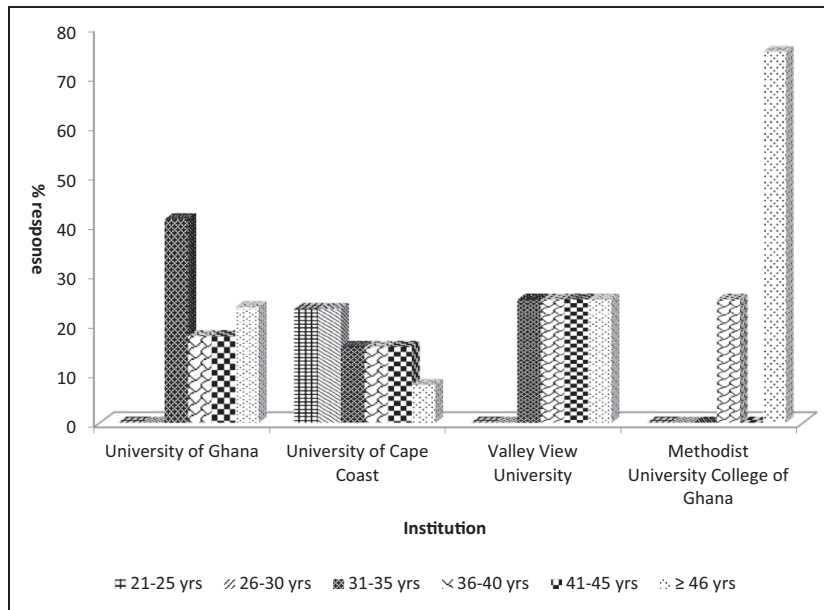


Figure 2. Age distribution of staff respondents according to academic institution (n = 38).

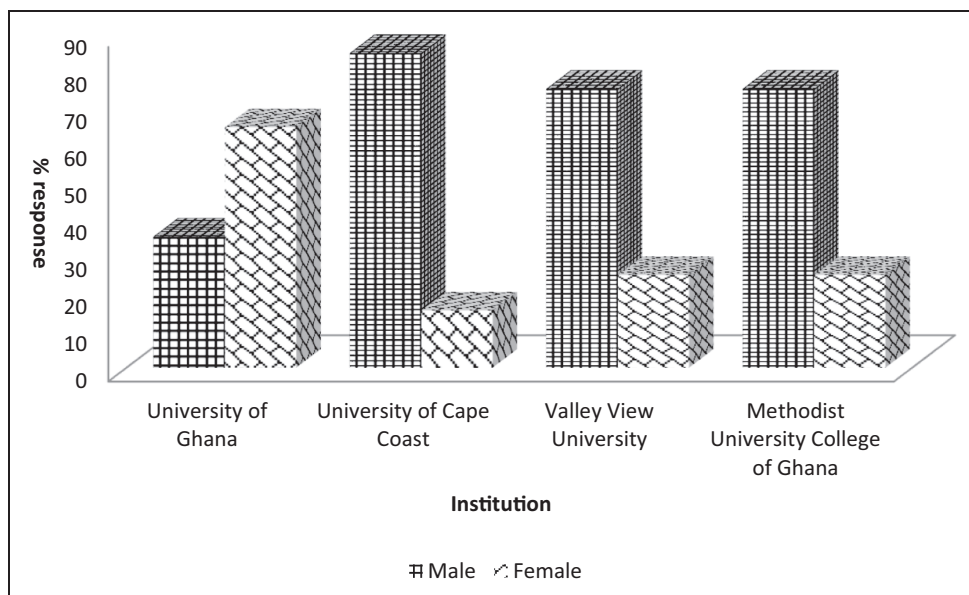


Figure 3. Gender distribution of staff respondents according to academic institution (n = 38).

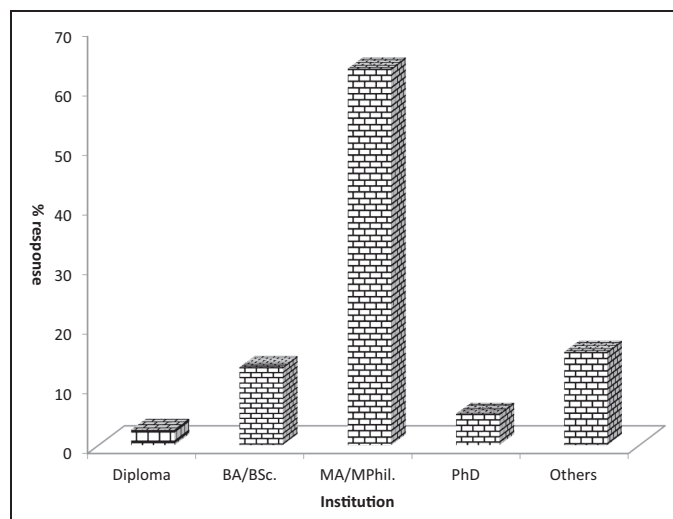
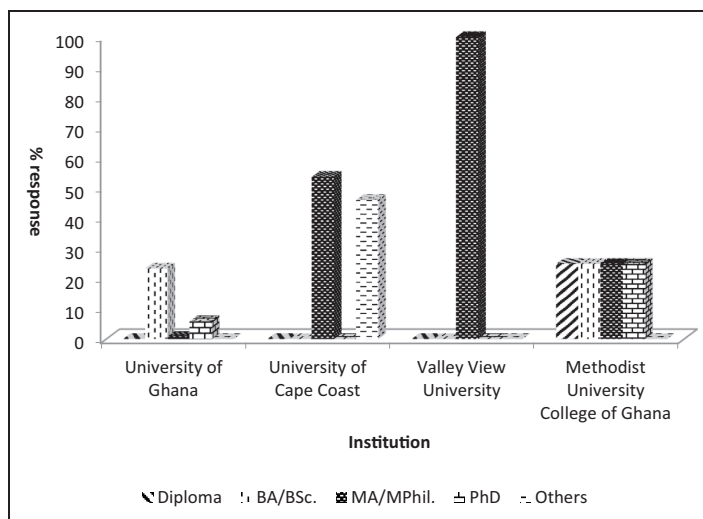
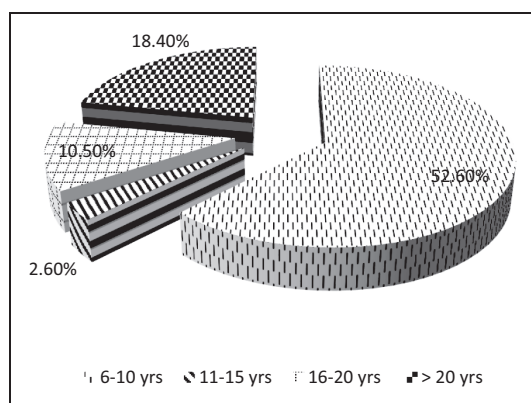


Figure 4. Academic background of staff respondents (n = 38).



**Figure 5.** Academic background of staff respondents according to academic institution ( $n = 38$ ).



**Figure 6.** Distribution of staff respondents by number of years of work experience ( $n = 38$ ).

institutions ( $\phi = 0.721, n = 38, p = .182$ ). Only 7.9% of the respondents were working in the acquisitions section of the library, with the majority (36.8%) working in departmental libraries (Figure 9). The distribution of staff working in the different sections of the library did not differ between institutions ( $\phi = 0.620, n = 38, p = .263$ ).

### Management of electronic resources

There were no significant institutional differences with regard to the electronic resources services being offered. Some staff in all the institutions indicated that their institutions offered e-reserves services, distance learning and online courses. All the respondents also indicated that, in the provision of resources for distance learning courses or e-reserves, they or other

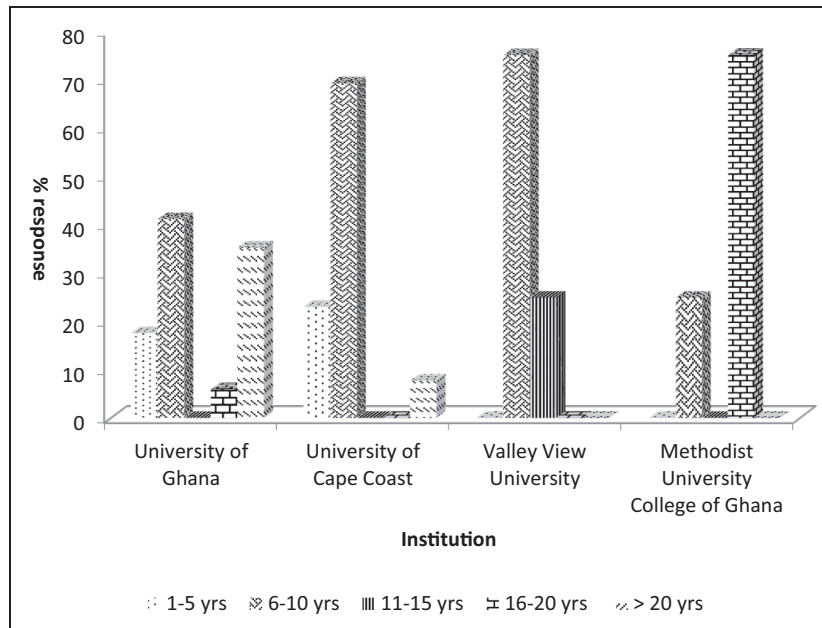
library staff had had faculty ask questions about copyright issues.

### *Opinions of library staff on freedom of library clients to use electronic resources such as e-journals, databases and e-books contracted by the library without any restrictions*

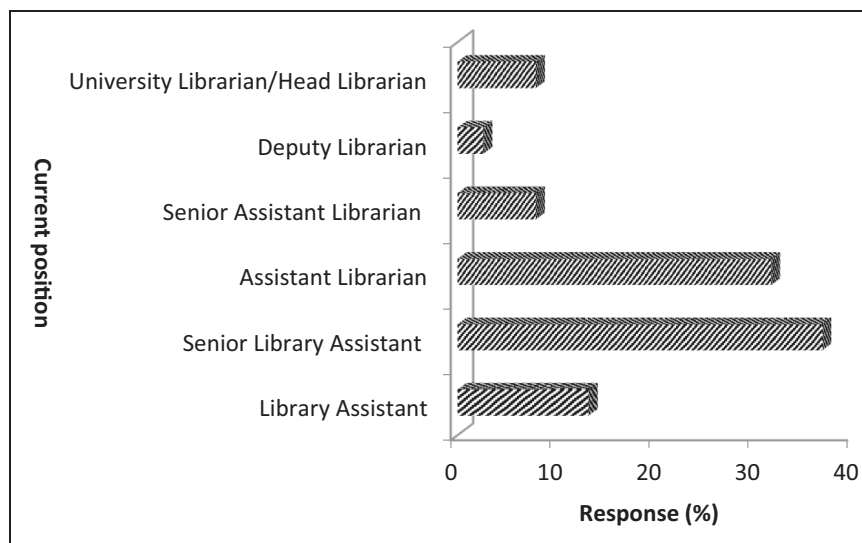
Table 1 shows that Assistant Librarians and Senior Assistant Librarians were the only categories of staff where 100% of them indicated that their clients were not free to use electronic resources such as e-journals, databases and e-books contracted by the library without any restrictions ( $\phi = 0.896, n = 38, p < .001$ ) when the data was disaggregated according to the current staff positions. With the exception of staff with a diploma (0%) and MA/MPhil (33.3%) degrees ( $\phi = 0.549, n = 38, p = .022$ ), Table 1 indicates that the majority of staff agreed that their clients were free to use electronic resources such as e-journals, databases and e-books contracted by the library without any restrictions ( $\phi = 0.896, n = 38, p < .001$ ). Also, only staff in the acquisitions and cataloguing/classifications sections had a 100% response rate indicating that their clients were not free to use electronic resources such as e-journals, databases and e-books contracted by the library without any restrictions ( $\phi = 0.824, n = 38, p < .001$ ).

### *Authority for making decisions about copyright regarding usage of digital resources for online courses, distance education or e-reserves*

The majority (54.5%) of library staff in all categories said that the decisions about copyright regarding the usage of digital resources for e-reserves, distance



**Figure 7.** Distribution of staff respondents in the various academic institutions by number of years of work experience ( $n = 38$ ).



**Figure 8.** Distribution of staff respondents according to current position in the library ( $n = 38$ ).

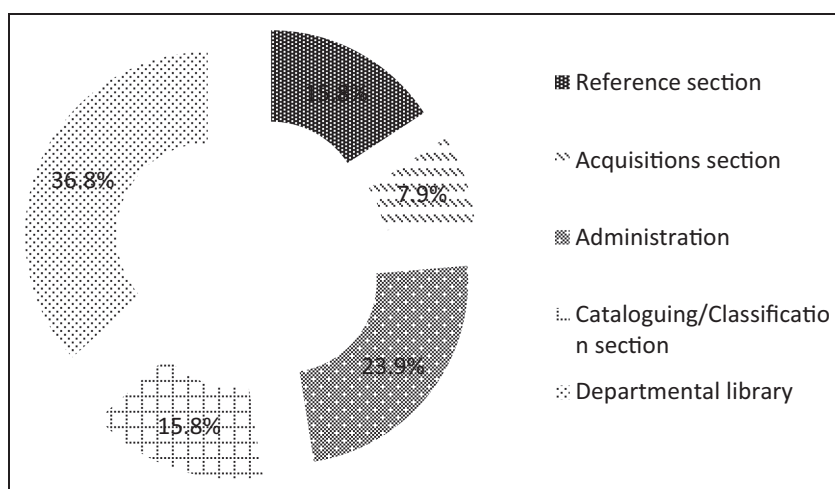
education or online courses were made by the academic department that posted the materials (Table 2).

*Cooperation of tutors or instructors of distance education courses with library staff in making materials available for online courses or distance education programmes*

Generally, the respondents in all categories felt that, in making materials available for online courses or

distance education programmes, the instructors or tutors did not cooperate with librarians. Where there were significant differences in the responses, only 33.3% of head librarians and 50% of PhD degree-holders said that, in making materials available for online courses or distance education programmes, instructors or tutors cooperated with librarians (Table 3).

The following is a comment from one of the head librarians with regard to the neglect of the library in making decisions on the types of materials made



**Figure 9.** Distribution of staff respondents according to the section of the library they worked in ( $n = 38$ ).

**Table I.** Opinions of library staff on freedom of library clients to use electronic resources such as journals, databases and e-books contracted by the library without any restrictions.

| Category of respondents                          | Freedom to use electronic resources (%) |            |
|--------------------------------------------------|-----------------------------------------|------------|
|                                                  | Yes                                     | No         |
| $\phi = 0.896, n = 38, p < .001$                 |                                         |            |
| Library Assistant                                | 3 (60.0)                                | 2 (40.0)   |
| Senior Library Assistant                         | 14 (100.0)                              | 0 (0.0)    |
| Assistant Librarian                              | 0 (0.0)                                 | 12 (100.0) |
| Senior Assistant Librarian                       | 0 (0.0)                                 | 3 (100.0)  |
| Deputy Librarian                                 | 1 (100.0)                               | 0 (0.0)    |
| University Librarian/Head Librarian              | 1 (33.3)                                | 2 (66.7)   |
| $\phi = 0.549, n = 38, p = .022$                 |                                         |            |
| Diploma                                          | 0 (0.0)                                 | 1 (100.0)  |
| Bachelor of Arts (BA)/Bachelor of Science (BSc)  | 4 (80.0)                                | 1 (20.0)   |
| Master of Arts (MA)/Master of Philosophy (MPhil) | 8 (33.3)                                | 16 (66.7)  |
| PhD                                              | 1 (50.0)                                | 1 (50.0)   |
| Other                                            | 6 (100.0)                               | 0 (0.0)    |
| $\phi = 0.824, n = 38, p < .001$                 |                                         |            |
| Reference section                                | 3 (50.0)                                | 3 (50.0)   |
| Acquisitions section                             | 0 (0.0)                                 | 3 (100.0)  |
| Administration                                   | 2 (22.2)                                | 7 (77.8)   |
| Cataloguing/classification section               | 0 (0.0)                                 | 6 (100.0)  |
| Departmental library                             | 14 (100.0)                              | 0 (0.0)    |

available for online courses or distance education programmes:

It is one of the issues I always raise when I happen to be at academic board meetings. Because they bring these courses that they want to mount . . . and sometimes you look at the references, then you ask them where they got the reference from . . . sometimes they are references they [the instructors] have in their own collection and they start with that . . . which is not possible for the students to find . . . It is an issue that we are grappling with, and I do not know whether it is because they do not

know or they are refusing to cooperate . . . I do not know . . . But then, at the end of the day, they want the students to come to the library. And they have not even come to check whether the materials they are referring the students to are available.

#### *Copyright competency of instructors or tutors of distance education courses or those using e-reserves*

There were no institutional differences with regard to the copyright competency of instructors or tutors of

**Table 2.** Copyright decision-making regarding usage of digital resources for online courses, distance education or e-reserves.

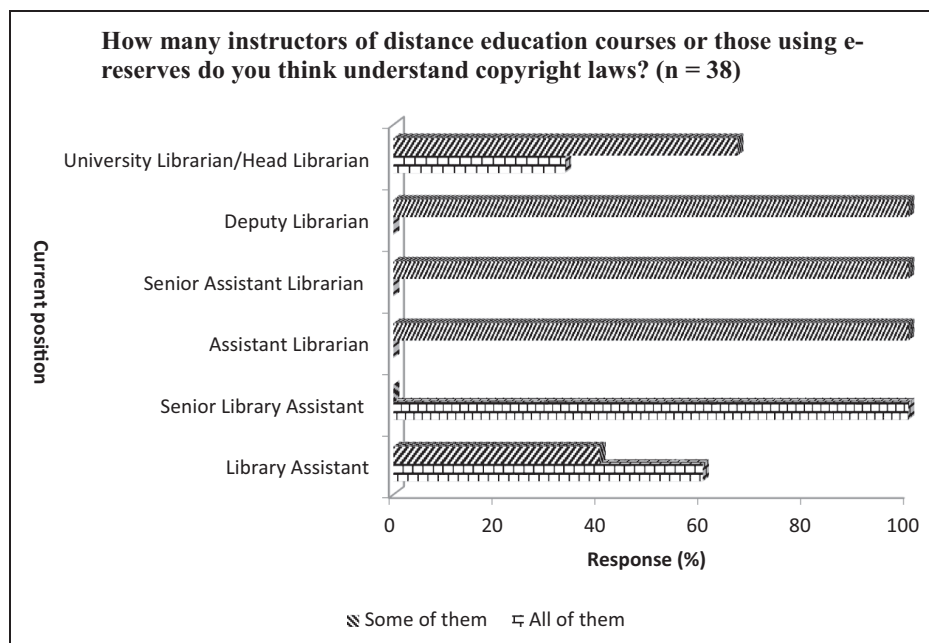
| Category of respondents                          | Sector with authority to make decision (%) |                                           |
|--------------------------------------------------|--------------------------------------------|-------------------------------------------|
|                                                  | Library                                    | Academic department posting the materials |
| $\varphi = 0.937, n = 33, p < .001$              |                                            |                                           |
| Library Assistant                                | 2 (50.0)                                   | 2 (50.0)                                  |
| Senior Library Assistant                         | 13 (100.0)                                 | 0 (0.0)                                   |
| Assistant Librarian                              | 0 (0.0)                                    | 10 (100.0)                                |
| Senior Assistant Librarian                       | 0 (0.0)                                    | 3 (100.0)                                 |
| Deputy Librarian                                 | 0 (0.0)                                    | 1 (100.0)                                 |
| University Librarian/Head Librarian              | 0 (0.0)                                    | 2 (100.0)                                 |
| $\varphi = 0.565, n = 33, p = .032$              |                                            |                                           |
| Diploma                                          | 0 (0.0)                                    | 1 (100.0)                                 |
| Bachelor of Arts (BA)/Bachelor of Science (BSc)  | 4 (80.0)                                   | 1 (20.0)                                  |
| Master of Arts (MA)/Master of Philosophy (MPhil) | 7 (31.8)                                   | 15 (68.2)                                 |
| PhD                                              | 0 (0.0)                                    | 1 (100.0)                                 |
| Other                                            | 4 (100.0)                                  | 0 (0.0)                                   |
| $\varphi = 0.692, n = 33, p = .003$              |                                            |                                           |
| 1–5 years                                        | 2 (40.0)                                   | 3 (60.0)                                  |
| 6–10 years                                       | 13 (76.5)                                  | 4 (23.5)                                  |
| 11–15 years                                      | 0 (0.0)                                    | 1 (100.0)                                 |
| 16–20 years                                      | 0 (0.0)                                    | 3 (100.0)                                 |
| > 20 years                                       | 0 (0.0)                                    | 7 (100.0)                                 |
| $\varphi = 0.924, n = 33, p < .001$              |                                            |                                           |
| Reference section                                | 2 (40.0)                                   | 3 (60.0)                                  |
| Acquisitions section                             | 0 (0.0)                                    | 3 (100.0)                                 |
| Administration                                   | 0 (0.0)                                    | 7 (100.0)                                 |
| Cataloguing/classification section               | 0 (0.0)                                    | 5 (100.0)                                 |
| Departmental library                             | 13 (100.0)                                 | 0 (0.0)                                   |

**Table 3.** Cooperation of instructors of distance education courses with library staff in making materials available for online courses or distance education programmes.

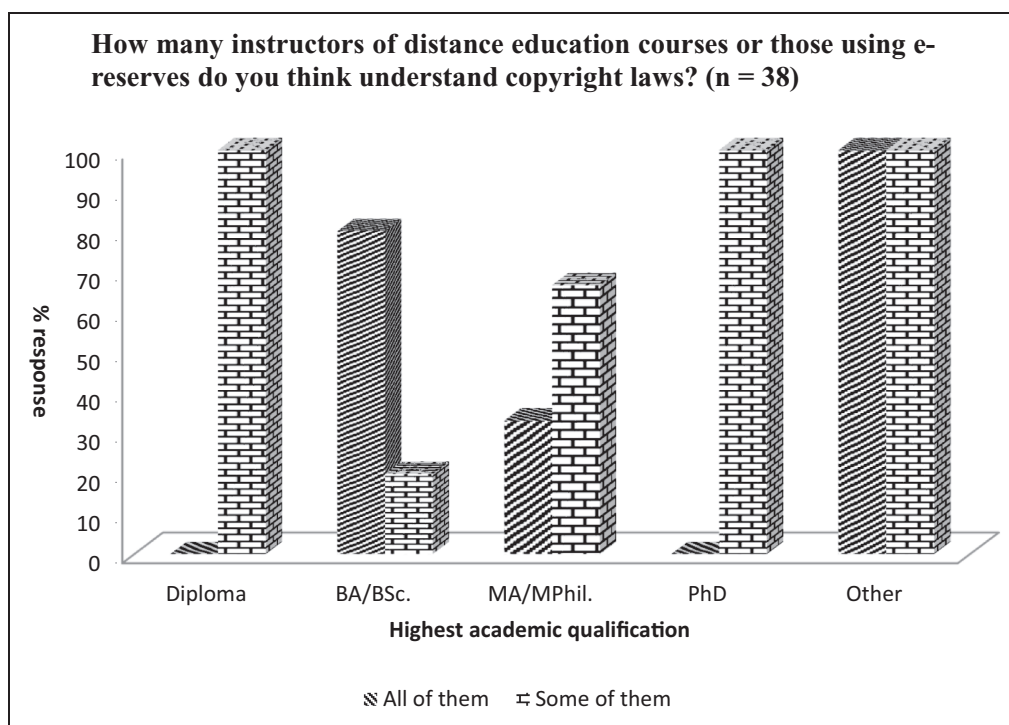
| Category of respondents                          | Cooperation of instructors of distance education courses with library staff (%) |                  |
|--------------------------------------------------|---------------------------------------------------------------------------------|------------------|
|                                                  | Cooperate                                                                       | Do not cooperate |
| $\varphi = 0.562, n = 38, p = .035$              |                                                                                 |                  |
| Library Assistant                                | 0 (0.0)                                                                         | 5 (100.0)        |
| Senior Library Assistant                         | 0 (0.0)                                                                         | 14 (100.0)       |
| Assistant Librarian                              | 0 (0.0)                                                                         | 12 (100.0)       |
| Senior Assistant Librarian                       | 0 (0.0)                                                                         | 3 (100.0)        |
| Deputy Librarian                                 | 0 (0.0)                                                                         | 1 (100.0)        |
| University Librarian/Head Librarian              | 1 (33.3)                                                                        | 2 (66.7)         |
| $\varphi = 0.697, n = 38, p = .001$              |                                                                                 |                  |
| Diploma                                          | 0 (0.0)                                                                         | 1 (100.0)        |
| Bachelor of Arts (BA)/Bachelor of Science (BSc)  | 0 (0.0)                                                                         | 5 (100.0)        |
| Master of Arts (MA)/Master of Philosophy (MPhil) | 0 (0.0)                                                                         | 24 (100.0)       |
| PhD                                              | 1 (50.0)                                                                        | 1 (50.0)         |
| Other                                            | 0 (0.0)                                                                         | 6 (100.0)        |

distance education courses or those using e-reserves ( $\varphi = 0.236, n = 38, p = .547$ ). Paraprofessionals tended to think that all instructors or tutors of distance

education courses or those using e-reserves understood copyright laws, compared to professional librarians, who thought that only 'some of them'



**Figure 10.** Current position of library staff and their opinions on the understanding of copyright laws by instructors or tutors of distance education courses or those using e-reserves.



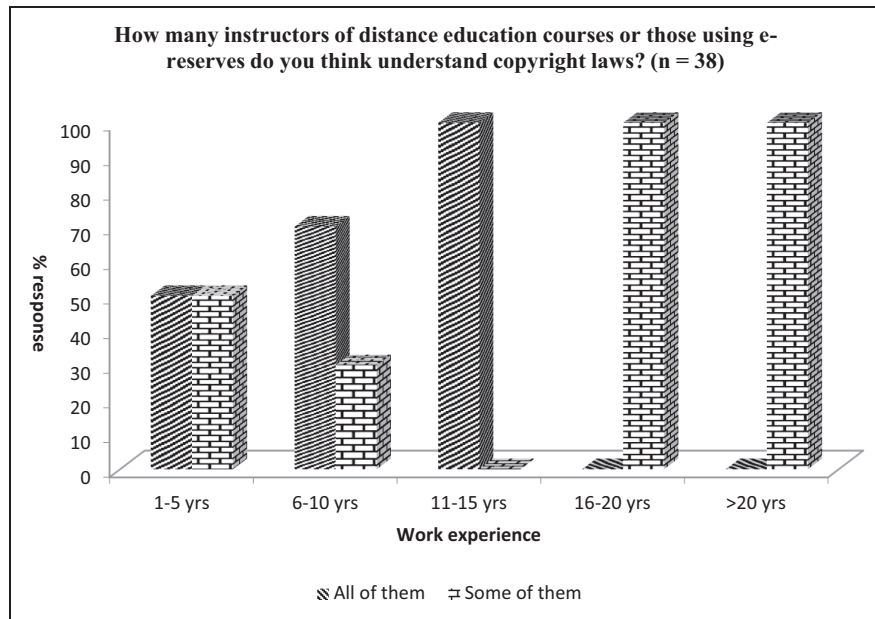
**Figure 11.** Academic background of library staff and their opinions on the understanding of copyright laws by instructors or tutors of distance education courses or those using e-reserves.

understood copyright laws ( $\phi = 0.896$ ,  $n = 38$ ,  $p < .001$ ; Figure 10).

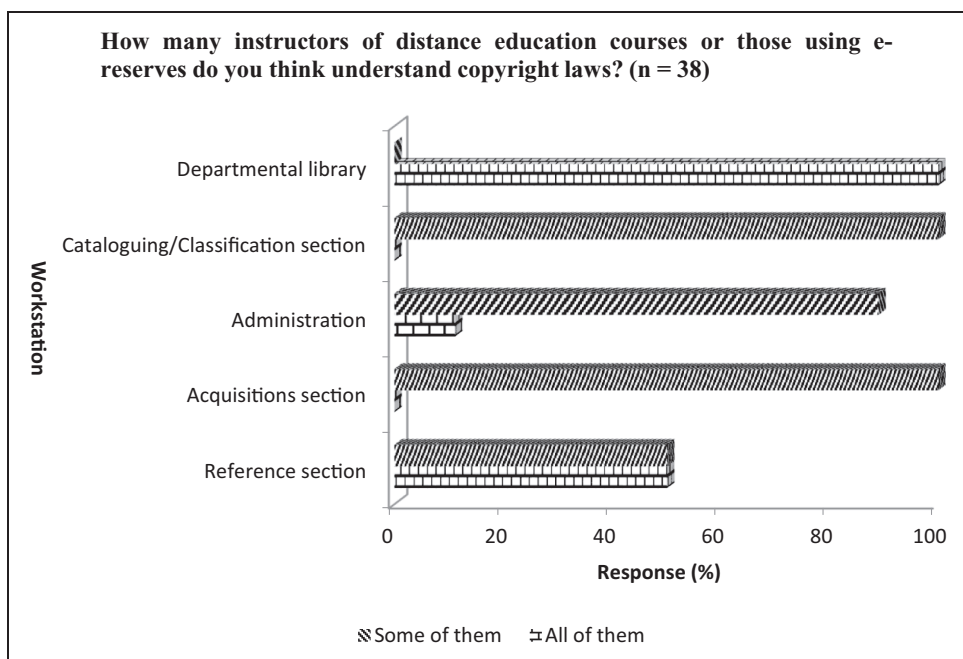
Although the academic background of staff significantly influenced responses to whether instructors or tutors of distance education courses or those using e-reserves understood copyright laws ( $\phi = 0.594$ ,

$n = 38$ ,  $p = .009$ ), this did not follow any particular pattern (Figure 11).

Respondents who had been in service for 16 years and above thought that only some of the instructors or tutors of distance education courses or those using e-reserves understood copyright laws, compared to staff



**Figure 12.** Work experience of library staff and their opinions on the understanding of copyright laws by instructors or tutors of distance education courses or those using e-reserves.



**Figure 13.** Workstation of library staff and their opinions on the understanding of copyright laws by instructors or tutors of distance education courses or those using e-reserves.

in the early stages of their career, who thought that all instructors or tutors of distance education courses or those using e-reserves understood copyright laws ( $\phi = 0.631, n = 38, p = .004$ ; Figure 12).

The library department in which staff were working significantly influenced the staff’s response to whether instructors or tutors of distance education courses or those using e-reserves understood

copyright laws ( $\phi = 0.865, n = 38, p < .001$ ). Those working in departmental libraries or the reference section of the library tended to indicate that all the instructors or tutors of distance education courses or those using e-reserves understood copyright laws, compared to the rest, who thought that only ‘some of them’ understood copyright laws and policies (Figure 13).

**Table 4.** The current position of staff and their opinions on who to hold responsible for breach of copyright laws in academic libraries in Ghana.

| Category of respondents                                                              | Response (%) |                 |
|--------------------------------------------------------------------------------------|--------------|-----------------|
|                                                                                      | Responsible  | Not responsible |
| <b>The educational institution (<math>\phi = 0.896, n = 38, p &lt; .001</math>)</b>  |              |                 |
| Library Assistant                                                                    | 2 (40.0)     | 3 (60.0)        |
| Senior Library Assistant                                                             | 0 (0.0)      | 14 (100.0)      |
| Assistant Librarian                                                                  | 12 (100.0)   | 0 (0.0)         |
| Senior Assistant Librarian                                                           | 3 (100.0)    | 0 (0.0)         |
| Deputy Librarian                                                                     | 0 (0.0)      | 1 (100.0)       |
| University Librarian/Head Librarian                                                  | 1 (33.3)     | 2 (66.7)        |
| <b>The institution's librarians (<math>\phi = 0.896, n = 38, p &lt; .001</math>)</b> |              |                 |
| Library Assistant                                                                    | 2 (40.0)     | 3 (60.0)        |
| Senior Library Assistant                                                             | 0 (0.0)      | 14 (100.0)      |
| Assistant Librarian                                                                  | 12 (100.0)   | 0 (0.0)         |
| Senior Assistant Librarian                                                           | 3 (100.0)    | 0 (0.0)         |
| Deputy Librarian                                                                     | 0 (0.0)      | 1 (100.0)       |
| University Librarian/Head Librarian                                                  | 1 (33.3)     | 2 (66.7)        |

*Involvement of the library in the evaluation of copyright materials during the planning stages of a distance education programme or online courses, or for e-reserves, and the opinions of patrons and library staff on who to hold responsible for infringement of copyright laws*

All the categories of respondents indicated that they believed in the involvement of the library in the evaluation of copyright materials during the planning stages of a distance education programme or online course, or for e-reserves. In the words of a head librarian:

The acquisitions librarian is always on them [the coordinators of online courses]. So now, [the acquisitions librarian] liaises with them so that if there's anything new, it will be picked up fast, because at the end of the day the library will be blamed.

Also, all the categories of respondents assigned some liability to library patrons for breach of copyright laws. Whilst paraprofessionals did not think that the educational institution and the institute's librarians ( $\phi = 0.896, n = 38, p < .001$ ) could be absolved of any blame, the professional librarians thought otherwise (Table 4).

A head librarian summarized the situation thus:

I think it is the institution...or the college [which should be held responsible for breach of copyright], because before you mount any course...you plan these things; they have to go through accreditation so it does not take even one year...So if they give us enough time, and then we know that this year a particular course will be mounted in this college, we get them the needed

materials. Otherwise, we will never get the materials...and they [the library users] will continue breaching the law.

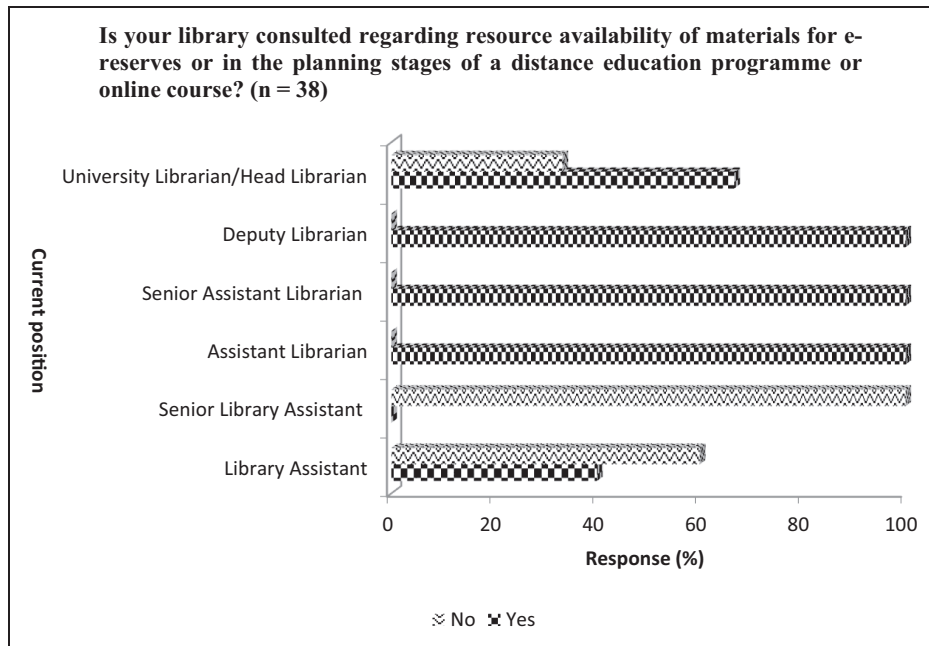
*Role of the library in making materials available during the planning stages of a distance education programme or online course, or for e-reserves*

There were no significant differences in the responses of staff to whether the library was consulted with regard to the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves ( $\phi = 0.264, n = 38, p = .448$ ). Paraprofessionals generally thought that the library was consulted with regard to the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves, compared to the professional librarians who thought that it was not ( $\phi = 0.896, n = 38, p < .001$ ; Figure 14).

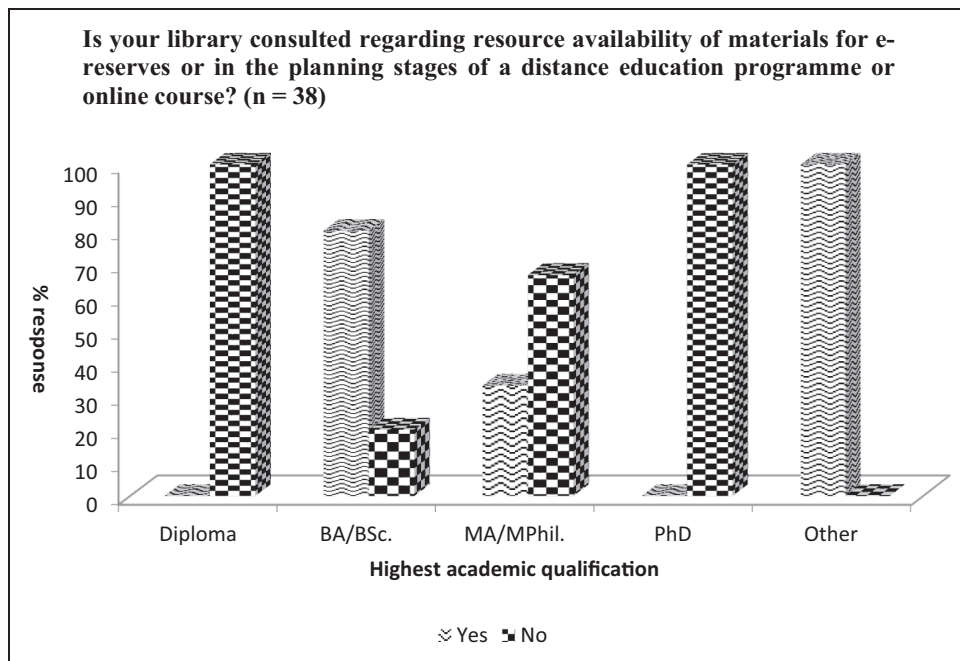
Although academic background significantly influenced responses as to whether the library was consulted with regard to the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves ( $\phi = 0.583, n = 38, p = .012$ ), this did not follow any particular trend (Figure 15).

Respondents in the early stages of their career (less than 16 years of experience) tended to agree that the library was consulted with regard to the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves, in contrast to those with 16 years of service





**Figure 14.** Current position of library staff and their opinions on whether the library was consulted regarding the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves.



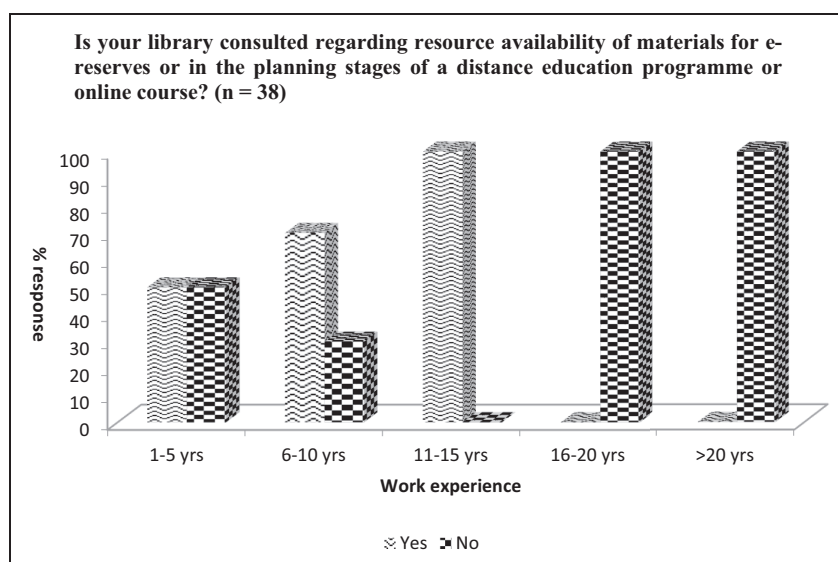
**Figure 15.** Academic background of library staff and their opinions on whether the library was consulted regarding the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves.

or more, who tended to ‘disagree’ ( $\phi = 0.565, n = 38, p = .016$ ; Figure 16).

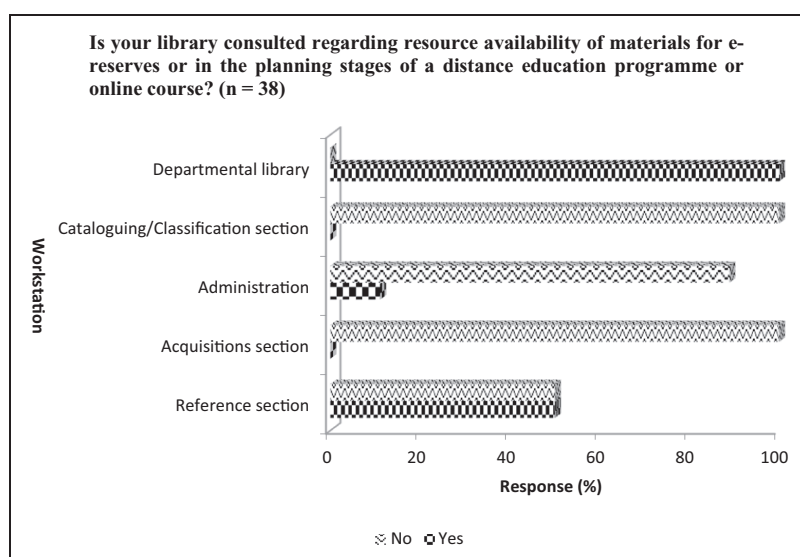
Furthermore, the respondents in departmental libraries and reference sections thought that the library was not consulted with regard to the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves, compared to staff in the other sections of

the library, who thought that it was ( $\phi = 0.865, n = 38, p < .001$ ; Figure 17).

A professional librarian, who indicated that the library was consulted in such matters, commented: ‘The library is involved for the purpose of accreditation, and during this process all materials acquired are governed by the copyright provisions’.



**Figure 16.** Work experience of library staff and their opinions on whether the library was consulted regarding the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves.



**Figure 17.** Workstation of library staff and their opinions on whether the library was consulted regarding the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves.

## Discussion

The findings of this study indicate that all the different institutions studied offered e-resources services, such as e-reserves services, e-journals, distance learning and online courses. Although the increasing use of e-resources in academic libraries today has resulted in a continuous process of improvement in service delivery to the academic community, copyright issues arise with the provision of these services, as all of the respondents indicated that, in the provision of resources for e-reserves services or distance learning courses,

they or their colleagues had had faculty ask questions about copyright issues.

The advances in the use of digital technology in academic libraries have made it easier to share information. The Copyright Clearance Center and Outsell (2019) report a dramatic upward trend in information-sharing among professionals in 2019 compared to 2016. In 2016, one employee shared information 5.5 times per week with 9 people; in 2019, one employee shared information 5.9 times per week with 21 people. The implication of this trend is the increasing possibility of copyright

violation. The Copyright Clearance Center (2017) reports that a senior executive who routinely forwarded copies of digital materials to two other executives ended up causing their employer US\$500,000 in copyright lawsuits.

As librarians move to satisfy the information needs of their clients, one primary challenge that arises is the ever-changing face of copyright law – the imprecise, inconsistent, gyrating judicial interpretation of the existing copyright laws. For instance, in *Google LLC v. Oracle America Inc.*, No. 18–956 (Supreme Court of the United States, 2021), Oracle America Inc. sued Google for US\$9 billion for breaching copyright on the use of a computer software code – the Java application programming interface – which Google had copied to develop its Android platform. Oracle America Inc. had earlier acquired the copyright to the code from Sun Microsystems in 2010, but Google appealed to the doctrine of fair use in using the code in the manner it did.

Although a jury had earlier ruled in favour of Google, this verdict was reversed by the Federal Circuit under a *de novo* standard of review (Snow, 2020). However, the Supreme Court recently reversed the court of appeals' decision. Justice Stephen Breyer, in writing the majority opinion in the case, agreed that Google's use of the code was protected under fair use, noting that Google took 'only what was needed to allow users to put their accrued talents to work in a new and transformative program' (Supreme Court of the United States, 2021: 4).

Digitisation and the application of new communications technologies have also largely eroded the importance and effect of territorial boundaries, thus enabling copyright owners to assert increasing rights over such goods that could otherwise be classified as a public good, to the detriment of information consumers (Chapdelaine, 2018; Finck and Moscon, 2019; Neal, 2013; Puckett, 2010). Weatherley (2014), however, reports the apathy of young people in the European Union towards copyright issues, and their tolerance of counterfeiting and illegal downloading.

Hart and Slater (2019) also state that compliance with the Copyright Act goes beyond merely the replication of copyrighted material; an often-overlooked issue is the performance of copyrighted material, which makes business owners, and for that matter academic libraries, liable for any copyright violations on their premises. The Copyright Act of 1976, 17 US Code § 101, defines a 'performance' as any

means to recite, render, play, dance, or act, either directly or by means of any device or process, in the case of a motion picture or other audiovisual work, to show its images in any sequence or to make the sounds accompanying it audible (United States Copyright Office, 2011: 4)

Such an all-encompassing definition can easily make one be in copyright violation when using information. Thus, academic librarians have a greater responsibility to safeguard their institutions against being sued for copyright violations as a result of improper or inadequate supervision of copyright information use in the library.

Thus, the belief of the professional librarians that the library was not consulted with regard to the availability of materials during the planning stages of a distance education programme or online course, or for e-reserves, coupled with the fact that the majority (54.5%) of staff said that the academic department posting the materials made decisions on copyright regarding the use of digital resources for distance education or online courses, or for e-reserves, does not augur well for the leadership role of the library in copyright matters on campus.

This is contrary to the situation in Canada, where Horava (2010) reports that the majority of librarians felt that they led in copyright issues in their institutions. An emerging trend in modern librarianship is to make libraries legally responsible for the management of licensing agreements, and educate users about the terms of these licensing agreements (Copyright Licensing Agency, 2019; Secker et al., 2019). Librarians are therefore obligated to be well informed, particularly on digital copyright issues, to be able to take on this role, and to be actively involved in the copyright debate on campus.

Ferullo (2004) comments that librarians stand to gain by actively contributing to the discussions of the copyright debate, and in the drafting and implementation stages of university copyright policies. Ferullo (2004) also advocates for the active involvement of librarians during the drafting and negotiation of licensing agreements that impact the operations of their libraries at the very stage when copyright can be defined and the limits of the rights can be negotiated.

Although the courts have applied the fair use doctrine in such a way as to encourage users to apply their skills in new and transformative ways that benefit, and not hinder, society's progress in innovation and creativity (Supreme Court of the United States, 2021), academic librarians would do well to heed the advice of the Copyright Clearance Center (2011). In

the confusion surrounding the application of the fair use doctrine with digital copyright in academic libraries, the Copyright Clearance Center offers the following advice on knowing how to navigate the labyrinth of copyright compliance in using e-resources:

It is important for librarians, instructors, and students to remember that, from a copyright law perspective, there is no distinction between paper reserves and e-reserves. The same fair use guidelines apply to e-reserves; if the particular use of content doesn't meet the fair use criteria in hard copy form, it is unlikely to be considered fair use in digitized form (Copyright Clearance Center, 2011: 1)

Norris et al. (2019) expect all librarians to have a general understanding of the concepts and challenges associated with copyright law, as modern librarianship is intrinsically tied to a good appreciation and application of copyright.

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# Knowledge mapping and visualization of personal information management literature, 1988–2020

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## Abstract

This study was designed to examine the structure of the literature on personal information management during the period 1988–2020 through the mapping of author and indexer keywords. The article also examines the volume, quantity and growth of personal information management literature during the period. The Scopus database was searched with the phrase ‘personal information management’ within the title, abstract and keyword fields on 18 February 2021. The annual growth in publications is presented as the number of retrieved documents each year, and the annual growth rate of publications on the subject is analysed. A total of 887 documents have been written on the subject since 1988. The major focus in addressing the problem of personal information management appears to be on technology applications, but research from 2015 onwards starts to address individual factors as they relate to personal information management.

## Keywords

Personal information management, PIM, information technology, visualization, information literacy

## Introduction

Since Lansdale (1988) coined the term ‘personal information management’ (PIM) in the late 1980s, researchers of various disciplinary bents have addressed the subject. PIM, like many other human behaviours that periodically burst into the scholarly literature, was, in practice, in existence long before Lansdale. Humans have always sought information in one form or another, and they consume, store or curate (Jones, 2007a; Whittaker, 2011) that information for further use. The need for PIM arises for several reasons. One is the limitation of human memory (Fuller et al., 2008). But the information explosion (Allen and Wilson, 2003; Toffler, 1970) – an event that has been exacerbated by expansion and growth in human knowledge, the human population, human activities and global economies – complicates the consequences of the limitations of human memory (Gimelstein, 2018). The role of information and communications technologies (ICTs) in intensifying the information overload is also very significant; ICTs

have facilitated the easy production and dissemination of knowledge. The emergence of the Internet and the World Wide Web has also played a huge role in escalating information creation, processing, storage and sharing. The emergence of a myriad of information technology derivatives, such as social media resources and microtechnologies for alerting and monitoring the use of information, has also played a significant role in accentuating the challenges of PIM.

Altogether, information production has always simply been at its peak. Societal problems, human knowledge and technologies to address them are also always growing together. There is simply too much to read, and there is access to more vast information outlay today than ever; there is also simply too much to write as

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human challenges are increasing in width and breadth (Gimelstein, 2018). Human beings simply have access to too much information, and keeping them for future use poses tremendous challenges, but finding the kept information when needed is a much bigger challenge. According to Jones and Teevan (2007), interest in PIM has been on the increase, not only as a hot tech topic but as a serious area of inquiry that focuses work from a diverse set of scientific and engineering disciplines that include cognitive psychology, human–computer interaction, database management, information retrieval, and library and information science.

Furthermore, PIM confronts the challenges of classification, recognition and recollection (Elsweiler et al., 2007). Cognitive difficulty in classification refers to the difficulty of deciding how to classify something, which can be an important barrier to filing information (Malone, 1983), such that sometimes individuals prefer to pile their information together rather than organize it into files (Donkor, 2019; Elsweiler et al., 2007). This difficulty often leads to the use of meaningless and idiosyncratic names and tags that are most often mainly understood by the owner or creator of the information (Bergman, 2013). Also, poor recollection of the contents or characteristics of stored files and folders develops over time as people’s personal information collection increases in scope and complexity, thereby creating problems for information retrieval (Fuller et al., 2008).

In order to understand the subject domain of PIM, some key definitions of PIM are provided. Lansdale (1988: 57) defines PIM as ‘how people manage their personal information, particularly using computer-based tools, and how they can learn to do this better, that is, how they can extend their personal knowledge concerning personal information management’. Barreau and Nardi describe PIM as

a person’s methods and rules for acquiring the information, which becomes part of the system, the mechanisms for organizing and storing the information, the rules and procedures for maintaining the system, the mechanisms for retrieval, and the procedures for producing the various outputs required. (Barreau and Nardi, 1995: 41)

For their part, Boardman and Sasse (2004: 583) refer to PIM as ‘an umbrella term used to describe the collection, storage, organization and retrieval of digital objects’. Bergman et al.’s (2004: 1598) Special Interest Group on PIM introduced PIM as follows: ‘Personal Information Management (PIM) is the management of information (e.g. files, emails, and bookmarks) by an individual in support of his/her roles and

tasks’. And, according to Jones (2007a: 12), PIM is ‘the practice and the study of the activities a person performs in order to acquire or create, store, organize, maintain, retrieve, use and distribute the information needed to complete tasks (work-related or not) and fulfill various roles and responsibilities’.

One of the key issues with these definitions, including the recent work of Bergman and Whittaker (2016), is the anticipated role of ICT. According to Jones and Teevan (2007), digital tools are versatile, plentiful, relatively cheap and easy to use, and these attributes explain the reliance on them. Long before Lansdale’s (1988) research, Bush (1945) observed that the pace of development of information technologies towards managing information was slow. Bush’s observation is justifiable because PIM is a behaviour that obtains at individual levels, thus presenting difficulties in sufficiently developing technologies that would meet the needs of all information users. Another key issue is that PIM involves everybody. It is multidisciplinary in nature, resulting in a diversity of interests, applications and research from different fields. PIM therefore intersects all disciplines and human activities, is a subject that bridges diverse human-focused disciplines, and has the potential of grounding human knowledge in a general framework. Although personal information includes information that identifies individuals or information experienced by people (Bruce, 2005), the view of PIM from the perspective of information discovered, retained and ordered by people for their own future use is dominant (Lansdale 1988).

The structure of a discipline or concept includes its theoretical definition, attributes, boundaries, preconditions and outcomes (Fridahl, 2010). Examining the structure of a discipline will benefit from, among other things, understanding authors’ and indexers’ behaviours – for example, the keywords they choose to represent the content they create. The potential success of PIM research in achieving its expected goals will depend on whether the content and subject scope of the term ‘personal information management’ is properly understood regarding whether it refers to the same or a diverse body of ideas. Understanding the concepts in a body of knowledge such as published research in an area is one way to examine the evolution, growth and development of a discipline or subject matter. New concepts and ideas are often scions of older concepts and ideas, in the same manner that researchers build on the previous work of other researchers. This association has prompted researchers to use publication data such as keywords to unveil research trends and opportunities (Choi et al., 2011).

Theoretically, a keyword is a word or phrase that succinctly describes the contents of a particular document. It is the shortest generalized summary of a document and serves as an important index for research papers. Author- and indexer-created keywords represent the opinions of researchers regarding how best to represent the content of their research using the shortest summary. They can also help researchers spot and locate a new area of knowledge. In fact, there is a consensus that keywords could be accepted as an indication of researchers' opinions regarding the content and subject matter of a new or even old study area. Keywords serve as a tool for retrieving literature, providing a guide to the subject the researcher considers to be in focus in a study (Onyancha, 2020). Some keywords may be popular on a subject and then serve as a signpost to a connection or relationship, or the importance of the concepts they represent. Relationships can be drawn among keywords as a keyword network, thus eliciting novel insights into a subject and highlighting implications for the evolution of the subject. Keyword-analysis-based research is used to decide the direction of connectedness, relationships and evolution of an emerging area based on the meaning of the keywords. Typically, this involves analysing frequency of use and the network characteristics, and showing the physical linkages and connections.

Evaluating the growth, development and evolution of PIM will definitely lead to a better understanding of the territories touched on by, and boundaries of, the concept (Bruce, 2016). Blessinger and Frasier (2007) have demonstrated that the evidence base of the role and significance of keywords in scientific literature is well developed in library and information science. For PIM, Bergman (2013) has observed that research in the area has moved from an infant stage of exploration to more rigorous quantitative stages, and that there is therefore a need to identify and map variables which characterize and account for the variety of PIM research and behaviour. The present article explores the development of PIM literature from the perspective of clusters, links, link strength and frequency of author- and indexer-selected keywords, using information-mapping and visualization technology. The study synthesizes links among the keywords, and constructs and visualizes analytics of the structural dynamics, trends and patterns to understand the formation and evolution of PIM hot topics and the trend of the subject's growth. The study establishes how the keywords used by authors and indexers represent their knowledge and evaluation of PIM, and reflect a body of intellectually corrigible subject matter on the topic.

The point of emphasis, however, is not the superiority or necessity of disciplinarity, and the need therefore for PIM to become a granular area of knowledge that is disconnected from other disciplines. Rather, the point is to establish the structure of PIM in order to understand what its content is, what is borrowed and what exact social problems PIM solves. Evidently, PIM literature that has passed through the process of scrutiny and oversight by experts in the same field (Kelly et al., 2014) will represent a definitive source of information to address conceptual issues.

### *Purpose of the study*

This study was designed to examine the structure of the literature on PIM during the period 1988–2020. Specifically, the study

1. Examined the volume and growth of PIM literature from 1988 to 2020;
2. Analysed the subject areas in which PIM was researched so as to understand the subject content and scope of PIM across disciplines; and
3. Mapped the keywords used by authors and indexers to represent the literature from 1988 to 2020.

Based on the analysis of these objectives, what does the cluster of the keywords of PIM literature tell us about the subject? Are scholars approaching a convergence in respect of the scope and content of PIM? Does the community of scholars engaging in PIM research coalesce around any central intellectual and content agenda? Are PIM researchers, for instance, dealing with locally modified diversities of an existing knowledge area or a new area altogether? What further developments would be required to refine the subject that scholars in the area represent?

### **Theoretical oversight**

Periodically, new disciplines and knowledge areas are born, but how do we determine the scope of the subject and content of these new areas of knowledge (Cohen and Lloyd, 2014)? Bibliometricians and sociology-of-science scholars alike have employed diverse models and methodologies to address this question. One of these methodologies is the visualization of the thematic content and scope of publications in an area and their relationship to an existing or parent knowledge-domain space. Osinski et al. (2017) have shown that science maps can be used for the comprehensive study of different levels of scientific research. New disciplines, over the course



of time, grow and may split into dissimilar components, or merely become part of a larger existing subject. Each of the new components also grows and either connects or merges with existing components. These components might become emerging fields, and then begin to attract the interest of researchers, who spontaneously form a fluid group of homogenous thinkers, opinionists and researchers.

Nettle and Frankenhuis (2019) have described the fission of existing disciplines as ‘demes’ – a term that is used in population biology to describe partially genetically isolated subpopulations that can form the basis for local adaptation. This biological analogy illustrates very clearly what occurs in the reproduction of disciplines. Theories and insights begin to emerge, giving rise to a diversity of assumptions and concepts around the phenomenon that the demes deal with. To illustrate their model, Nettle and Frankenhuis (2019) deploy a combination of bibliometric techniques, including visualization, to understand the evolution of life-history theory in an interdisciplinary research area.

Cohen and Lloyd (2014) have also elucidated how the theory of evolution could be used to understand the development of disciplines. Although they observe that there are clear differences between the evolution of disciplines and Darwin’s theory of evolution, they suggest that Darwin’s theory could contribute greatly to the understanding of disciplines and their development. According to Onyancha (2020), there are different approaches, models and methods that have been used to apply the theory of evolution to the study of the scientific evolution of disciplines, fields or subject domains. These include studying the growth of scientific fields, also known as ‘research fronts’, and investigations that relate to long-term trend analyses of science and techniques of mapping or visualization of science structures.

### *Related studies*

No studies were identified that adopted bibliometric approaches to examine the content and structure of PIM, despite 887 documents on the subject from 1988 to 2020. Using keywords, Park and Kim (2011) found information literacy to be highly associated with user training, which posted 310 records in Library and Information Science Abstracts (LISA). They found that information-literacy-specific terms included ‘computer-assisted instruction’, ‘lifelong learning’, ‘information-seeking behaviour’, ‘critical thinking’ and ‘online information retrieval’. Onyancha (2020) examined the evolution of information literacy over 43 years (from 1975 to 2018) using

knowledge visualization and the mapping of information literacy literature as indexed in the Scopus database. The study reveals that information literacy has evolved from being a library- and/or librarianship-oriented concept to a multidisciplinary field, and is no longer restricted to the social sciences, but has spread across 27 disciplines in the subject classification of Scopus.

Le Grand and Soto’s (2000) research describes the visualization tool they developed and shows how the tool could be used to enhance understanding of topic maps. González-Valiente et al. (2019) mapped the evolution of the structure of information management over 36 years (1980–2015) using author co-citation analysis of a data set they extracted from the Web of Science Core Collection. They found that PIM was one of the key topics in the clusters of the keywords that emerged.

Bibliometrics is presently generally viewed as a combination of classification and visualization methods of analysis of aggregated data to describe and summarize relevant literature (Gakvagno, 2017). Bibliometricians have used visualization, map-making and cluster analysis to address questions about the structure of science and of individual disciplines, as well as interdisciplinary research areas (Osinski et al., 2017; Yeung et al., 2017; Youngblood and Lahti, 2018). Visualization involves using visuals to present large amounts of data according to certain parameters or categories, such as the collection of data into charts, graphs, scatter plots or other standard types of visualization (Meloncon and Wartner, 2017). The application of visualization techniques to bibliometric maps facilitates new depths of understanding of a network’s structure and uncovers relations between nodes that would be otherwise difficult to observe (Willett et al., 2015; Xie et al., 2015). In a recent article, Vílchez-Román et al. (2021) show how using bibliometrics and information visualization can provide a ‘picture at a glance’, from which decision-makers can structure processes and organize outputs/outcomes. With the increase in computing power, many software tools for science-mapping analysis, such as VOSviewer, have become available (Cobo et al., 2011).

### **Methodology**

This study adopted a bibliometric research design; bibliometrics provides us with the mathematical and statistical applications and methods to understand the quality and quantity, evolution, growth and development, and visualization of scientific literature (Sweileh, 2017). The study covered the period 1988–2020. This start date was selected because there is a

**Table 1.** Summary of data on PIM in Scopus, 1988–2020.

| Period    | Number of documents | Number of keywords | Keyword analysis threshold | Number of threshold keywords |
|-----------|---------------------|--------------------|----------------------------|------------------------------|
| 1988–1995 | 15                  | 114                | 1                          | 114                          |
| 1996–2000 | 36                  | 248                | 2                          | 47                           |
| 2001–2005 | 87                  | 582                | 3                          | 57                           |
| 2006–2010 | 311                 | 1836               | 5                          | 97                           |
| 2011–2015 | 279                 | 1619               | 3                          | 156                          |
| 2016–2020 | 159                 | 1281               | 3                          | 96                           |
| All       | 887                 | 5680               | –                          | –                            |

consensus that the term ‘personal information management’ originated in 1988, due to the work of Lansdale (1988), despite the concept having been identified in the literature long before Lansdale (Donkor, 2019). For ease of analysis, Onyancha’s (2020) approach was followed, and the whole period was divided into six arbitrary groups (see Table 1 below).

The data was sourced from the Scopus database. According to Schotten et al. (2017), Scopus is the world’s largest abstract and citation database of scientific literature. Among its other features, Scopus indexes the highest number of journals, conferences and other sources in all fields, including the social sciences, in comparison to Web of Science. Its focus is therefore wide and diverse, and this characteristic also extends the geographical distribution limitation of Web of Science, which is notorious for excluding much scientific evidence from the periphery. The database indexes the greatest number of journals, with diverse disciplinary foci, including a large number in the social sciences, within which PIM is often researched (Majid and Abazova, 2007). Scopus was searched with the phrase ‘personal information management’ in the title, abstract and keyword fields on 18 February 2021, and the scope of the search was limited to the period January 1988 to December 2020.

The annual growth in publications was presented as the number of retrieved documents in each year (see Figure 1 below), as an indicator of the amount of attention focused on the area. The inbuilt analytical facility in Scopus guided this analysis. The inbuilt analytical facility of Scopus was also used to analyse the subject areas in which PIM research has been carried out. Further, using a Microsoft Excel spreadsheet, the annual growth rate (AGR) was measured as the percentage change in the number of publications over a period of one year using the following equation:

$$AGR = \frac{\text{end value} - \text{start value}}{\text{start value}} \times 100$$

The ‘start value’ is the number of publications in a year and the ‘end value’ means the number of publications in the subsequent year.

VOSviewer, a ‘software tool for creating maps based on network data and for visualizing and exploring these maps’ (Van Eck and Waltman, 2019: 3), was deployed to guide the mapping in this study. This software permits three types of data – namely, network data, bibliographic data and text data. The analysis was based on bibliographic data. The software permits analysis of bibliographic data and organizes this data in five ways: by co-authorship, co-occurrence of terms, citation analysis, bibliographic coupling and co-citation analysis. The units of analysis can be authors, organizations, countries, keywords or journals.

Co-occurrence was selected as the type of analysis and fractional counting as the counting method. Co-occurrence refers to the occurrence of keywords together in a set of documents. The fractional counting method equalizes the weight of each of the papers in the study (Perianes-Rodriguez et al., 2016). The unit of analysis was ‘All Keywords’. ‘All Keywords’ means that author-selected and indexer-selected keywords were combined in the mapping. Author keywords and indexer keywords together added to the reliability of the information in the maps and tables.

The visualization of the maps was normalized through the selection of the fractionalization method. Five papers in each period were selected in an effort to gain a better understanding of the content of the literature during the period. The papers were downloaded in a cluster, and as much information as could be discerned was cursorily gleaned about PIM based on the content of the papers. In presenting the results of the visualization, only the labels, cluster, total link strength and number of occurrences of a keyword were emphasized. ‘Labels’ refers to the keywords; a ‘cluster’ is a set of unique items included in a

map; ‘total link strength’ describes the number of publications in which two or more terms occur together; and ‘occurrence’ refers to the number of documents in which a keyword occurs (Van Eck and Waltman, 2019).

VOSviewer ranks items in alphabetical order of labels (keywords), whereas the most significant keywords to the researcher might not correspond with the alphabetical ranking of the labels. It was therefore decided to rank the labels in the tables according to their occurrences or frequency of occurrences, otherwise known as popularity. For the purposes of economy, the contents of the tables were restricted to only 30 items/labels.

### *Limitations of the study*

A major limitation of this study relates to the limitations associated with keyword-guided searches. Keyword searches are literal – for instance, PIM could be retrieved from a document even if the term is used in another context not related to the essence of the study. Also, keywords cannot be considered a definitive description of the content of documents – besides being idiosyncratic, keywords represent what the author (and, in this case, the indexer also) considers relevant in understanding the content. Keywords are definitely biased according to an individual assessment of content, and their use in this study excludes their synonyms, hyponyms and related terms, thus excluding works that do not include ‘personal information management’ in their title, abstract or keyword fields. Studies such as ‘Undergraduates’ personal academic information management’ (Mizrahi and Bates, 2013) are, for instance, evidence of studies on PIM, but they would have been omitted in this study. Related to the foregoing, PIM researchers trace PIM research to the work of Bush (1945), and even beyond. But those studies used other terms to describe their concerns, and such research would have been excluded in this analysis.

Also, keyword choice for content could be considered idiosyncratic – authors have their own reasons for using one keyword instead of another. In addition to authors choosing keywords based on their thinking and interpretation concerning the content of the texts they create, keywords are conceptual and a subject that has a disciplinary location. As a result, an author might not have the skills to choose the most appropriate keywords for their content. For example, some of the keywords encountered in this study, such as ‘adult’, ‘male’, ‘female’ and ‘camera’, raise questions regarding whether the author understood the meaning and role of keywords in their research. Another limitation

relates to the characteristics of the software tool used for the data analysis. There is a threshold characteristic of the software, which aptly relates to the frequencies of the links and total link strength. For instance, a threshold of one keyword would lead to the retrieval of a large number of keywords, but an increase in the threshold of keyword size would reduce the size of the links and link strength. The implication of this limitation is that when data is arranged according to periods (as in this study), the researcher cannot be definitive about comparing outputs except by using the same thresholds in the mapping, which may yield data that will be difficult to analyse in some periods.

## **Results and discussion**

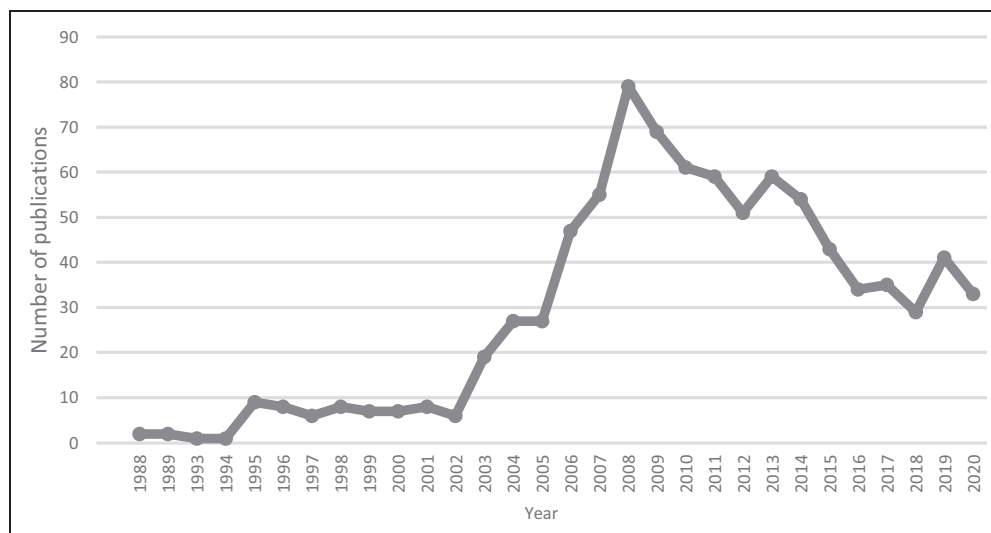
### *Volume of literature on PIM, 1988–2020*

Figure 1 shows that there was no attention paid to Lansdale’s (1988) PIM until 1995, when nine papers were written on the subject. Until 2002, the growth in the number of papers on the subject was slow, ranging from one to eight papers annually. Beginning in 2003, research on PIM started increasing and it peaked in 2008, when the highest amount of attention paid to the subject was recorded. The period 1988–2002 was the slow starting period, with almost no publications until 1995 and then about 10 papers per year thereafter. The period 2003–2008 was when PIM was on trend, with publication numbers increasing rapidly up to 80 per year. The final period, 2009–2020, was the established period when PIM was no longer on trend, so the number of publications decreased, although the average publication rate was about 50 per year or about five times more than in the slow starting period, suggesting a slow-growing but relatively established research field. Despite the apparent stabilization of the research area, attention to PIM research can be considered low – there was only a total of 887 papers in the entire 33-year period of 1988–2020.

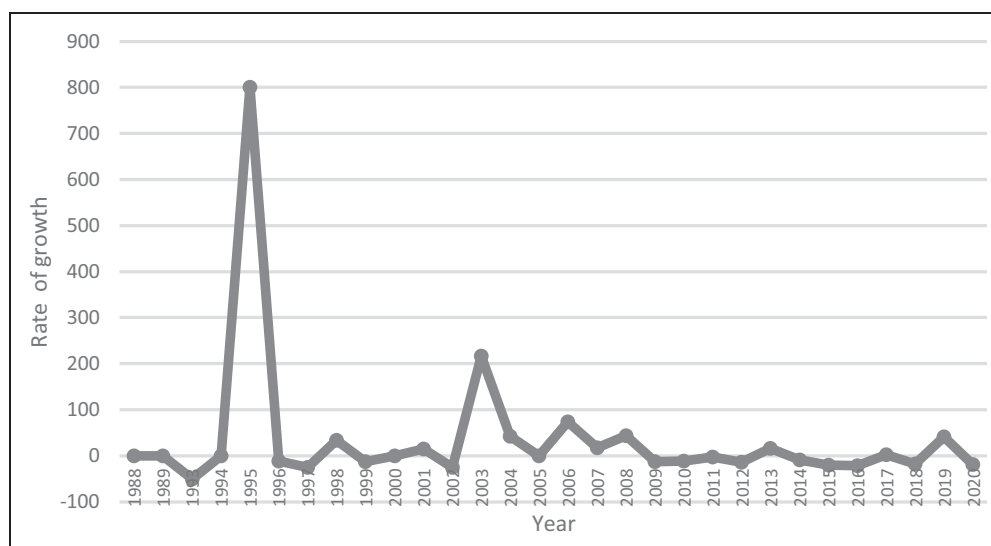
### *Growth of literature on PIM, 1988–2020*

There were two documents in each of the years 1988 and 1989. The growth rate of publications was negative in 1993 and zero in 1994, and then jumped to an all-time high of 800% in 1995. The rate dipped again to –11.11% in 1996 and further to –25% in 1997, before picking up to 33.33% in 1998 and dipping again to 12.5% in 1999 (see Figure 2).

Apart from 2001 (14.28%), 2003 (216.67%), 2004 (42.11%), 2006 (74.07%), 2007 (17.02%), 2008 (43.64%) and 2019 (41.38%), the rate of production was either negative, zero or negligible.



**Figure 1.** Number of publications on PIM in Scopus per annum, 1988–2020.



**Figure 2.** Annual growth rate of PIM based on Scopus, 1988–2020.

### *Distribution of literature on PIM by subject area, 1988–2020*

More than half of the total number of publications on PIM in Scopus were in computer science, while social sciences constituted only about 16%. Engineering and mathematics contributed about 9% and 8% of the publications, respectively, while decision sciences accounted for 4% and business, management and accounting 3% (see Table 2).

Besides arts and humanities, which contributed 2%, the rest of the subject areas accounted for unit or no contributions.

The dominance of the subject area of information technology in Table 2 could be understood as an act of faith on the part of PIM researchers in the potentials of

digital technologies and systems to address the problem of PIM – a research route that has attracted researchers' attention right from the earliest evidence of research in the area (Bergman and Whittaker, 2016; Bush, 1945; Lansdale, 1988; Jones, 2007b). Researchers in the social sciences, for their part, have identified and underpinned PIM as a social problem that deserves attention, while other subject areas have either focused on one or both sides of the problem. In recent studies, Donkor and Nwagwu (2019), Nwagwu and Donkor (2020) and Nwagwu (2021b) have argued that the dominant devotion to information technology distracts attention from investigations of the effects of personal and individual variables, and differences in human memory and other contextual

**Table 2.** Publications on PIM in Scopus by subject area.

| Serial number | Subjects                                     | Number of documents | %     |
|---------------|----------------------------------------------|---------------------|-------|
| 1             | Computer science                             | 721                 | 53.45 |
| 2             | Social sciences                              | 213                 | 15.79 |
| 3             | Engineering                                  | 118                 | 8.75  |
| 4             | Mathematics                                  | 112                 | 8.30  |
| 5             | Decision sciences                            | 53                  | 3.93  |
| 6             | Business, management and accounting          | 41                  | 3.04  |
| 7             | Arts and humanities                          | 26                  | 1.93  |
| 8             | Medicine                                     | 17                  | 1.26  |
| 9             | Psychology                                   | 14                  | 1.04  |
| 10            | Health professions                           | 6                   | 0.45  |
| 11            | Material sciences                            | 4                   | 0.30  |
| 12            | Earth and planetary sciences                 | 3                   | 0.22  |
| 13            | Economics, econometrics and finance          | 3                   | 0.22  |
| 14            | Energy                                       | 3                   | 0.22  |
| 15            | Nursing                                      | 3                   | 0.22  |
| 16            | Biochemistry, genetics and molecular biology | 2                   | 0.15  |
| 17            | Chemical engineering                         | 2                   | 0.15  |
| 18            | Chemistry                                    | 2                   | 0.15  |
| 19            | Physics and astronomy                        | 2                   | 0.15  |
| 20            | Environmental science                        | 1                   | 0.07  |
| 21            | Multidisciplinary                            | 1                   | 0.07  |
| 22            | Neuroscience                                 | 1                   | 0.07  |
| 23            | Pharmacology, toxicology and pharmaceuticals | 1                   | 0.07  |

social issues. The spread of research on PIM to as many as 23 of the 27 Scopus subject areas points to the multidisciplinary nature of the subject matter.

#### *Analysis of all keywords in the PIM literature, 1988–2020*

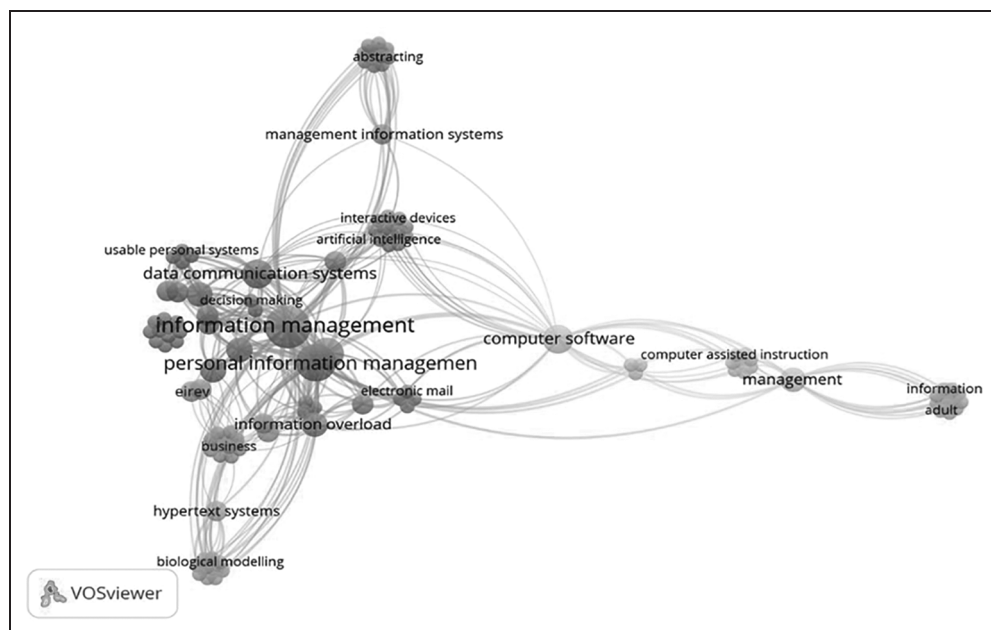
Altogether, the 887 papers were described with 4430 keywords – about five keywords per publication.

*1988–1995: context-setting and initiation.* During the period 1988–1995, 15 documents were published, and they were represented by a total of 114 keywords (Table 1). Table 3 and Figure 3 show that the first and most significant keyword, ‘information management’, has a cluster of eight and has links with 89 other keywords; it also has a total link strength of 9 and occurred in nine documents. ‘Personal information management’ itself follows with only one cluster, 67 links, a total link strength of 9 and nine occurrences.

Except for Item 7 (‘information overload’), Item 8 (management) and a few other items, the rest of the items were all information-technology-based concepts. Also, except for ‘personal information management’, ‘information management’, ‘adult’ and ‘management’, which appeared as visible items on the map, the rest of the items were all information-technology-related. The key information here is that

researchers on the subject of PIM focused on information technology early on as a solution to the problem of PIM. It can be observed that Lansdale (1988) moored his definition of PIM in the roles of information technology. However, emphasis on the roles of information technology coincides with the period 1988–1995, which could be considered crucial in the development and application of information technologies to meet various needs. For instance, it was in 1990 that the Internet expanded and became international in scope, and its operation was largely globalized.

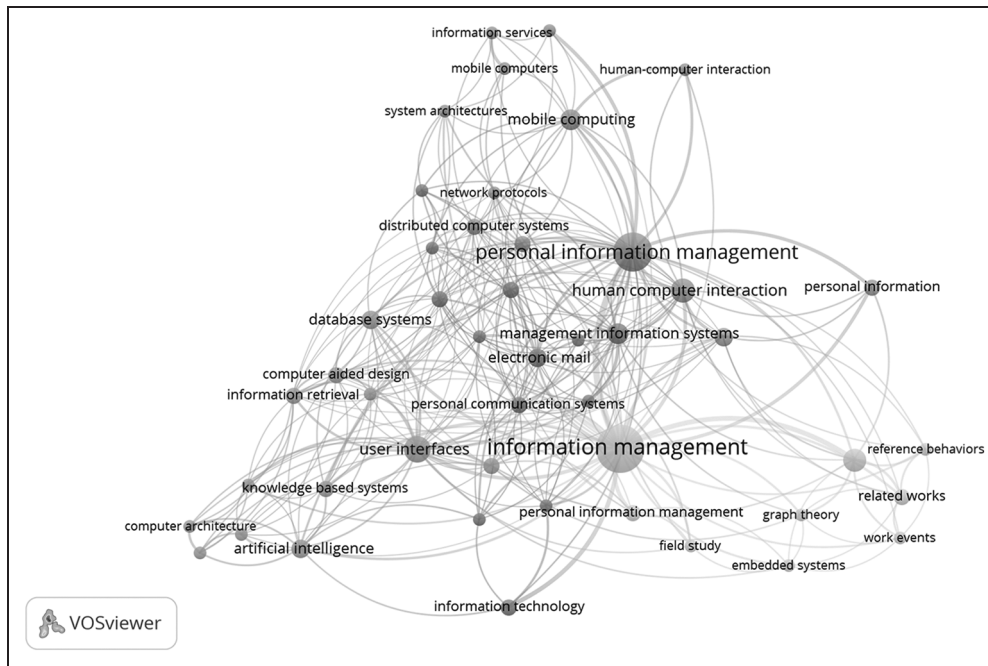
Figure 3 shows that the 114 keywords in Table 3 were grouped into eight unique clusters (see the colours). Cluster 1 contains 26 keywords; Cluster 2 contains 15 items; Clusters 3 and 4 contain 13 and 14 items, respectively; and Clusters 5, 6, 7 and 8 contain 12, 12, 11 and 11 items, respectively. The relatively large number of clusters of keywords used to describe PIM at its earliest stages of research points to the expected absence of consensus in the opinions of researchers regarding the subject and content home of the concept. It also reflects the spread and diversity of interest of the researchers on the subject. The first three items in Cluster 1 are ‘activity-based information’, ‘automatic speech recognition’ and ‘cooperative video gophers’. Looking at the database, it could be seen that these three keywords were index



**Figure 3.** Visualization map of all keywords in the PIM literature, 1988–1995.

**Table 3.** All keywords on PIM in Scopus, 1988–1995.

| Serial number | Label                                         | Cluster | Links | Total link strength | Occurrences |
|---------------|-----------------------------------------------|---------|-------|---------------------|-------------|
| 1             | Information management                        | 8       | 89    | 9                   | 9           |
| 2             | Personal information management               | 1       | 67    | 7                   | 7           |
| 3             | Information technology                        | 8       | 51    | 5                   | 5           |
| 4             | Computer software                             | 4       | 37    | 4                   | 4           |
| 5             | Data communication systems                    | 1       | 45    | 4                   | 4           |
| 6             | Data storage equipment                        | 1       | 41    | 3                   | 3           |
| 7             | Information overload                          | 8       | 30    | 3                   | 3           |
| 8             | Management                                    | 4       | 25    | 3                   | 3           |
| 9             | Personal communication systems                | 1       | 30    | 3                   | 3           |
| 10            | User interfaces                               | 1       | 33    | 3                   | 3           |
| 11            | Computer networks                             | 8       | 15    | 2                   | 2           |
| 12            | Eirev                                         | 2       | 38    | 2                   | 2           |
| 13            | Human–computer interaction                    | 2       | 38    | 2                   | 2           |
| 14            | Human engineering                             | 1       | 26    | 2                   | 2           |
| 15            | Hypertext systems                             | 7       | 30    | 2                   | 2           |
| 16            | Information appliances                        | 3       | 26    | 2                   | 2           |
| 17            | Information retrieval                         | 1       | 26    | 2                   | 2           |
| 18            | Information retrieval systems                 | 2       | 25    | 2                   | 2           |
| 19            | Management information systems                | 5       | 30    | 2                   | 2           |
| 20            | Mobile telecommunication systems              | 1       | 26    | 2                   | 2           |
| 21            | Usability engineering                         | 1       | 26    | 2                   | 2           |
| 22            | World Wide Web                                | 2       | 25    | 2                   | 2           |
| 23            | Abstracting                                   | 5       | 12    | 1                   | 1           |
| 24            | Abstraction                                   | 5       | 12    | 1                   | 1           |
| 25            | Activity-based information retrieval (AIR)    | 1       | 22    | 1                   | 1           |
| 26            | Adult                                         | 6       | 12    | 1                   | 1           |
| 27            | Artificial intelligence                       | 3       | 19    | 1                   | 1           |
| 28            | Automatic speech recognition (ASR) technology | 1       | 22    | 1                   | 1           |
| 29            | Automation                                    | 6       | 12    | 1                   | 1           |
| 30            | Biological modelling                          | 7       | 12    | 1                   | 1           |



**Figure 4.** Visualization map of all keywords in the PIM literature, 1996–2000.

terms used in a 1995 unauthored paper: ‘IEE computing and control division colloquium on developments in personal systems’ Meech and Thomas (1995). Cluster 2 has ‘business’, ‘cockpit’ and ‘computer systems’ as the three initial keywords; ‘business’ and ‘computer systems’ referred to the information technology businesses that could address PIM needs and the roles of computer systems in PIM, respectively.

Cluster 3 had ‘artificial intelligence’, ‘computer applications’ and ‘information appliances’ as the three initial keywords, while Cluster 4 had ‘computer disk’, ‘read-only memory’/‘computer-assisted instruction’ and ‘computer software’. Cluster 8 also had information-technology-related items as its three initial keywords; the three initial keywords in Clusters 5, 6 and 7 dealt with other issues. These clusters reinforce the focus of researchers on the roles of information technologies in PIM. Altogether, probably in response to the consciousness raised by Lansdale’s seminal work in 1988, it was at this time that research on hypertext was also developing and its application to PIM was beginning to be addressed (Carl, 1988; Patterson, 1995; Schnase and Leggett, 1989), just as issues about personalizing information systems (Chang et al., 1993) and the role of context in PIM (Barreau, 1995) were significant in PIM research during this period.

**1996–2000: attention and diversity.** During the second period in the study, 1996–2000, a total of 248 keywords were used to describe the literature on PIM. A

minimum number of occurrences of two keywords and above returned very few keyword threshold sizes of less than 47. There was therefore a very large number of keywords – 229 or over 81% – that had unit values, and this says a lot about how the subject was evolving during 1996–2000. In addition to probably speaking of the increase of interest in PIM, it speaks of the subject matter attracting the attention of a diversity of researchers.

The mapping was based on a minimum threshold of two keywords – that is, the keywords that were in the analysis included those that appeared at least twice. Figure 4 and Table 4 show how the keywords interrelate with one another. ‘Information management’ and ‘personal information management’ continue to be the major keywords used to describe research in the area. ‘Information management’ occurred in four clusters that were weighted 41, had a total link strength of 26 and appeared 26 times. ‘Personal information management’ was weighted 32 in four clusters and had a total link strength of 17 and 17 occurrences (see Table 4). Only the keyword ‘work events’ was not an ICT keyword.

The 248 keywords were spread over five clusters, in line with the earlier observation of the spread and diversity of keywords. However, the clusters reflected clearer classes of issues than in the previous period. For example, Cluster 1 contains ‘computer applications’, ‘data acquisition’ and ‘electronic mail’, while Cluster 2 has ‘artificial intelligence’, ‘computer-aided design’ and ‘computer architecture’. Clusters 3 and 4 contain

**Table 4.** All keywords on PIM in Scopus, 1996–2000.

| Serial number | Label                                  | Cluster | Weight | Total link strength | Occurrences |
|---------------|----------------------------------------|---------|--------|---------------------|-------------|
| 1             | Information management                 | 4       | 41     | 26                  | 26          |
| 2             | Personal information management        | 3       | 32     | 17                  | 17          |
| 3             | User interfaces                        | 2       | 30     | 8                   | 8           |
| 4             | Human–computer interaction             | 5       | 25     | 7                   | 7           |
| 5             | Personal information management system | 4       | 12     | 6                   | 6           |
| 6             | Mobile computing                       | 3       | 16     | 5                   | 5           |
| 7             | Management information systems         | 1       | 18     | 5                   | 5           |
| 8             | Interactive computer systems           | 5       | 17     | 4                   | 4           |
| 9             | Electronic mail                        | 1       | 18     | 4                   | 4           |
| 10            | Database systems                       | 2       | 15     | 4                   | 4           |
| 11            | Artificial intelligence                | 2       | 14     | 4                   | 4           |
| 12            | Related works                          | 4       | 9      | 3                   | 3           |
| 13            | Personal information management (PIM)  | 4       | 9      | 3                   | 3           |
| 14            | Personal information                   | 5       | 5      | 3                   | 3           |
| 15            | Personal computers                     | 1       | 15     | 3                   | 3           |
| 16            | Personal communication systems         | 1       | 18     | 3                   | 3           |
| 17            | Knowledge-based systems                | 2       | 10     | 3                   | 3           |
| 18            | Information technology                 | 1       | 5      | 3                   | 3           |
| 19            | Information retrieval                  | 2       | 16     | 3                   | 3           |
| 20            | Information dissemination              | 1       | 20     | 3                   | 3           |
| 21            | Distributed computer systems           | 3       | 22     | 3                   | 3           |
| 22            | Data communication systems             | 3       | 19     | 3                   | 3           |
| 23            | Computer software                      | 2       | 16     | 3                   | 3           |
| 24            | Computer-aided design                  | 2       | 18     | 3                   | 3           |
| 25            | Work events                            | 4       | 7      | 2                   | 2           |
| 26            | Wide area networks                     | 2       | 11     | 2                   | 2           |
| 27            | Voice/data communication systems       | 1       | 8      | 2                   | 2           |
| 28            | Ubiquitous computing                   | 3       | 6      | 2                   | 2           |
| 29            | System architectures                   | 3       | 9      | 2                   | 2           |
| 30            | Search engines                         | 1       | 9      | 2                   | 2           |

‘data communication system’, ‘distributed computer system’ and ‘human–computer interaction’, and ‘interactive computer system’ and ‘personal information’, respectively. Finally, Cluster 5 has ‘human–computer interaction’, ‘interactive computer systems’ and ‘personal information’ as its three initial keywords.

The 248 keywords have narrowed down into five classes. Information technologies and systems remain the key subject of PIM, but the role and significance of emerging systems was beginning to be recognized. It can be seen that growth in PIM research was also accompanied by growth in the applications of information technologies. For example, email has been added to the challenges of PIM (Gwizdka, 2000; Whittaker and Candace, 1996), and data acquisition and communication systems have become significant PIM issues. Computer-aided design and computer architecture, distributed computer systems and human–computer interaction have become critical strategies for addressing the problem of PIM. Human factors as lone variables have become absent in the

list of components in the clusters. Underpinning the deepening of information technology strategies, Haneda and Hakaridani (1996) had already suggested the development of technologies for personal information and intelligent tools. The opportunities for software agents and agency as PIM technologies had been highlighted (Macredie and Keeble, 1997).

*2001–2005: human factors and mobile PIM.* With 582 keywords during 2001–2005, the research on PIM during this period continues to reflect the diversity in the previous period, with only 57 keywords meeting the threshold of three occurrences per document. High thresholds, of four and above, resulted in a significantly fewer number of keyword threshold sizes. Figure 5 shows that ‘information management’ is now more prominent than it was in the previous periods, whereas ‘personal information management’ as a keyword is no longer as prominent.

Table 5 shows that ‘information management’ occurred only in two clusters, but has 52 links and a



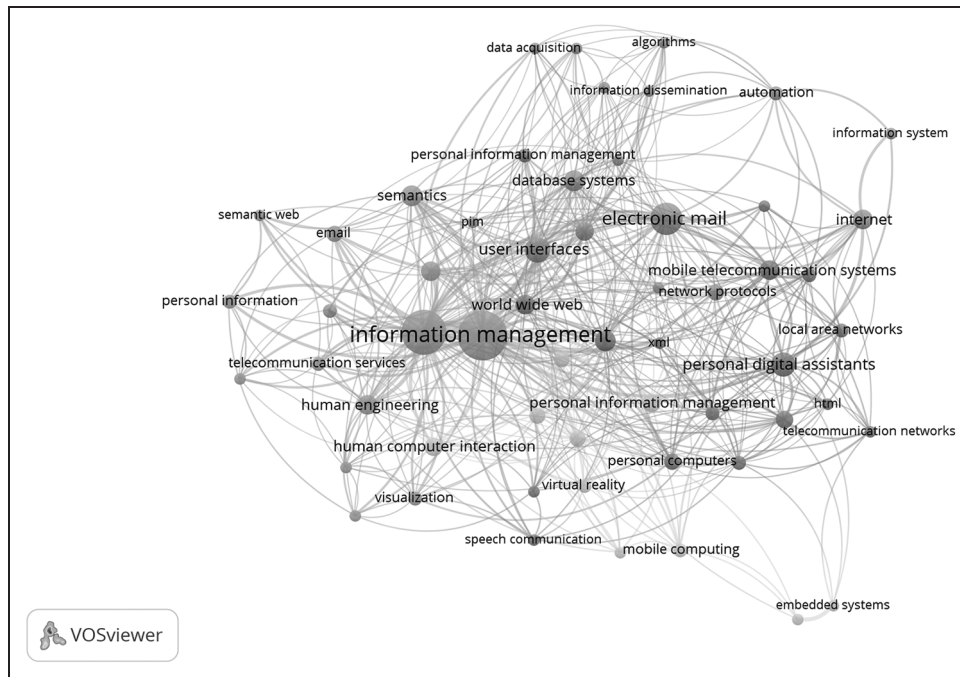
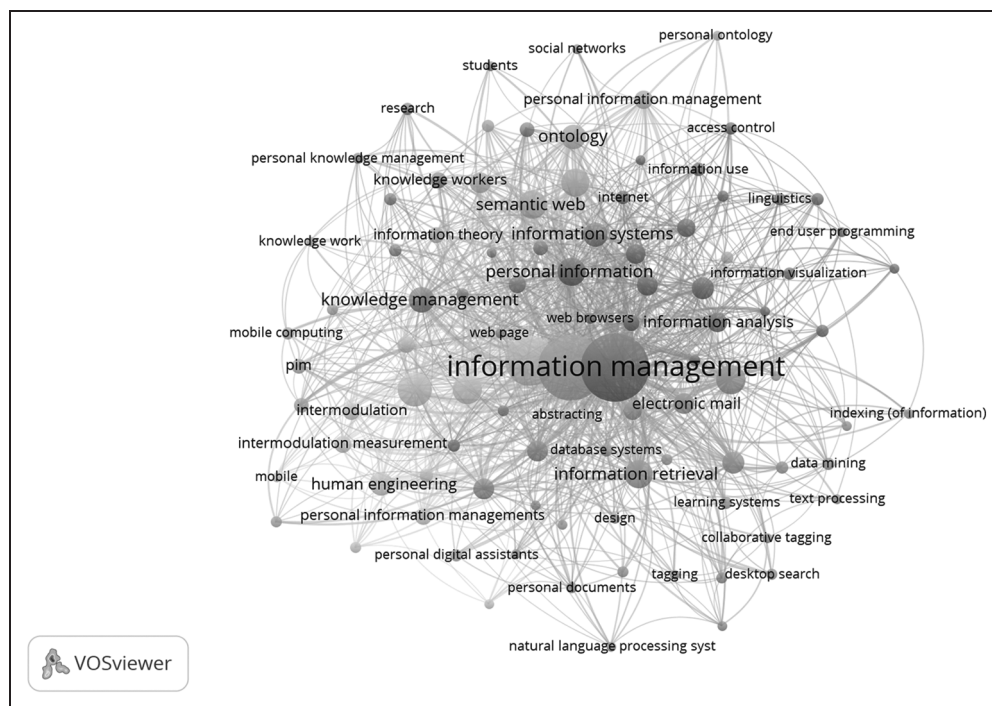


Figure 5. Visualization map of all keywords in the PIM literature, 2001–2005.

Table 5. All keywords on PIM in Scopus, 2001–2005.

| Serial number | Label                                 | Cluster | Links | Total link strength | Occurrences |
|---------------|---------------------------------------|---------|-------|---------------------|-------------|
| 1             | Information management                | 2       | 52    | 49                  | 49          |
| 2             | Personal information management       | 2       | 47    | 39                  | 40          |
| 3             | Electronic mail                       | 3       | 38    | 20                  | 20          |
| 4             | User interfaces                       | 3       | 35    | 13                  | 13          |
| 5             | Personal digital assistants           | 1       | 28    | 12                  | 12          |
| 6             | Computer software                     | 1       | 30    | 9                   | 9           |
| 7             | Database systems                      | 5       | 26    | 9                   | 9           |
| 8             | Semantics                             | 2       | 24    | 9                   | 9           |
| 9             | Human engineering                     | 2       | 20    | 8                   | 8           |
| 10            | Information retrieval                 | 2       | 19    | 8                   | 8           |
| 11            | Internet                              | 3       | 19    | 8                   | 8           |
| 12            | Mobile telecommunication systems      | 1       | 24    | 8                   | 8           |
| 13            | World Wide Web                        | 1       | 26    | 8                   | 8           |
| 14            | Human–computer interaction            | 4       | 19    | 7                   | 7           |
| 15            | Personal information management (PIM) | 4       | 21    | 7                   | 7           |
| 16            | Problem solving                       | 3       | 25    | 7                   | 7           |
| 17            | Wireless telecommunication systems    | 1       | 22    | 6                   | 6           |
| 18            | Computer operating systems            | 4       | 26    | 5                   | 5           |
| 19            | Data processing                       | 4       | 22    | 5                   | 5           |
| 20            | Email                                 | 2       | 12    | 5                   | 5           |
| 21            | Interfaces (computer)                 | 4       | 16    | 5                   | 5           |
| 22            | Network protocols                     | 5       | 20    | 5                   | 5           |
| 23            | Personal computers                    | 1       | 14    | 5                   | 5           |
| 24            | Automation                            | 3       | 13    | 4                   | 4           |
| 25            | Cameras                               | 1       | 22    | 4                   | 4           |
| 26            | Customer satisfaction                 | 1       | 16    | 4                   | 4           |
| 27            | Information services                  | 5       | 11    | 4                   | 4           |
| 28            | Local area networks                   | 1       | 18    | 4                   | 4           |
| 29            | Mobile computing                      | 4       | 12    | 4                   | 4           |
| 30            | Multimedia systems                    | 1       | 19    | 4                   | 4           |



**Figure 6.** Visualization map of all keywords in the PIM literature, 2006–2010.

total link strength of 49, and occurred 49 times, while PIM was in two clusters and has 47 links, a total link strength of 49 and 40 occurrences. Table 5 shows that except for ‘information management’, ‘PIM’, ‘semantics’, ‘problem solving’ and ‘customer satisfaction’, the remaining 52 keywords were also all information-technology-related concepts.

Like in the initial period, the 582 keywords were classed into five unique non-overlapping clusters. Cluster 1 has 17 items, with ‘camera’, ‘computer software’ and ‘customer satisfaction’ as the initial three keywords. Cluster 2 has 13 items, with ‘behavioural research’, ‘email’ and ‘human engineering’ as the initial three items. ‘Algorithm’, ‘automation’ and ‘data acquisition’ are the three initial keywords in Cluster 3 and, for Cluster 4, they are ‘computer operating system’, ‘data processing’ and ‘embedded systems’. Cluster 5 has ‘database systems’, ‘information-processing systems’ and ‘Java programming’ as its initial three keywords.

During this period, researchers intensified their study of information technology approaches to PIM. Many experiments to build systems for managing personal information were also ongoing, beginning with studies of how emerging mobile technologies could be used to manage calendars, address books, to-do lists, emails and other personal data. Whittaker et al.’s (2006) ContactMap, Chakrabarti et al.’s (2005) Searching personal information networks (SPIN), Dolfing et al.’s (2005) and Varadarajan

et al.’s (2005) Semantic Pen were among the mobile technologies that dominated the solutions for PIM. Interestingly also, issues about human factors returned to the discussion, with the keywords ‘human factors’, ‘human engineering’, ‘behavioural research’ and ‘customer satisfaction’ signalling that the focus should also touch on issues other than information technologies.

*2006–2010: need for safety and information retrieval.* Research on PIM during the period 2006–2010 was captured by 1836 keywords, which continued to reflect the rich contributions of researchers to the subject. ‘Information retrieval’ is prominent on the map of the keywords, much more than ‘personal information’. But ‘information management’ continues to be the fulcrum of all the other keywords used to describe PIM research. The number of keywords notwithstanding, the map reflects closer connectedness among the 97 keywords with a threshold of five keywords permitted for the map (see Figure 6).

Figure 6 shows how the keywords connect, while Table 6 shows the distribution of the keywords by the identified criteria. ‘Information management’ continues to be the major keyword in PIM, with 96 links, a total link strength of 216 and 218 occurrences. ‘Personal information management’ itself has seven clusters and 96 links; it also has a total link strength of 195 and occurred 203 times. The maturity of information retrieval systems during this period brought about

**Table 6.** All keywords on PIM in Scopus, 2006–2010.

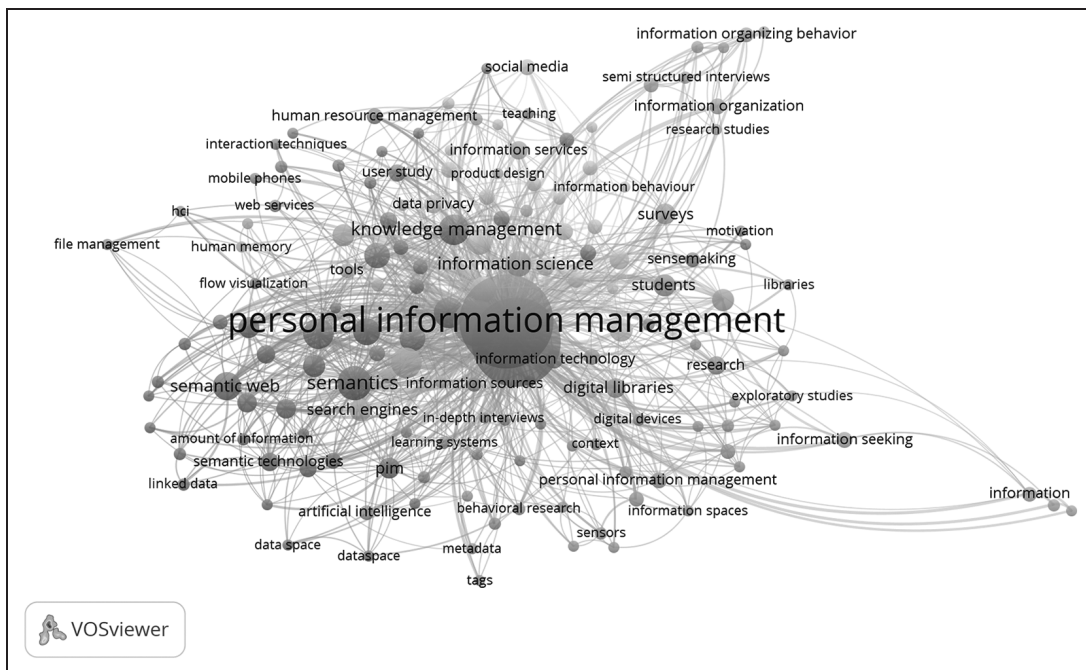
| Serial number | Label                                  | Cluster | Links | Total link strength | Occurrences |
|---------------|----------------------------------------|---------|-------|---------------------|-------------|
| 1             | Information management                 | 1       | 96    | 216                 | 218         |
| 2             | Personal information management        | 7       | 96    | 195                 | 203         |
| 3             | Information retrieval                  | 4       | 94    | 116                 | 116         |
| 4             | Management                             | 4       | 77    | 54                  | 54          |
| 5             | Management information systems         | 4       | 70    | 41                  | 41          |
| 6             | User interfaces                        | 2       | 77    | 40                  | 40          |
| 7             | Telecommunication services             | 2       | 81    | 39                  | 39          |
| 8             | Personal information                   | 1       | 63    | 37                  | 37          |
| 9             | Semantic web                           | 6       | 65    | 37                  | 37          |
| 10            | Semantics                              | 6       | 70    | 37                  | 37          |
| 11            | Knowledge management                   | 3       | 70    | 32                  | 32          |
| 12            | Information systems                    | 3       | 69    | 30                  | 30          |
| 13            | Ontology                               | 6       | 63    | 30                  | 30          |
| 14            | Human engineering                      | 4       | 51    | 27                  | 27          |
| 15            | Search engines                         | 2       | 60    | 23                  | 23          |
| 16            | Human–computer interaction             | 5       | 44    | 21                  | 21          |
| 17            | Metadata                               | 1       | 59    | 21                  | 21          |
| 18            | Semantic desktop                       | 6       | 57    | 21                  | 21          |
| 19            | Electronic mail                        | 2       | 47    | 19                  | 20          |
| 20            | Information services                   | 5       | 58    | 20                  | 20          |
| 21            | Information analysis                   | 1       | 52    | 19                  | 19          |
| 22            | Information dissemination              | 1       | 52    | 19                  | 19          |
| 23            | World Wide Web                         | 1       | 59    | 17                  | 17          |
| 24            | Personal computers                     | 2       | 52    | 16                  | 16          |
| 25            | Personal information management system | 6       | 37    | 16                  | 16          |
| 26            | Administrative data processing         | 4       | 53    | 15                  | 15          |
| 27            | Intermodulation                        | 4       | 48    | 15                  | 15          |
| 28            | Intermodulation measurement            | 4       | 48    | 15                  | 15          |
| 29            | Information science                    | 3       | 52    | 14                  | 14          |

changes in the way stored information was accessed. While ‘information management’ and ‘personal information management’ emphasize the central challenge encountered by most researchers, ‘management information systems’ has come into the literature to take care of the speculation that information systems could play significant roles in ameliorating the challenges of PIM. Specifically, PIM systems had also become part of the argument around how to address PIM challenges (Jones, 2007b). ‘Management’ appears in the list of keywords for the first time, highlighting the direction of attention to the concern about individuals’ capacity to manage the information they keep for future use.

The 1836 keywords were grouped into seven clusters, with Cluster 1 having ‘access control’, ‘data acquisition’ and ‘data privacy’ as its three key elements. Data privacy comes onto the scene in this period – a concept that is often concerned with consent and regulatory obligations in respect of personal information. Although data acquisition has been technically defined as the process of ‘sampling signals

that measure real world physical conditions and converting the resulting samples into digital numeric values that can be manipulated by a computer’, it would appear that White et al. (2008: 12) were using this term in its everyday sense, such as information acquisition/creation. The observation by Donkor and Nwagwu (2019) that a major component of PIM is information creation, acquisition, storage and retrieval resonates here. Information acquisition links to individual maturity and discipline in deciphering what should be read, stored and/or discarded (Nwagwu, 2021b).

The terms ‘data mining’, ‘database systems’ and ‘desktop search’ are the three initial keywords in Cluster 2, while ‘computer science’, ‘digital storage’ and ‘digital libraries’ comprise the first three elements in Cluster 3. Data mining is an advanced database querying technique that is supported by database management systems, all of which are operated by via the interface of desktops or mobile technologies (Morzy et al., 2002). At this stage in the life of PIM, researchers were addressing the roles of skills in



**Figure 7.** Visualization map of all keywords in the PIM literature, 2011–2015.

database searching and data mining as possible solutions to the challenges of PIM tools.

Cluster 3 and cluster 4 bring to the fore the role of Internet sites that are dedicated to the creation and preservation of information, known as ‘digital libraries’, and this concept benefits from computer science tools and techniques, and digital methods (Sun and Yuan, 2012). ‘Information overload’, ‘information theory’ and ‘ontology’ are the first three keywords in Cluster 5. Information overload is a commonly identified factor in PIM, and Alon and Nachmias (2020b) discussed this subject as an affective aspect of issues in PIM. Nwagwu (2021b) has also found information overload to be a major factor of PIM for social scientists. However, Kearns et al. (2014) found in their study that ‘filter failure’ rather than information overload was in cluster 6 the key issue in PIM. Information theory and ontology were inviting attention to be directed to issues relating to the retrieval of stored information.

‘Knowledge work’, ‘mobile work’ and ‘mobile computing’ are the key elements in Cluster 7. Researchers were addressing the question of the role of mobile technologies in personal knowledge work, with particular emphasis on PIM (Allen and Shoard, 2005).

The challenges of PIM also resurfaced in the majority of the papers during this period (Jones et al., 2006; Tagg et al., 2010), given that the results of an evaluation of existing PIM applications were not very promising (Juntumaa and Tuunainen, 2006).

Gomes et al. (2010) suggested the deployment of visualization as a PIM tool, just as the concept of tagging has been used in the context of what Razavi and Iverson (2008) called ‘social- personal information management’.

*2011–2015: reinforcement of human factors and relative consensus.* The period 2011–2015 produced 279 documents and 1619 keywords. Table 7 and Figure 7 show that ‘personal information management’ became prominent compared to all of the other keywords, with five clusters, 152 links, a total link strength of 196 and a frequency of 201. ‘Knowledge management’ also, for the first time, became a strong keyword among PIM keywords. ‘Semantic’ and ‘semantic web’ also came into prominence in respect of PIM research. During this period in the study, Latif et al. (2006), Elahi (2011), and Hu and Janowicz (2012) examined semantic desktops, the semantic web and semantic mobile applications as critical novel approaches to improve user interfaces through recording and annotating users’ activities for a personalized user experience and improved search in personal information spaces.

The number of clusters of keywords during this period increased to nine. The first cluster has ‘amount of information’, ‘data mining’ and ‘data integration’ as the initial three keywords. Kearns et al. (2014) actually used the term ‘amount of information’ to address the challenge of information overload that confronts modern society. Dong and Halevy (2005)

**Table 7.** All keywords on PIM in Scopus, 2011–2015.

| Serial number | Label                                  | Cluster | Links | Total link strength | Occurrences |
|---------------|----------------------------------------|---------|-------|---------------------|-------------|
| 1             | Personal information management        | 5       | 152   | 196                 | 201         |
| 2             | Information management                 | 5       | 154   | 181                 | 182         |
| 3             | Personal information                   | 7       | 106   | 50                  | 50          |
| 4             | Semantics                              | 1       | 65    | 27                  | 27          |
| 5             | Human–computer interaction             | 8       | 52    | 22                  | 22          |
| 6             | User interfaces                        | 8       | 70    | 22                  | 22          |
| 7             | Information retrieval                  | 6       | 65    | 21                  | 21          |
| 8             | Knowledge management                   | 8       | 64    | 21                  | 21          |
| 9             | Semantic web                           | 1       | 49    | 18                  | 18          |
| 10            | Social networking (online)             | 1       | 50    | 17                  | 17          |
| 11            | Information systems                    | 3       | 51    | 16                  | 16          |
| 12            | Mobile devices                         | 3       | 52    | 16                  | 16          |
| 13            | Personal information management system | 4       | 54    | 16                  | 16          |
| 14            | Information science                    | 7       | 51    | 15                  | 15          |
| 15            | Electronic mail                        | 4       | 40    | 13                  | 13          |
| 16            | Human engineering                      | 4       | 39    | 13                  | 13          |
| 17            | Information literacy                   | 9       | 23    | 12                  | 12          |
| 18            | Search engines                         | 6       | 40    | 12                  | 12          |
| 19            | Telecommunication services             | 1       | 46    | 12                  | 12          |
| 20            | Students                               | 2       | 33    | 11                  | 11          |
| 21            | World Wide Web                         | 6       | 48    | 11                  | 11          |
| 22            | PIM                                    | 1       | 26    | 10                  | 10          |
| 23            | Semantic desktop                       | 1       | 39    | 10                  | 10          |
| 24            | Surveys                                | 7       | 35    | 10                  | 10          |
| 25            | Digital libraries                      | 2       | 31    | 9                   | 9           |
| 26            | Information use                        | 4       | 35    | 9                   | 9           |
| 27            | Ontology                               | 1       | 34    | 9                   | 9           |
| 28            | Visualization                          | 1       | 27    | 9                   | 9           |
| 29            | Data privacy                           | 4       | 29    | 8                   | 8           |
| 30            | Information dissemination              | 4       | 29    | 8                   | 8           |

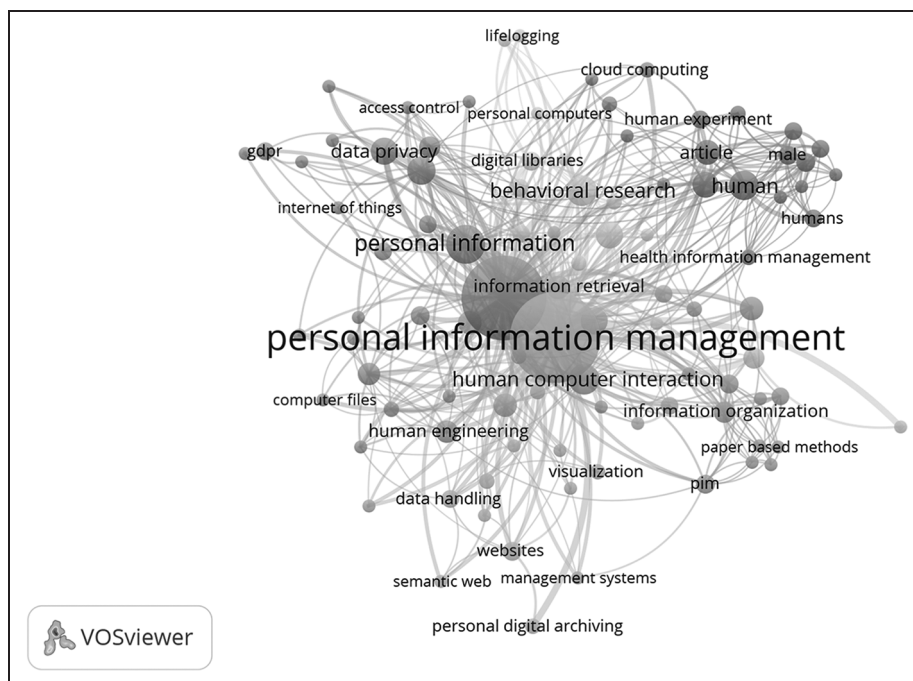
also created a platform for managing PIM, which they described as ‘flexible’. Clusters 2 and 3 contain the keywords ‘datasets’, ‘data integration’ and ‘college students’, and ‘application integration’, ‘communication’ and ‘cloud computing’, respectively. But attention was focused on database systems, desktop search, tagging and design, which have been explained by Bergman and Whittaker (2016) in their book discussing desktop search and tagging.

*2016–2020: consolidation and increased attention on human factors.* A total of 159 publications in the last period of this study, 2016–2020, were represented with 1281 keywords; both by volume of publications (see Figure 1) and keywords, this period suggests a decline in attention to PIM research.

Figure 8 and Table 8 show the keywords that represented publications during this period. The major keywords ‘personal information management’ and ‘information’ have become weaker in terms of links, total link strength and occurrence. However, in both

this period and the immediately preceding period, ‘personal information management’ has displaced ‘information management’, which was the leading keyword in the initial four periods (1988–1995, 1996–2000, 2001–2005 and 2006–2010). With six clusters, 94 links, a total link strength of 144 and 126 occurrences, the keyword ‘personal information management’ has less presence in 2016–2020 than it did in 2010–2015; this is also the case with ‘information management’. Table 8 and Figure 8 have a similarity – the first three significant keywords (namely, ‘personal information management’, ‘information management’ and ‘personal information’) are the same. But Table 8 brings ‘behavioural research’ closer to the top of the ranks than has been the case in the previous periods.

The keywords ‘information use’, ‘behavioural research’ and ‘information behaviour’ have entered the list of keywords for the first time. The significance of this observation relates to the focus and findings in Donkor and Nwagwu’s (2019) study, which



**Figure 8.** Visualization map of all keywords in the PIM literature, 2016–2020.

**Table 8.** All keywords on PIM in Scopus, 2016–2020.

| Serial number | Label                                  | Cluster | Links | Total link strength | Occurrences |
|---------------|----------------------------------------|---------|-------|---------------------|-------------|
| 1             | Personal information management        | 6       | 94    | 114                 | 126         |
| 2             | Information management                 | 3       | 94    | 111                 | 111         |
| 3             | Personal information                   | 3       | 46    | 24                  | 24          |
| 4             | Behavioural research                   | 4       | 47    | 15                  | 15          |
| 5             | Human-computer interaction             | 2       | 43    | 15                  | 15          |
| 6             | Human                                  | 1       | 38    | 14                  | 14          |
| 7             | Personal information management system | 3       | 30    | 13                  | 13          |
| 8             | Data privacy                           | 3       | 28    | 12                  | 12          |
| 9             | Information use                        | 7       | 42    | 12                  | 12          |
| 10            | Surveys                                | 4       | 44    | 12                  | 12          |
| 11            | Information system                     | 1       | 35    | 11                  | 11          |
| 12            | Article                                | 1       | 31    | 10                  | 10          |
| 13            | Information dissemination              | 9       | 26    | 9                   | 9           |
| 14            | Information retrieval                  | 6       | 36    | 9                   | 9           |
| 15            | Information systems                    | 7       | 28    | 9                   | 9           |
| 16            | Students                               | 2       | 37    | 9                   | 9           |
| 17            | Digital storage                        | 5       | 19    | 8                   | 8           |
| 18            | Human engineering                      | 5       | 23    | 8                   | 8           |
| 19            | Information behaviour                  | 10      | 22    | 7                   | 7           |
| 20            | Information organization               | 2       | 25    | 7                   | 7           |
| 21            | Privacy                                | 3       | 22    | 7                   | 7           |
| 22            | Digital libraries                      | 4       | 17    | 6                   | 6           |
| 23            | Education                              | 2       | 21    | 6                   | 6           |
| 24            | Electronic mail                        | 5       | 16    | 6                   | 6           |
| 25            | Female                                 | 1       | 22    | 6                   | 6           |
| 26            | Male                                   | 1       | 22    | 6                   | 6           |
| 27            | PIM                                    | 2       | 20    | 6                   | 6           |
| 28            | Websites                               | 6       | 16    | 6                   | 6           |
| 29            | Adult                                  | 1       | 21    | 5                   | 5           |
| 30            | Application programmes                 | 3       | 17    | 5                   | 5           |

highlighted the significance of personal factors in PIM. Evidently, the search for how to ease the difficulty of finding kept information has focused more on technology applications, despite early studies that highlighted the roles of other factors (Fuller et al., 2008; Maccoby and Jacklin, 1974).

The 1281 keywords in this period were categorized into 10 clusters. ‘Adult’, ‘article’ and ‘female’ appear to be strange keywords for PIM literature, but they are the first keywords in Cluster 1. In order to make sense of these keywords, Cluster 2 was examined and ‘categorization’, ‘decision making’ and ‘education’ were found to be the first three keywords. Evidently, as has been observed, it would appear that PIM researchers are directing their minds to issues other than information technology in their efforts to solve PIM problems. Information technology issues such as ‘access control’, ‘application programme’ and ‘architecture’ started to emerge in Cluster 3, flagging the need not to leave electronic technology solutions out of the equation yet.

The volume of literature on personal information (PI) was lower in this period, while the number of clusters of keywords expanded. Evidently, interest in research on the subject has declined, but a diversity of opinions remains. There are four categories of studies in this period: those that presented new information technologies and systems for managing personal information; those that studied the use and efficiency of existing systems; those which observed that PIM was becoming more complicated than it had ever been before; and those that focused on behavioural issues. In fact, the last paper during the period examined and revealed a complex and intense affective experience accompanying PIM, which is characterized by anxiety and frustration, on the one hand, and a sense of high efficacy and little desperation, on the other. Alon and Nachmias (2020a) also found that the affective experience was more intense for female participants, was correlated with the number of PIM platforms used, and decreased with age.

## Conclusions

Managing personal information has been a persistent human task from time immemorial. However, the concept of ‘personal information management’ was coined in 1988 by Lansdale, thus giving a *name* and a body structure to events that had been hitherto amorphous. This study was designed to examine the volume and quantity of PIM literature since the coinage of the term ‘personal information management’, and the growth of PIM literature. Moreover, the study mapped the keywords used by authors and indexers

to represent the literature from 1988 to 2020 in order to determine the structure, scope and evolution of the literature on the subject. This concluding section begins with a discussion of the key lessons learned from the overall presentation, and then looks at the specific issues during each of the periods.

The volume of literature produced during 1988–2020 is low in comparison with the expectations of PIM being a hot topic, as suggested by Jones and Teevan (2007). Annual attention to the subject has also been sparse, with an average of 27 papers per annum for a subject that deals with issues which affect everybody. There is an emerging community of scholars in the area, but their numbers are small; they are diverse in terms of spread in the Scopus subject areas. PIM literature is available in 23 of the 27 subject areas of Scopus, with these subject areas having at least one document on PIM. This spread is an indication of the relative importance of the subject matter, and also supports PIM being a multidisciplinary area. However, it must be pointed out that the multidisciplinary nature of PIM has the likelihood of fragmenting knowledge about the subject, as well as posing problems and challenges for both users and designers of PIM tools.

Together, ‘personal information management’, ‘information management’ and ‘information technology’ are dominant among the initial and strong keywords in the results. There is consensus that PIM is an information management subject, and that information technology should supply the solutions to PIM. However, there is also diversity in the variety of information technologies and systems that can be applied to address the problems of PIM. Research on PIM during 1988–2020 could be described as characterized by external consensus and internal diversity within – information management envelopes PIM but the variety of information technologies for PIM appear numerous, with each emerging technology finding PIM a veritable testing ground. If the raw overall number of clusters of keywords is used as a basis for assessing consensus, then there was relative consensus during 1996–2001, when the number of clusters was the least, compared to the other periods. It would also appear that this consensus was challenged in the following periods.

The preponderance of the subject area of information technology could be understood as an act of continuous faith on the part of PIM researchers in the potential of information technologies and systems to address the problems of PIM – a route that has attracted researchers’ attention from the earliest evidence of research in the area (Bergman and Whittaker, 2016; Bush, 1945; Jones, 2007b; Lansdale, 1988). While

researchers in the social sciences were identifying and underpinning PIM as a social problem that deserved attention, other subject areas focused on either one or both sides of the problem.

An attempt is made here to identify the classes of research on PIM based on the results of this study. In addition to research from cognitive psychology and other disciplines that continually foregrounded PIM and its challenges (Jones, 2007a), research efforts were also dedicated to addressing the need for PIM tools using all possible emerging information technologies. Then came studies that tested or evaluated the use and challenges of PIM tools and, finally, there were efforts directed at social/human and individual factors as necessary elements to improve the efficiency of PIM tools. Evidently, and in line with Nettle and Frankenhuis's (2019) allusion to disciplines as partially genetically isolated subpopulations that can form the basis for local adaptation, PIM has grown, attracting the attention of a variety of disciplines, and there is consistent attention directed towards the subject by a small number of researchers. Its adaptations notwithstanding, PIM remains in information management territory, like its neighbours – business information management and management information systems, for example.

It can be seen that as information technology has fragmented into micro-products, the optimism of realizing efficient PIM tools appears to have lessened, as there is a continuous application of these information technologies to PIM research. PIM tools are therefore still evolving, and the solution to PIM will be continuous and dynamic, responding to new technologies and new ways of adapting and using those technologies. In fact, new technologies will present their own challenges to PIM, given that information technology is also a value-laden artefact; its use responds to several social variables (Jones et al., 1999).

The initiation period of 1988–1995 was characterized by attention to and consciousness of research in the area. The research consisted of the roles of computer systems and software applications such as artificial intelligence, data applications, hypertext, appliances such as computer disks and applications such as hypertext systems. The ideas of to-do lists and tagging and flagging, and how information technologies could be deployed to automate these processes, all featured in early discussions about PIM solutions during this period. Also, the context of personal information was introduced by Barreau (1995), who examined the features of a PIM system and compared the factors which influenced classification decisions in the electronic environment and those observed for physical documents in an office. Thomas et al.

(1995) also designed a framework for interactive technologies, which aimed to assist users in managing personal information in organizational, group and environmental contexts.

Much of the research during 1996–2000 and 2001–2005 was dominated by the testing of several PIM systems. The context became more clearly delineated to include the physical location, time periods and activities, among other factors. Moreover, the role of mobile and ubiquitous and wearable computing devices, interactive systems, sensors and software agents in integrating context in PIM systems became prominent (Abowd et al., 1998). The continued design of information systems, and experiments and evaluations of knowledge file systems, thesaurus management tools and Web 2.0 applications were developed during this period. But there were also many opinions questioning the efficiency of these systems, and inviting attention to be paid to the roles of social factors in enhancing the outcomes of the tools. During 2011–2015, the clustering of the keywords shows that information literacy, media literacy, user tasks, time, behavioural issues, methodological issues, the constraints of human memory and individual differences marked the significance of the amount of attention that was being directed at human factors. While relatively older technologies such as mobile devices, ubiquitous computers and tagging systems remained part of the choice of ICT tools for PIM, issues around the roles of microblogging, information extraction and web browsers were introduced.

The final period in the study was characterized by a diversity of research on behavioural factors, with few tools tested and even fewer designed. Many of the studies addressed issues ranging from the value of digital possessions to filing behaviours, digital legacies, PIM practices and self-efficacy in the use of various information technologies, among others. Bergman et al. (2019) tested and quantified the effect of factors related to collection size, file properties and workload on file retrieval. Oh's (2020) study examined how individuals' personal information organization reflected their social environments in order to understand social aspects of personal information organization. Further evidence of PIM research during this period is that researchers were beginning to search for a suitable theoretical basis for PIM research. For instance, the question of a theoretical framework for PIM research (Feng and Agosto, 2019) and a study testing the application of grounded theory to generate PIM theory (Alon and Nachmias, 2020a) could be considered significant.

Information management has always deployed information technologies and systems to achieve its



missions and goals, and tremendous tangible results abound. In addition to supporting local adaptation in the field of information management (Nettle and Frankenhuis, 2019), PIM research is continuously inviting the need for the integration of multidimensional social issues into the processes and technologies being adopted to address it, suggesting a persisting unmet need. However, the lesser amount of attention directed at the design of PIM tools during the final period of the study compared to the previous periods shows that research on the design of PIM tools appears to have been paused. This may be an indication of some relative consensus, but it is definitely not an expression of a saturation of research on PIM tools. It is anticipated that PIM tool designers will return, but this time the tools will integrate social/behavioural factors to achieve scalable outcomes that will meet users' needs or enable individuals to remake or appropriate the tools to meet their own needs (Tchounikine, 2019).

### *Implications for research, practice and/or society*

Researchers have been consistently focusing their attention on information technology as the main strategy for addressing the challenges of PIM, but the realization that information technology is a value-laden artefact and requires counterparts with social and human factors for better PIM tools is becoming overwhelming (Nwagwu, 2021a). In addition to being cultural where constant efforts are required to cope with it, the rapid changes that attend information technology make keeping up to date with the tools difficult. Many PIM tools already exist, but how far have they penetrated or been adopted by various user communities? How accessible and available are they? What about cost and technology issues? At the very basic level, what is the level of consciousness and awareness on the part of various community members about PIM tools? There is a need for studies that address these issues as a way of making these tools popular and generating the information required to improve PIM tools. The foregoing connects to the need to pay attention to behavioural aspects of PIM and PIM tools, including the influence of personal factors, capacity for the personal organization of information, self-discipline, memory and cognitive factors, time management, and capacity for information evaluation (Kearns et al., 2014).

Many studies have underlined the role of information literacy in dealing with PIM challenges (Koltay et al., 2015). Majid et al. (2013) have shown that PIM techniques are largely components of information literacy competencies. In his study of information

literacy, Jacques (2019) recommends a framework of personal information organization competencies, which consists of the essential components of PIM literacy. In a recent study of selected social scientists in Africa, Nwagwu (2021b) found information literacy to be a major factor of PIM efficiency. These opinions resonate with Barreau et al.'s (2009) study, which queried what is being taught about PIM, observing that it is unclear how research on PIM has affected pedagogy.

Three critical issues can be discerned from these opinions: (1) information literacy is absorbing PIM; (2) PIM is absorbing information literacy; and (3) PIM and information literacy are being integrated. The local adaptation of disciplines in Nettle and Frankenhuis's (2019) in the sense that opinions manifest aptly in this observation; information management 'highlights PIM' (González-Valiente et al., 2020: 314) and it has a very strong relationship with information literacy. There are specific microtechnology application issues that relate directly to both information literacy and PIM. For example, file management, hierarchical structures, tagging, dynamic structures and faceted search strategies are all found in both information literacy and PIM tools. Alerts and feeds technologies that facilitate tables of contents and news aggregators, and personal archiving tools that facilitate decisions and organization, could be directed to both subjects. Ironically, Onyancha's (2020) recent visualization of information literacy did not yield 'PIM' as a keyword, but it did yield 'information management' in the 1991–2000 period. Also, the present study on the visualization of PIM keywords did generate 'information literacy' as a keyword. Besides 'information management', what exactly is the nature of the relationship between information literacy and PIM? A different approach other than keyword analysis, such as the use of 'overlay visualization', 'topic detection' or citations, is required to determine the (dis)similarity between the two areas and the extent of their interrelationships (González-Valiente et al., 2020).

There are also non-technology issues that relate to PIM. Bergman et al.'s (2021) study – which reported that people create bookmarks for the purpose of remembering websites that they have previously used, but that these bookmarks are hardly ever used – is very revealing. Memory issues are central to PIM issues; besides being a significant justification for PIM tools, memory has a significant relationship with various personal (Nwagwu, forthcoming) and other factors. Integrating this issue, along with other social issues of PIM, into the design of PIM tools will

require PIM designers to work together with social and cognitive scientists.

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# A review of the library and information science profession in the Maldives: Development, challenges and opportunities

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## Abstract

The Republic of Maldives, a small island developing state in the Indian Ocean, has achieved upper-middle-income and high human development category status, and one of the strongest information and communications technology infrastructures in South Asia. However, the country's library and information science sector, which saw its inception over seven decades ago, has yet to advance beyond the initial development phase. This article traces the emergence of the library and information science sector in the country and draws attention to the myriad challenges faced by it. The article is also an attempt to draw the attention of government decision-makers and motivate them to understand and resolve the difficulties faced by the library and information science sector through engaging library and information science employers, educational institutions, professional trainers, and library and information science professionals. Some concerns are identified and five key action areas with associated action steps are suggested. These may resonate with other small developing countries that are facing similar scenarios.

## Keywords

Library and information science, LIS profession, LIS education, continuing professional development, library associations, Republic of Maldives

## Introduction

Libraries have been an integral part of the social infrastructure for aeons and are largely associated with economic development and prosperity, intellectual growth, education and learning, research, personality development and societal evolution (Klinenberg, 2018). Society and social institutions are dynamic and evolve with the times, and so have libraries. Technology, globalization and consumerism have not only accelerated societal changes but also transformed and redefined libraries. Today, libraries are perceived not only as a gateway to knowledge and culture, but also as a platform to support education and lifelong learning that stimulates economic, social and cultural development. Moreover, libraries provide opportunities for

idea-sharing and interaction, thus fostering social cohesion and community-building. Furthermore, as institutions with a social responsibility, libraries are perceived not only to be well placed to improve the outcomes of the United Nations' 2030 Agenda for Sustainable Development goals, but also to be visionary and innovating to adapt to the post-COVID era (European Bureau, 2020; IFLA, 2017).

The emergence of digital content, cheaper computer storage, and fast and reliable telecommunications has

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also opened up unprecedented opportunities for libraries. These developments, especially the digital shift, have challenged the library and information science (LIS) profession on two levels: first, to reskill as well as acquire new skills to stay relevant, and, second, to help develop the capacity of library users through media and information literacy skills to effectively navigate the digital information landscape for learning, work and personal needs (Carlsson, 2019; Varlejs, 2016).

Information is an enabler to making informed decisions for a better life. Universal access to information implies equitable access to information for all countries and citizens, irrespective of their level of national development. However, it is a fact that the availability of library services and access to information does not present a level playing field due to many factors. For example, we are aware of the glaring disparities in the digital divide and the existence of low-tech environments in many developing nations. As such, support for easy access to information is all the more important for these countries (International Telecommunication Union and UNESCO, 2019).

The geographically challenged small island developing state of the Republic of Maldives, located in the Indian Ocean, saw the emergence of its LIS sector in around 1945. The sector is still evolving, with advancements in LIS education gathering momentum only during the last decade, and the LIS profession yet to gain recognition in the country. The aim of this article is to map out the origins and current status of the LIS sector and draw attention to the plethora of challenges faced by the LIS community. Another aim of this article is to reach out to government policymakers and motivate them to understand and resolve the difficulties faced by the LIS sector through engaging various stakeholders such as LIS employers, educational institutions, professional trainers and LIS professionals. The article is informed by the limited body of LIS literature available on the Maldives, as well as insights acquired by the first author during a study visit to the Maldives (De Alwis, 2019). In addition, the findings of the first countrywide study on the status of continuing professional development (CPD) for LIS professionals in the Republic of Maldives provided some useful data (De Alwis Jayasuriya et al., forthcoming). Other small developing countries that are faced with parallel situations may find value in the proposed recommendations.

## The Republic of Maldives

The geographically isolated and dispersed low-lying island nation of the Republic of Maldives, located in South Asia, is an archipelago of 26 atolls and 1192

low-lying small coral islands, of which 188 are inhabited by a population of less than 400,000 (National Bureau of Statistics, 2020). Malé, the Republic's capital, serves as the country's resource hub and is one of the most densely populated cities in the world. The adult population (those aged 15 and above) has a high literacy rate (97.74% in 2014) and there is a literate youth population (National Bureau of Statistics, 2020; UNESCO Institute for Statistics, 2015). The official language of the country is Dhivehi and the medium of instruction at the primary, secondary and tertiary levels of education is English.

Growth in the tourism sector has helped the country advance to an upper-middle-income status and the high human development category. However, despite its high socio-economic development, the country is a typical example of the 'island paradox', with multi-dimensional development issues and geographical challenges (UNESCO, 2017). For many decades, the fishing and tourism sectors were the key income drivers, but they were overtaken by the construction industry in 2014, mainly due to the government-initiated infrastructure projects to address spatial disparity between the capital Malé and the atolls. The World Bank-funded infrastructure projects have targeted the relocation of inhabitants, as well as social, economic and institutional activities, from the sparsely populated islands to the Greater Malé region for more equitable access to resources and services, and to address the human development gap, mostly in income and education choices (World Bank, 2017).

Although the Maldives has succeeded in universalizing access to basic education, its education system suffers from a low quality of education, like many other countries in South Asia (UNESCO, 2017). As such, the government has identified the need to address the quality of education as a key priority. Measures undertaken by the government to address this gap include improving teacher education and harnessing the potential of information and communications technologies (ICTs) for education at all levels, thereby moving away from traditional modes of teaching.

The Maldives has experienced rapid growth in its ICT sector in recent years, which has facilitated connectivity and helped bridge the geographic disparity within the population (Government of Maldives, 2019). According to the International Telecommunication Union (2018), despite its challenging geography, the country's ICT infrastructure is considered to be one of the strongest in South Asia and has generated high levels of mobile broadband coverage. In 2016, Internet home penetration was at 54.7% and access to social media via a mobile device was at 65% (Yerbury et al., 2020). However, the key limitations

of adopting technology for learning are the cost of data packages and home accessibility to computers due to living and sharing facilities with extended families (De Alwis Jayasuriya et al., forthcoming).

### **The Maldives LIS sector: emergence and current status**

A library directory compiled by the Maldives Library Association (MLA) in 2012 reveals that a total of 294 libraries operate in the country (Shiham, 2012a). These include the National Library of Maldives (NLM), which also serves as a public library for the entire country, 221 school libraries, 7 academic libraries and 13 special/research libraries.

The oldest library in the country, the Dhaulathuge Kuthubukhana (Government's Library), was the predecessor of the NLM and was established in 1945 to serve an elite group of the community (Habeeb, 1989; Islam et al., 2012). In the late 1970s, it was restructured and opened to the community; it was renamed the National Library in 1982 and has since been serving both as the national library and a public library. The Legal Deposit Act 01/2006 was only realized in 2012 due to the lack of enabling legislation (Maldives Library Association, 2012; Riyaz and Smith, 2012). The Act supports the collection of all publications published in the country, as well as works authored by Maldivians and under Maldivian affiliation in other countries. The Act paved the way to accelerate the collection of materials for the *Maldives National Bibliography*, which was first published in 1995 (National Library, 1995).

Although there are no known state-funded public libraries in the country, a handful of privately owned libraries are offering public services, such as the public library in Lhaviyani Atoll (Shiham, 2012a). The 2010 Local Government Authority Act mandated each island to operate a public library maintained by the respective island council. However, according to informants for this study, to date, only two island councils in two atolls have extended public library services in accordance with this directive, and the services are offered by extending their respective government school library located on the island. The LIS professionals further suggested that there may be several reasons for the low take-up rate of collaborations. Many of the school librarians are unqualified or semi-qualified and, therefore, it can be reasonably assumed that they lack the necessary skills and knowledge to initiate and mobilize support and partnerships between the schools and the island councils. It is also possible that they lack motivation, since it will add to their responsibilities without any compensation. The

NLM and MLA therefore have a role to play in proposing a mechanism to compensate and empower library staff for this additional work, and also making known to them that it is an opportunity to create visibility and advocate for the LIS profession and libraries. Furthermore, the schools' management, as well as the island councils, should understand the potential benefits of possible partnerships between the two entities. The lack of initiative in the establishment of public libraries could also possibly be due to a gap in the policy initiatives of the NLM and/or its overseeing ministry, and the local government authority which oversees island councils, etc. However, the overarching reason for this gap may be attributed to the fact that the island councils may not be empowered as yet to fulfil their mandates as envisioned by the constitution, and the decentralization framework is yet to be strengthened (Transparency Maldives, 2019). These are areas that require further exploration and consideration.

The Maldives National University (MNU), established in 2011, is the first university and the major tertiary education institution in the country; it operates a library system comprising the main library, located in Malé, and seven campus libraries, some of which are located in Malé and others in different atolls. The nucleus of the rich collection of resources for the MNU library originated from the Maldives College of Higher Education library, established in 1998, and its predecessors (Riyaz, 2013). The MNU library is the leading library in the country, with the largest pool of library staff, and has pioneered library automation and digitization in the Maldives.

The majority of the 221 school libraries in the Maldives are located in the outer atolls, with 21 located in the capital city of Malé. The bulk of these libraries are operating under the aegis of the Ministry of Education, while a small number are in international and private schools. According to the MLA's newsletter, initially school libraries in Malé were managed by untrained librarians and 'there [were] no qualified or trained technical staff to handle the work...except young school leavers' (Maldives Library Association, 1988). By the early 1990s, many of these libraries employed at least one professional librarian, recruited mainly from Sri Lanka (Islam et al., 2012; Maldives Library Association, 1991). Discrepancies in resources and manpower exist between the libraries in Malé and the atolls, mainly owing to geographic dispersion, as well as the limited availability of LIS professionals (Gross and Riyaz, 2004; Islam et al., 2012; Riyaz, 2013). Comparatively better resourced, the school libraries in Malé are manned by at least two to four staff. Conversely, the



libraries in the atolls are usually overseen by one staff member, either trained or untrained, or in some cases are even left unmanned. The school libraries in some atolls are limited to a single book cupboard, a few shelves of books or a small unorganized collection, without any access to computers (Hickok, 2019; Sameer, 2005).

The National Archives of Maldives, established under the Archives Act (16/2011) in January 2012, is exploring ways to transform the future of archives in the Maldives. In an official statement released to commemorate International Archives Day, the National Archives of Maldives (2020) outlined the importance of digitization and manpower, among other related matters.

### **Maldives Library Association**

The MLA was established in 1987 at a time when there were no qualified library professionals in the country, and it is housed in the NLM (Maldives Library Association, 1988). The MLA developed a very ambitious strategic plan for the period 2012–2015, which identified five key action areas: the publication of library and membership directories; research and publishing; education and professional development; sustainability; and partnerships. However, due to resource constraints and a lack of experienced professionals and leadership, the MLA has faced setbacks and has also been inactivate at different times over the years (Riyaz et al., 2012b). As a result, the only outcomes realized from the plan were the creation of library and membership directories, and launching an MLA blog to communicate with the profession. Outcomes such as increasing membership, appointing MLA chapters for school and special libraries, increasing publications in the field of library science, and forging partnerships with relevant local and overseas institutes are yet to be realized (Shiham, 2012b). Similarly, advancing education and professional development through the strategic actions of creating a code of ethics for librarians, conducting a periodic training needs assessment of librarians, and holding a biennial conference has not been achieved. Although some of the delineated outcomes were realized, the relative inactivity of the MLA is evidenced by the absence of MLA newsletters from the late 1990s to 2004, and from 2007 to 2009, and, more recently, updates on activities on the MLA blog from 2014 to 2016, and again from 2020 to date. The periods of hiatus in the MLA are a phenomenon that has been experienced by LIS professional bodies in developing countries, which tend to be weak because of

their small membership base (Riyaz et al., 2012b; Sturges, 2012).

Several attempts were made over the years, up until the early years of the 2000s, to get the MLA registered as an accredited education and training provider. However, these efforts were unsuccessful as the criteria for accreditation stipulated by the authorities were not met (Riyaz et al., 2012b). As the MNU eventually started offering certificated programmes and given the resource constraints, it was decided that the NLM and MLA should concentrate on short-term CPD activities such as seminars and lectures (Islam et al., 2012).

De Alwis Jayasuriya et al. (forthcoming) reveal that only a small number of MLA members have been in the LIS profession for less than five years. The study reveals several reasons for the low take-up rate of MLA membership. These include the lack of follow-up due to phases of inactivity over the years; failure to update the membership register consequent to the revision of the constitution in 2014–2015; and failure to execute membership drives. Other reasons attributed to the lack of interest in MLA membership include: school librarians located in the outer atolls did not appreciate the benefits of joining the association; many of the new library recruits were considering joining a different job sector and therefore were not interested in actively participating in professional network activities; and many librarians were tied up with family commitments, with limited time for professional activities, and, as such, did not perceive the value of taking up membership for personal professional development.

The recent CPD study (De Alwis Jayasuriya et al., forthcoming) also reveals that although the MLA and NLM are focused on similar missions in terms of developing the LIS profession, there is only limited collaboration between them. The MLA continues to be inactive from time to time, and the NLM does not appear to be embracing the importance of the MLA as an enabler in implementing its strategies.

### **Utilization of ICT by the LIS sector**

The Maldives College of Higher Education library, the precursor to the MNU library, was the first to implement a commercial library management system in the country in 2007. The NLM followed in 2011 with the implementation of the same system – the Liberty library management system. The Maldives Digital Library Project, launched in 2012 with the MLA as the project lead and technical work carried out by MNU-affiliated library professionals, was a multi-agency effort and enabled over 20 school

libraries to implement the open-source Koha integrated library automation package and a digital repository at a research library using Greenstone and DSpace open-source software (Maldives Library Association, 2017; Riyaz et al., 2012a). Since then, the MNU library has also implemented a digital repository (Maldives Library Association, 2017; Riyaz and Nashfa, 2011). According to the stakeholder informants for this study, a Digital Library Unit was established at the NLM in 2015, but did not make much progress due to lack of staff. It was reported that the project was rekindled in 2020 utilizing existing staff. In January 2021, the NLM signed a Memorandum of Understanding (MOU) with stemspace.net to launch a makerspace and conduct programmes at the library. The deployment of social media by the LIS community is currently limited to the Viber groups maintained by the NLM and independent groups of LIS communities, and used mainly to market library-related events. Plans in the pipeline for the utilization of technology include the provision of technical support by the UNESCO Communication and Information Sector to strengthen open access to information through digital library initiatives (UNESCO, 2017). These forays into library automation and digitization were a key milestone in the progression of the LIS sector in the Maldives and afforded LIS professionals exposure and training in the adoption of technology.

### The LIS job market

The majority of the individuals employed in libraries in the Maldives are officers of the Maldives Civil Service. It is estimated that there were 293 active library positions in the Civil Service as of July 2020, comprising 251 assistant librarian, 36 librarian and 6 head librarian positions. These positions were at the NLM, a research library, government libraries and school libraries. Approximately 93 of the positions were vacant as of August 2020, and the majority of these were junior positions which required a MQA Level 4 or 5 LIS certification and/or related work experience. According to government officials, it has been extremely challenging to recruit qualified librarians, especially for the positions that require a LIS qualification. To get around this issue, flexibility has been adopted, such as downgrading positions to recruit unqualified individuals or recruiting people with a related qualification (such as in information technology or business administration). Consequently, the majority of the individuals employed in school libraries and junior positions in the national and university libraries may likely hold a certificate

in another discipline or are school leavers with a General Certificate of Education, either at the Ordinary or Advanced level (De Alwis Jayasuriya et al., forthcoming).

One particular barrier to recruiting individuals to library jobs is the absence of a job classification framework for the LIS profession (De Alwis Jayasuriya et al., forthcoming). The Civil Service Commission (2014) is responsible for the creation of a job classification framework for all professions in the Civil Service sector. The job classification framework for the LIS profession has been at the drafting stage since 2012, and the last draft, circulated by the Civil Service Commission for stakeholder inputs, is still pending.

The absence of a job classification framework is perceived by the LIS profession as a major impediment not only to the recruitment and retention of individuals in the profession, but also to attracting potential candidates to LIS study courses (De Alwis, 2019; Riyaz, 2019). The need for an approved scheme is all the more pressing given the impending launch of a LIS Bachelor degree programme in 2021.

The CPD study (De Alwis Jayasuriya et al., forthcoming) also recognizes other reasons that are limiting the recruitment of individuals to the profession, and for the high turnover of newcomers to the LIS profession without a LIS qualification:

- New job entrants lack understanding of the nature of the work performed by library professionals, as they are mainly tasked with shelving and shelf reading.
- Many new entrants perceive a library job as ‘just an interim job’, a stepping stone to another profession, and therefore lack commitment and interest in the profession and pursuing a LIS qualification.
- Individuals straight out of school may not have firmly decided on a career at that juncture and perceive that pursuing a generic qualification would offer more job opportunities.
- Most of the LIS courses are conducted in Malé, and many of the individuals working in libraries, especially in school libraries on the islands, are unable to continue studying on the job.
- Library jobs offer low salaries, particularly in the school library sector.

The study further notes that some mid-career LIS professionals were working in libraries without a LIS qualification, probably because certificated LIS programmes were only made available recently and also

because of the absence of a job classification framework that mandates LIS qualifications.

### LIS education and training in the Maldives

The first effort to introduce LIS education in the Maldives was in 1987 when the NLM launched the 12-week Basic Course in Librarianship with assistance from the Asia Foundation and the guidance of an overseas trainer (Maldives Library Association, 1988). The NLM continues to offer this course on an annual basis.

The first formal LIS education programme, launched in 1995, was based on a unique collaboration between three professional bodies – the MLA, the Sri Lanka Library Association and the NLM – and was offered via distance education (Yapa, 2004). Subsequently, the MNU developed its own suite of programmes, comprising the Advanced Certificate in LIS in 2010 and the Diploma in LIS in 2012 (Islam et al., 2012). The curricula of these two programmes were developed by MNU library staff with support from other practising librarians.

The challenges faced by the curriculum development team during the preparation of the two programmes included the lack of expertise in curriculum development amongst the team; the need to benchmark against LIS courses offered regionally and internationally; and conforming to the requirements of the Maldives Qualification Framework (Islam et al., 2012). A review of the MNU's Advanced Certificate course, based on employer and student feedback, assessed its usefulness and skills applicability in the workplace, and revealed that '[i]n general, graduates had positive comments about their experiences' but

Some graduates . . . needed more resources and support from the management . . . to apply their skills and knowledge. The employers too were very positive and suggested the inclusion of a research component and enhancement of the computer application component and internet applications into the program. (Islam et al., 2012: 130–131)

The review also drew attention to some of the shortcomings experienced by the LIS professionals, including limited opportunities for LIS education in the country and the need for employees to take time off work, which may risk their job security. The geographical dispersion of the country and the organizers' tendency to conduct programmes in the capital city of Malé was a challenge for the participants located in remote atolls. The study recommended the need to introduce distance learning to help working librarians overcome transportation and financial constraints.

Given this scenario, the review concluded that there was still a need for short-term LIS training opportunities for working librarians (Islam et al., 2012).

As of August 2020, a cohort of 54 students had successfully completed the MNU Diploma in LIS programme. In addition, 93 students had acquired their Advanced Certificates in LIS. It was only in 2018 that a full-time LIS faculty was appointed within the Faculty of Arts at the MNU and, consequently, a Bachelor degree programme in LIS is scheduled for launch in 2021.

Although the team that developed the LIS Advanced Certificate, Diploma and Bachelor degree programmes may have faced many challenges over the years due to their lack of expertise in curriculum development, it was opportune that they had the benefit of varying levels of LIS education through Australian-affiliated development scholarships. This afforded them the opportunity to add a more modern aspect to the programmes.

The recent COVID-19 lockdown has drawn attention to the need to review and consider new teaching and learning methods to reach out to potential students more effectively, particularly those located on remote islands (Maldives National University, 2020). The MNU has responded to this situation by adopting hybrid face-to-face and asynchronous teaching methods for its training programmes.

Additionally, the literature review conducted by De Alwis (2019) and the recent CPD study on the Maldives (De Alwis Jayasuriya et al., forthcoming), as well as this article, highlight the very limited amount of literature available on the LIS sector in the Maldives. This serves as a wake-up call for LIS professionals in the country to begin exploring various aspects of the LIS profession in the Maldives.

### Continuing professional development

A two-day event conducted in 1987 was the first LIS CPD initiative to take place in the country and was perceived as a milestone in the development of the library profession (Maldives Library Association, 1988; Riyaz et al., 2012b). Since its inception, the MLA has played a key role in offering CPD opportunities to its members. But as the MLA was housed on the NLM premises and both organizations were headed by the same group of individuals, MLA programmes conducted in-house tended to be branded under NLM ownership (Nashath, 2012).

Over the years, the two principal CPD training providers that have supported the LIS profession have been the NLM and the MLA. The Institute of Library and Information Services, a unit at the NLM approved

by the Ministry of Higher Education in 2010, is mandated to oversee the professional development of LIS professionals in the Maldives. Appendix 1 provides a list of LIS-related CPD programmes offered during 2016–2019 by the two key training providers in the country (the NLM and the MLA) and is indicative of the small range of available CPD programmes. The NLM offers regular training sessions to working librarians to overcome the shortage of training opportunities available (Islam et al., 2012).

During the COVID-19 lockdown, the NLM took the opportunity to adapt to the new norm by piloting one of its onsite workshops scheduled for 2020 as a webinar. Although initially there were many technology-related issues, it was well received by the LIS community. The NLM has since presented more webinars and launched a YouTube channel to access these recordings, and plans to make the webinars a regular feature. These positive outcomes have also inspired the NLM to explore the possibility of replacing face-to-face teaching with more online CPD programmes. Much groundwork is required before this can become a reality.

As NLM staff and government school librarians are Civil Service employees, they are entitled to receive at least six hours of training every year in their professional area. The mandate to oversee the on-the-job training and CPD of these employees lies with the Civil Service Training Institute, the training arm of the Civil Service Commission (2014).<sup>1</sup> The Civil Service Training Institute offers a wide range of general/soft-skills development programmes with an emphasis on upgrading information technology skills. The use of technology for delivering training material is encouraged to ensure inclusive opportunities for Civil Service employees working in the outer islands. Although the NLM staff have been benefitting from the Civil Service Training Institute courses, school librarians may not be aware of and/or do not perceive that they are eligible to attend these courses as they are on soft skills and are not library-specific courses (De Alwis Jayasuriya et al., forthcoming).

The first study on the status of CPD for LIS professionals in the Maldives was conducted during 2019–2020 (De Alwis Jayasuriya et al., forthcoming). The key findings of this study are as follows:

- LIS professionals in the Maldives have access to a very limited number of LIS-related CPD programmes.
- The CPD programmes offered by the NLM and the MLA are mainly targeted at new entrants to the profession, as the majority do not have any LIS qualifications.

- Appropriate training programmes are lacking for LIS professionals at the supervisory and middle-management levels across all types of libraries.
- The main barriers to pursuing CPD programmes are the lack of suitable training programmes, lack of knowledgeable resource persons and unaffordability of such programmes from personal resources.

It can be concluded that the ‘great need for short-term LIS training opportunities for working librarians’ highlighted almost a decade ago is yet to be achieved (Islam et al., 2012: 131). The findings of De Alwis Jayasuriya et al.’s (forthcoming) study are expected to provide some basic data for developing a CPD plan and strategies for the LIS sector in the Maldives.

### **Maldives policy direction on the school library sector**

Libraries are seen as an essential resource within the education sector. Although the majority of libraries in the Maldives are school libraries and a substantial number of the LIS professionals are school librarians, investment in school library development has been stagnant for a number of reasons (Didi, 2019). On paper, in strategic plans, libraries are featured as essential players in enhancing teaching and learning activities, as well as in the general development of a well-rounded society. While there is rhetoric on developing libraries, strategy implementation seems to fall short. For example, a Voluntary Service Overseas Maldives (2005: 18) report states that: ‘Training and professional development is key to improving the quality of education being delivered in the Maldives’. However, there seems to be a gap in the human resources policies governing staff development for school librarians, and they appear to be afforded little opportunity for CPD activities (De Alwis Jayasuriya et al., forthcoming).

Another example is the *National Curriculum Framework*, which includes only a general reference to the school library:

#### 10.3. Creating a Suitable Learning Environment

Provide physical facilities such as laboratories, libraries, toilets, safe drinking water, special rooms for various subjects, a canteen, adequate sport or play areas and a prayer room to promote effective learning and teaching. (National Institute of Education, 2014: 58)

The *National Curriculum Framework* identifies eight key competencies as the basis for employability and

lifelong learning. Using Technology and the Media' is expounded as follows:

As technology is a powerful platform to capture and disseminate information across the world, students need to *master the information literacy skills* they need in order to become sensitive consumers and creative producers of information. Therefore, *young people need to use and manage information effectively, accurately... Students who are confident in using technology, employ digital technologies and communication tools successfully to search for, manage, evaluate and use information effectively.* They recognise the information needed at any given time and purpose, how and where to locate it, evaluate the reliability and the validity of information. (National Institute of Education, 2014: 20; our emphasis)

The *National Curriculum Framework's* guide for teachers (National Institute of Education, 2015) elaborates how students should be assisted in achieving the expected competencies in information and digital literacy skills. However, the guide does not specify if school librarians have a role to play in helping students to achieve these competencies.

The most recent strategic directions that govern the Ministry of Education and Ministry of Higher Education (2019) regarding the need for school libraries are reflected in the Maldives Education Sector Plan 2019–2023. Unfortunately, this document also does not identify specific strategies to develop school libraries and their librarians.

In comparison, the Government of Maldives' (2019) *Strategic Action Plan 2019–2023* is a more pronounced and robust plan, which is overseen by the President's Office of the Maldives and is effectively aligned with the political manifesto of the current government. The *Strategic Action Plan* acknowledges the importance of libraries in ensuring that the citizenry become educated and free-thinking individuals. The key policy priorities identified in the education subsector relating to the LIS profession include:

Policy 4: Enhance the learning environment to ensure provision of a holistic education

Target 4.3: By 2023, all public schools have library facilities with learning spaces

Strategy 4.3: Ensure provision of adequate library services and independent learning spaces in all schools

4.3a: Prepare physical facility development plan and library development plan for provision of library

4.3b: Conduct a human resource need assessment and develop a HR [human resource] plan to employ trained librarians. (Government of Maldives, 2019: 135)

The lead implementation agency identified to achieve the targets is the Ministry of Education. The two other agencies assigned to partner in the implementation of Target 4.3a are the Civil Service Commission and the NLM. The *Strategic Action Plan* offers an ideal opportunity for the NLM and MLA to initiate engagement with relevant stakeholders.

### Strategic partnerships

At an international level, in 2005, the Maldives was accepted as a member of the then newly established Regional Federation of South Asian Library Associations (Kaur, 2008; Riyaz et al., 2012b). The MLA was expected to benefit considerably from this collaboration but, unfortunately, the Federation has been almost dormant since 2010. In 2010, the Maldives was a partner in the creation of the Digital Library Network of South Asia which was established through a grant from University of Waikato, New Zealand, to support digital library activities, among other things (Neelameghan and Raghavan, 2013). The MLA's digital library project came into existence through initial support from the Digital Library Network of South Asia.

In 2011, the NLM joined the Electronic Information for Libraries network and explored the formation of a Maldives library consortium with the MNU library and some private higher education providers. The key objective of the consortium was to provide the tertiary education community with access to a range of electronic resources through a cost-effective model. However, the consortium did not take off as there was no commitment on the part of some of the higher education providers (Shabana, 2012).

The NLM is a member of the Conference of Directors of National Libraries in Asia and Oceania and the International Federation of Library Associations and Institutions, and has close ties with the Asia Foundation (Conference of Directors, 2019).

Although, at the international level, the Maldives has not gained much from these collaborations, lately the NLM has started to venture into establishing strategic partnerships at a local level. Examples include the partnership with Stemspace Maldives to offer makerspace programmes at the NLM and the collaboration with Malé City Council and a private construction company to set up a street library service where books are placed in cupboards at vantage points in rest areas and small parks in the city to promote reading in the community.

A further development that has materialized in 2021 is that the Ministry of Arts, Culture and Heritage

(the ministry currently overseeing the NLM) has established an International Relations Unit and appointed a subcommittee. The NLM is also represented on this committee, which may be perceived positively given that the library does not have the resources to set up its own unit for this purpose at this juncture.

It is apparent that collaborations, be they at a local or international level, are unfortunately lacking and need to be paid more attention, especially given the resource constraints that the NLM, MLA and LIS community have to cope with.

### Library users in the Maldives

A narrative on the LIS profession would be incomplete without insights into the most critical component of the equation: the users served by the Maldivian libraries and LIS community. Unfortunately, there is only a limited understanding of user requirements, especially from a public library perspective. An analysis of MNU lecturers highlights that they were unhappy with the level of access to library resources (Navarro and Shareef, 2011). The MNU library is considered to be one of the most resourced libraries in the country. However, it is apparent that users now expect more online content with easier and more flexible access. Riyaz's (2017a, 2017b) research, based on a study of lecturers and students at two of the most prominent higher education institutions in the Maldives (the MNU and Villa College), reports that there was a high reliance on Google as an information source as opposed to the use of academic libraries. It is highlighted that the low use of the libraries did not necessarily reflect a lack of resources, rather their inability to provide speedy access to full texts (Riyaz, 2017a, 2017b). Riyaz (2017a) further highlights that the user community was quite Internet-savvy and expected 'Google-like' information services. Given the limited financial resources at the disposal of libraries in the Maldives, limited access to journal databases was also perceived negatively (Riyaz, 2017a). A small-scale study by Mohamed (2010), conducted at the MNU central library, found that among those who regularly visited the library, only 40% expressed satisfaction with the available databases. These findings are similar to Riyaz's (2017a) study, where only 43.1% of the survey participants from the MNU rated accessibility to research articles as good or excellent. It is unfortunate that the NLM's efforts to set up a Maldives library consortium in 2011 under the aegis of the Electronic Information for Libraries network to provide access to

electronic resources did not materialize (Shabana, 2012).

To summarize, it was over three decades ago when the first reference to a lack of qualified LIS professionals in the Maldives was made (Maldives Library Association, 1988). Almost two decades later, the Maldives LIS sector was still perceived to be in a state of development and concerns were expressed regarding a lack of skills among individuals employed in various libraries (Gross and Riyaz, 2004). Although some incremental developments have taken place in the LIS profession over the years, it is to be acknowledged that much is yet to be achieved. One reason for the slow pace of development may be attributed to the MLA not being very active. In addition, the LIS profession faces a plethora of challenges (De Alwis, 2019; De Alwis Jayasuriya et al., forthcoming; Riyaz, 2019). These include a lack of recognition of the importance of libraries; uncertain career paths due to the absence of a job classification framework; and the low salary structure, leading to low self-esteem in the profession and thus a failure to attract and retain talented individuals.

### Opportunities to steer the future direction of the Maldivian LIS profession

Although there are a number of concerns that need to be addressed to build a strong foundation for the LIS profession and get it future-ready, this article proposes *five key action areas* that need immediate attention and *key action steps* to achieve the respective action areas.

#### *Action Area 1. Build a strong collaboration between the NLM and the MLA*

It must be conceded that some sort of collaboration has existed over the years. However, both the NLM and the MLA need to take a fresh look to determine how it can be strengthened for more effective outcomes. Although the MLA can rally the LIS community together, it is less effective as it is a voluntary organization that is managed by a small and geographically dispersed LIS community, and has unfortunately been relatively inactive over the past several years. On the other hand, the NLM is a policymaking body with a government mandate. Although the NLM's core function is to manage and preserve the national heritage, it is also mandated through its training arm, the Institute of Library and Information Services, to oversee capacity-building for the LIS profession for the nation. As such, both bodies are focused on similar missions and need to cope with

resource constraints – some of which are mutually exclusive and others which are common to both. However, the NLM does not seem to have had much success in fulfilling this mandate to its full capacity. Therefore, in the interests of the LIS community, the NLM and the MLA need to develop a very close working relationship and, most importantly, the NLM needs to realize the key role of the MLA as an enabler in implementing the NLM's strategies and leverage its strengths and capabilities.

### *Action Area 1. Key action steps*

*Appoint a national steering committee to oversee the development of the LIS sector.* As the mandate to develop the LIS sector in the Maldives is vested in the NLM, it needs to take a lead role to establish and steer a committee with support from the MLA. The composition of the committee should ideally include two or three senior LIS professionals, with representation from all stakeholders: the NLM, the MLA and the different types of libraries, and the MNU as the tertiary LIS education provider, as well as representatives from the Ministry of Education, the Ministry of Higher Education and the Maldives Civil Service. The NLM needs to lobby the Ministry of Arts, Culture and Heritage (the ministry currently overseeing the NLM) for its patronage and representation at a very high level on the committee. Ideally, the representations from the other ministries should also be at a high level to facilitate decision-making on policy matters. The administration of all committee matters will be the purview of the NLM. Some areas that need to be given immediate attention are as follows.

*Develop a blueprint for the LIS sector.* The committee should develop a blueprint and propose an implementation strategy, detailing the roles of the various agencies such as the NLM, MLA, MNU LIS programme, Ministry of Education, Ministry of Higher Education and Maldives Civil Service in developing the LIS sector.

*Advocate for the extension of more public library services on the islands.* Although the 2010 Local Government Authority Act mandates each island to operate a public library maintained by the respective island council, to date only two school libraries in two atolls have extended public library services in accordance with this directive. The committee should explore with the relevant island councils, ministries and local government authority the feasibility of having more school libraries extend public library services on the islands.

*Advocate to improve the school library sector.* The Maldives Strategic Action Plan 2019–2023 (Government of Maldives, 2019) is a perfect platform to engage with the relevant stakeholders and commence advocating for libraries. These dialogues need to focus on two specific areas: first, improving school libraries on the islands (and ensuring that members of the island councils are engaged in these conversations for the provision of funds and other resources) and, second, implementing policies governing CPD opportunities for school librarians. With respect to CPD, three measures that should be considered immediately are: (1) establishing a training policy which incorporates Ministry of Education professional development days currently extended to school teachers to be also offered to library staff; (2) providing adequate training hours to enable school librarians to acquire LIS competencies; and (3) making school librarians aware that they are eligible to attend training courses offered by the Civil Service Training Institute and encourage their participation.

*Implement the LIS job classification framework.* The patronage of the National Steering Committee should be sought to lobby the relevant policymakers to get the job classification framework formalized for the LIS profession. The implementation of the framework would not only facilitate the recruitment and retention of capable individuals in the profession, but also attract potential candidates to study on the LIS courses.

*Conduct an advocacy campaign to create awareness of the critical role of libraries in society.* It is desirable that the MLA and NLM leverage the members of the National Steering Committee to reach out to, engage with and influence decision-makers in state organizations as well as in the community.

*Advocate the support of decision-makers.* A concerted advocacy campaign should be conducted, targeted at relevant decision-makers. The objectives of the campaign should be to create awareness about libraries and their critical role in changing lives through education and lifelong learning, and to secure support for funding for libraries and buy-in for policy decisions pertaining to the LIS sector. For example, the Voluntary National Review for the High-Level Political Forum on Sustainable Development (Ministry of Environment and Energy, 2017) does not seem to include any reference to how libraries can contribute to the realization of the United Nations' 2030 Agenda for Sustainable Development goals. This is a matter of concern given that UNESCO (2017) is attempting to promote universal

access to information for the local community through open solutions.

*Advocate the support of the local community.* It is also important to garner the support of the local community to advocate for libraries. To do so, the NLM and MLA should gain the support of community leaders and other prominent members of the community or influencers.

*Increase the visibility of the LIS sector.* The visibility of the LIS sector could be increased by LIS professionals serving on boards or committees of community organizations and/or volunteering with these. Other options include leveraging the media to tell stories about libraries both positive and negative.

Advocating for libraries as 21st-century learning centres will help showcase how they add value to people's lives and lifelong learning. This process would also pave the way to create visibility for the LIS profession and awareness of its contributions to the community.

### **Action Area 2. Strengthen the national library association**

A critical first step that the LIS community needs to undertake is to strengthen the national library association in order to build a strong foundation that will be the basis for a robust LIS profession. It is desirable that senior LIS professionals take the lead and adopt a two-pronged approach: first, they need to persuade individuals that it is in their own interests to invest time in the association and, second, they need to advocate to the LIS community (especially the school librarians based in the outer islands) the purpose and value associated with obtaining membership of the MLA, and giving more visibility and respect to the profession.

#### **Action Area 2. Key action step**

*Update the MLA's list of members.* The MLA's 2012 directory of libraries should be updated and a list of personnel employed in libraries should be included. It is recommended that these lists are created online for ease of updating. This directory will also improve visibility and cooperation among library staff. In addition to personal information, this directory should include the special expertise and skills of the individuals so that they can be approached when assistance is required.

### **Action Area 3. Advocate CPD for LIS professionals**

Given the evolving information landscape, it is imperative that LIS professionals invest in regular and planned learning through CPD at different stages of their career. Learning and implementing new skills

and best practices at work will enhance the professionalism of librarians, as well as improve the quality of library services and the track record of libraries, and support employers' organizational goals. Varlejs (2016) suggests that the primary responsibility of CPD lies with individuals. Additionally, employing institutions, professional associations, library/information science education programmes and organizations concerned with library development have a stake in the CPD of professionals. However, given the current status of CPD for LIS professionals in the Maldives, it is recommended that advocating for CPD should in the first instance focus on the individual (De Alwis Jayasuriya et al., forthcoming).

#### **Action Area 3. Key action steps**

*Inculcate the importance of adopting personal responsibility for CPD.* LIS professionals need to be encouraged to cultivate personal commitment and adopt a self-directed route to explore different avenues to acquire professional skills. Some useful educational resources available in the public domain include YouTube videos, lectures, conference presentations and webinars. Two tools that could be promoted for tracking individuals' personal CPD journeys are personal development plans (Fontain, 2018; Varlejs, 2016), which can serve as a guide to developing one's career, and the use of a 'to do' list to ensure that learning is intentional and focused towards projects and new tasks that need to be undertaken.

*Appoint CPD champions.* It is desirable to identify young individuals with leadership potential by library type to act as 'CPD champions'. Their roles could encompass the monitoring and sharing of information on upcoming local and overseas online CPD events; motivating fellow librarians to pursue CPD activities; and initiating and promoting the use of personal learning networks as a means to stay connected and share know-how, as well as troubleshoot common concerns with fellow librarians (Cooke, 2012).

Potential individuals from amongst the CPD champions may also be considered for coaching as trainers to overcome the shortage of knowledgeable resource personnel in the Maldives. These actions will also facilitate the development of a pool of young leaders to eventually take on leadership roles and steer the future of the profession. The launch of the Bachelor degree in LIS will provide a resource pool that may be tapped to identify potential candidates for this role.

*CPD opportunities that the NLM and MLA need to offer in the short term.* The NLM and MLA need to offer



courses that are targeted at school librarians and supervisory and middle-management personnel across all types of libraries, and to be a source for training programmes offered overseas to facilitate the development of a cohort of young LIS leaders and trainers (e.g. the train-the-trainer model). Practising CPD will have a spin-off effect on individual professionals through acquiring the desired skills and knowledge, which will help enhance their self-esteem and motivation, as well as realize their personal and career goals. For the LIS profession as a whole, it will lead to the development of the profession, it gaining the recognition of decision-makers in state organizations, and, ultimately, it being positioned as a promising profession for new entrants. In the process, it will help to break the stereotyping of library-related jobs as clerical and administrative support, and lead to the redefinition of the identity of the profession and expansion of its boundaries to fit a 21st-century image.

#### **Action Area 4. Advocating a LIS research agenda**

As the Maldives has a very limited amount of literature on libraries, it will be beneficial to initiate a LIS research agenda targeted at the different types of individuals associated with the LIS profession.

#### **Action Area 4. Key action steps**

*Current cohorts in the MNU LIS programme.* Depending on the programme, students may be encouraged to either conduct some basic studies or incorporate a mandatory research component in the LIS curriculum to help bridge this knowledge gap.

*LIS practitioners and researchers.* LIS practitioners should be encouraged to pilot projects to showcase examples of their work. Additionally, LIS practitioners could identify potential areas of research and provide support to students, faculty and researchers in data collection. This will ensure that the research has some application aspects. Three areas of research that may be given priority in the short term are: users' perceptions of the role of libraries in national development; how libraries can best respond to users' information needs; and how school libraries can extend public library services to island residents.

#### **Action Area 5. Build strategic partnerships**

The NLM and MLA need to reach out, explore and build strategic partnerships at two levels: locally, with individuals in related industries, community organizations and non-governmental organizations, and inter-/intra-regionally and internationally with libraries, LIS

schools and professional bodies, and other related organizations that may offer opportunities for collaboration. Special efforts should be made to seek collaborations within the Asia region as these may offer a contextually better fit. Such alliances could help overcome resource constraints, especially knowledgeable individuals to support education and training activities.

The Maldivian LIS community may also consider the model adopted by a group of committed librarians and other individuals active in the field to establish the Myanmar Book Aid and Preservation Foundation.<sup>2</sup> The Foundation has successfully collaborated with local and international non-governmental organizations to assist local libraries with the donation of resource materials, the preservation of Myanmar's historical and contemporary print culture, capacity-building through training programmes, the provision of mobile information literacy training through approximately 90 public libraries, and, lately, developing a data literacy curriculum.

#### **Conclusion**

LIS professionals who have acquired the requisite professional education and updated their knowledge through participation in CPD learning activities are likely to satisfy their professional needs and expectations. A good track record on the part of libraries would help enhance the image of libraries and strengthen and position libraries with stakeholders. LIS education in the Maldives is still in a state of development, and the LIS profession is yet to gain recognition. According to the report *The future of skills: Employment in 2030* (Bakhshi et al., 2017), individuals engaged in the library sector are listed in the high-growth professions and will be in demand to navigate information even in a digitalized world. It is therefore imperative that the Maldivian LIS community take a transformative leap to drive the future direction of the profession and ensure a strong outlook for the sector, which is needed in the 21st century. Openness to new ideas and adaptability are required to make these changes happen. A strong NLM and the MLA, together with the Maldivian LIS community, need to establish a very close working collaboration. The cumulative effect of a close-knit community will be a means to overcome professional isolation, boost the status and image of the profession, and help get the profession recognized.

We live in unprecedented times. The COVID-19 pandemic has accelerated transformation throughout the world, and governments today are focused on rebuilding economies and introducing new norms. The Maldives government is likewise focused on building resilience to external shocks in the midst of coping with slower economic growth. Drawing the attention of government decision-makers and obtaining funding for LIS-related

activities will therefore become increasingly challenging. The Maldivian LIS community will need to be resourceful, adopt bold thinking and initiatives, and find ways to creatively build a skilled pool of LIS professionals. These efforts will pave the way to redefining the identity of the profession and prepare it to accept future challenges successfully.

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### Notes

1. See the Civil Service Training Institute's website at: <https://csti.gov.mv/>
2. See the Myanmar Book Aid and Preservation Foundation's website at: <https://mbapf.org/>

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**Appendix I.** CPD learning activities conducted by the NLM and MLA, 2016–2019.

| <b>Year</b> | <b>Month</b>      | <b>NLM</b>                                                                                                                                                                                                                      | <b>MLA</b>                                                                                                                  |
|-------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 2016        | February          | Reference inquiries workshop                                                                                                                                                                                                    |                                                                                                                             |
|             | March             | Information literacy workshop                                                                                                                                                                                                   |                                                                                                                             |
|             | May               |                                                                                                                                                                                                                                 | Workshop on island library development                                                                                      |
|             | August            | Advanced classification and cataloguing workshop                                                                                                                                                                                |                                                                                                                             |
|             | November          | Fundamentals in library and information services                                                                                                                                                                                | Training on essential skills in library science (for new recruits), October–November (five Saturdays from 9 a.m. to 1 p.m.) |
| 2017        | March             | Hazard recognition, assessment and control workshop                                                                                                                                                                             |                                                                                                                             |
|             | April             |                                                                                                                                                                                                                                 | Dhivehi big book writing skills workshop                                                                                    |
|             | May               |                                                                                                                                                                                                                                 | Grant proposal writing workshop                                                                                             |
|             | September         | Information literacy workshop                                                                                                                                                                                                   | IFLA Global Vision country workshop<br>Workshop on island library development                                               |
|             | October           | Library activities for preschoolers workshop                                                                                                                                                                                    |                                                                                                                             |
|             | November          | Fundamentals in library and information services                                                                                                                                                                                |                                                                                                                             |
| 2018        | March             | Library display and promotion workshop                                                                                                                                                                                          |                                                                                                                             |
|             | April             | Dhivehi Bahuge (language) training                                                                                                                                                                                              |                                                                                                                             |
|             | June              | IFLA Global Vision conversation 2018 – workshop on united library field, initiated by the MLA in partnership with the NLM ( <a href="https://infomalias.wordpress.com/page/14/">https://infomalias.wordpress.com/page/14/</a> ) |                                                                                                                             |
|             | November/December | Fundamentals in library and information services                                                                                                                                                                                |                                                                                                                             |
| 2019        | April             | Workshop on library development and library management, initiated by the MLA in partnership with the MNU and NLM                                                                                                                |                                                                                                                             |
|             | July              | Research 4Life training                                                                                                                                                                                                         |                                                                                                                             |
|             | September         | Library management                                                                                                                                                                                                              |                                                                                                                             |
|             | November          |                                                                                                                                                                                                                                 | Koha training (three-day programme)                                                                                         |



# A model of access to information among Nigerian rice farmers

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## Abstract

Facilitating access to information has been and will continue to be a dynamic process in light of the growing importance of information. Many studies have explored the socio-economic characteristics or attributes of farmers that affect access to information. Studies on models for their prediction are often lagged, particularly in developing countries. In this article, data on access to information and other attributes was collected from 1920 randomly selected rice farmers in Nigeria using structured interviews. Half of the farmers (49.0%) had access to information on rice farming and more than half (64.9%) belonged to a farmers group. The majority of the rice farmers were married (90.7%) and educated (73.1%). A logistic regression model with a 54.4% correct prediction showed age, education and membership of a farmers group to be predictors of access to information. Librarians should ascertain the attributes of rice farmers to enable them to repackage information for easy access.

## Keywords

Access to information, rice farmer, predictive model, attributes of farmers, logistic regression model

## Introduction

Rice is a unique crop that is grown virtually all over Nigeria because of its wide adaptability in every ecological zone. This has been emphasized in the works of Akande (2003), Davis (1962), Filani (1980) and Hardcastle (1959), including Federal Capital Territory (National Agricultural Extension, 2015). As such, its production levels can easily be improved to reduce food insecurity. Studies on information surrounding rice farming have been carried out by numerous authors (e.g. Abur, 2014; Diouf, 2003). Although the bulk of rice in Nigeria is produced in swamp and upland areas, the potential exists for increased output through irrigation (Clark, 1967; Davis, 1962). Ajah et al. (2017) state that a temperature range of between 20 °C and 38 °C is required during growth, with long periods of sunshine, which makes rice suitable for growing in virtually every part of Nigeria. Since the mid 1970s, the demand for rice in Nigeria has been increasing at a faster rate than in any other African country (Food and Agriculture Organization, 2002; Odoemenem and Inakwu, 2011; Ohen and Ajah, 2015). Cadoni and Angelucci (2013) note that rice is grown on approximately 3.7 million hectares of land in Nigeria, covering 10.6% of the 35 million

hectares of land under cultivation out of a total arable land area of 70 million hectares.

A predictive model of access to information among Nigerian rice farmers has the potential to make a difference between grinding poverty and an economically secure life for rice farmers, as well as enhancing rice production in Nigeria. Known facts or historical data are used to forecast outcomes. In this case, it involves making use of the attributes of farmers that will enable them to access information and repackage it for easy access, comprehension and usage. Many authors have revealed that the attributes of farmers affect access to information. For instance, Lawal et al. (2016) note that users' attributes affected rural women's access to agricultural information in Abuja, Nigeria. This warrants study, to find ways of matching information with its users.

Access to information is the bedrock through which information reaches the user community. According to Jaeger and Burnett (2005), access to information

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means the presence of a robust system through which information is made available to citizens and others. Contextually, access to information is the ability of farmers to acquire the right amount of information or input information and technologies as and when needed for agricultural purposes. Information is becoming an increasingly important asset and, as such, should be central to any production process. As Jaeger (2007: 843) comments: 'without access to information, there will be no exchange, use, collection, or management of information'. The literature on access to information shows that many factors in particular, the variables that vary among information users – contribute to the heterogeneity and choices involved in access to information. Kumar and Phil (2009) note that systematic study of a user community will reveal the various attributes of the users seeking information, and this will provide the necessary base guidelines for librarians to serve various types of user groups.

Rogers (2003) and Botha and Atkins (2005) asserted that user characteristics or attributes include, among others, head of household, gender, age, marital status, education and number of households. Other attributes, as listed by Kanungo (1995), include demographic, institutional and professional. Cowan et al. (2017) listed technical knowledge, while Luger and Sellen (2016) included cultural background. Other characteristics are assimilation bias, technical confidence and users with visual guidance (Myers et al., 2019). This means that the attributes of users that will guide any information professional to carry out their responsibility depend on the type of user group.

A model of access to information provides a framework for organizing information so that it can be delivered and used in a variety of innovative ways. Modelling access to information among Nigerian rice farmers entails creating a database of users' attributes that predict their access to information. This is very useful for addressing the information needs of target groups in Nigerian communities. It helps to improve information flow to, from and within farming communities to support well-organized information provision, especially in developing countries where many farmers are illiterate. Once a model of access to information is created, librarians – and especially those working in public libraries – will be able to label information in ways that will enhance its provision, making it possible to disseminate information quickly and easily to farmers.

Allen (1996) states that, with a heterogeneous group of users, a one-size-fits-all approach to designing information is less likely to be successful. Dillon and Watson (1996), Egan (1988) and Nielsen (1993)

assert that users' individual differences have received more attention than ever before and have been recognized as a crucial aspect of study for understanding users and developing more usable systems. A model of access to information will help librarians – and especially those working in public libraries – to repackage information based on the way users will understand, access and make use of it. Equipped with knowledge of the attributes of the farming community and the capacity to improve access to information, librarians can incorporate information in different forms, such as text, sound, images and videos. They are equally capable of providing different organizational structures for information and access to it in ways that can accommodate users' interests and needs, thereby allowing librarians flexible presentation of information and limitless access to information by farmers. This is in accordance with Nielsen (1989, 1993), who states that users' individual differences are the most important variable to be considered in the usability of hypermedia. Therefore, in this article, a binary logistic regression model is used for the accurate prediction of access to information among Nigerian rice farmers.

## Literature review

This literature review identifies the attributes of farmers that affect access to information. Lawal et al. (2016) applied maximum likelihood estimates using a logit regression model to determine the factors influencing rural women farmers' access to agricultural information in Abuja, Nigeria. The results reveal that age, marital status and membership of a farmer's cooperative association had positive and significant relationships with access to agricultural knowledge and information.

Oke et al. (2019) investigated the determinants of access to credit among cocoa farmers in Osun State, Nigeria. The data was analysed using logit regression. Farm size, income and number of years of schooling had a significant and positive effect on access to credit. On the other hand, gender, distance to the credit source and the interest rate were significant but had negative effects on access to credit by cocoa farmers in the study area. In their work, Assogba et al. (2017) analysed the determinants of credit access by farmers in north-east Benin. A logit model was used to identify the relationships between access to credit and selected farmers' socio-economic characteristics. The results show that access to credit among smallholder farmers was determined by the number of years of schooling, literacy, membership

of a farmers group, the guarantor, collateral and the interest rate.

Ajah et al. (2017) studied the determinants of access to credit among rice farmers in the Biase Local Government Area of Cross River State, Nigeria. The results show a positive and significant relationship between credit access and age. This finding suggests that older people have a good chance of accessing credit. Ololade and Olagunju (2013) studied the determinants of access to credit among rural farmers in Oyo State, Nigeria. Using a binomial logit regression analysis, the results show that the significant factors affecting access to credit by rural farmers were gender, marital status, the guarantor and a high interest rate.

Kega et al. (2015) carried out '[a] logit analysis of farmer knowledge on rice blast disease *Pyricularia grisea* [Cook, Sacc] at Mwea irrigation scheme, Kirinyaga County, Central Province, Kenya'. A logit regression model was used to identify factors that influenced farmers' knowledge of rice blast disease. The analysis revealed that age had a significant influence on knowledge of rice blast disease.

In his work, 'Credit accessibility and poverty among small holder cassava farming households in south west Nigeria', Obisesan (2013) used logistic regression analysis to ascertain the factors that influenced credit accessibility. Access to credit was regressed on age, number of years of formal education, gender, land area cultivated, household size, marital status, main occupation, participation in off-farm activities, membership of a farmers group, years of farming experience and crop yield. The results show that, among the 11 variables used in the analysis, only 7 variables significantly influenced farmers' credit accessibility: gender, age, main occupation, participation in off-farm activities, membership of a farmers group, years of farming experience and crop yield.

Mohamed (2003) examined access to formal and quasi-formal credit by smallholder farmers. The study employed descriptive statistics and a logistic regression model in its analysis. Age, gender, education, income levels and degree of awareness of credit availability were the factors that influenced credit accessibility by smallholder farmers.

Tetteh (2013) reveals a significant relationship between the age of the respondent and access to land, credit, inputs and labour. However, no significant relationship was found between age and extension services and technology. The results also show a significant relationship between level of education and access to improved seeds and labour, while no significant relationship was found between level of

education and access to extension services, technology, land, credit, fertilizers and herbicides. Moreover, there was a significant relationship between household size and access to extension services, but no significant relationship was found between household size and access to technology, land, credit, inputs and labour. The results further reveal a significant relationship between the size of land holdings and access to labour, credit, inputs and land, while no significant relationship was found between the size of land holdings and access to technology and extension services.

Koskei et al. (2013) found that there was a significant relationship between smallholder tea farmers' access to agricultural information on tea crops and their off-farm income, education level, household size and marital status. The study by Rehman et al. (2013) reveals that farmers' educational levels, as well as the size of their land holdings, were found to influence their access to agricultural information, while age and farming experience had no influence on their access to agricultural information.

Sani (2017) found that age, sex, experience, educational status and belonging to a farmers association had a significant relationship with access to and utilization of agricultural information by irrigation farmers. Jeiyol et al. (2013) reveal that farmers' household expenditure, the cost of fertilizers, the cost of hired labour, farm size and farm income were significant determinants of access to credit among male and female farmers in Benue State, Nigeria.

In their work, Nyamba and Mlozi (2012) reveal that it was evident that people in Kilolo District, Iringa, Tanzania, were taking advantage of the increasing number of mobile phones to access information related to their farming business. Characteristics such as age, gender, daily income and education level were found to be determinants of the ownership and use of mobile phones in the study area.

Jain et al. (2012) discovered that access to information and communications technologies by farm women was largely determined by their socio-economic status and the educational status of their household. Noumani et al.'s (2013) findings suggest that a strong relationship exists between access to agricultural credit and the socio-economic characteristics of the borrower. The amount of agricultural credit that could be borrowed by farmers was significantly affected by their marital status, education level, farm size and farm status.

Kughur et al.'s (2015) study reveals that out of seven socio-economic characteristics that were regressed on farmers' accessibility to agricultural information, only formal education and annual income were positively and statistically significant.



The implication of this finding is that the higher the level of education of the respondent, the more access they had to information on agricultural technologies. Likewise, the higher the income of the respondent, the more access they had to agricultural information.

Various studies have been conducted to explain the influence of users' attributes on accessing information, inputs or input information, and technologies. However, to the best of my knowledge, no study has developed a model using attributes to predict access to information among Nigerian rice farmers. This study aims to fill this knowledge gap.

## Materials and methods

The instrument for data collection was a structured interview schedule. The data used for the study was obtained from the primary source using a two-stage cluster sampling technique. Agricultural clusters often form geographical and sectorial agglomerations of enterprises (Food and Agriculture Organization, 2006). Contextually, a rice production cluster is an agglomeration of various rice production communities located around a specific geographical production continuum, with some common natural resources such as water and flood plains.

Aminu Adnan (2019) identified 165 clusters of rice farmers in Nigeria from 18 selected states. Sixteen of these states are currently the major producers (in the wet season) and cumulatively account for about 80% of the total output. Two states, which were selected to capture niche production clusters and the market preference for some local rice varieties, were added. The estimated total number of rice farmers during the 2016 wet season was 1,426,505 in the 18 rice-producing states, which represented only 17.69% of the total number of farming families (National Agricultural Extension, 2015). A random sample of one cluster from each geopolitical zone was selected. Simple random sampling was used on each cluster, resulting in a sample size of 1920 or 0.13% of the total population of wet-season rice farmers in the 18 states. The instrument was administered to the 1920 randomly selected wet-rice farmers and the 'no responses' were replaced to make up the exact number.

## Data presentation

Table 1 shows the percentage distribution of the attributes of the 1920 respondents. In this analysis, access to information is the response or dependent variable of interest and age, marital status, education, sources of information, experience of farmers, household size and membership of a farmers group are predictors.

**Table 1.** Percentage distribution of the socio-economic characteristics of the respondents.

| Socio-economic characteristics       | Frequency | %    |
|--------------------------------------|-----------|------|
| <b>Gender</b>                        |           |      |
| Male                                 | 1752      | 91.3 |
| Female                               | 168       | 8.8  |
| <b>Age</b>                           |           |      |
| 30–40                                | 333       | 17.3 |
| 41–50                                | 525       | 27.3 |
| 51–60                                | 726       | 37.8 |
| 60+                                  | 336       | 17.5 |
| <b>Marital status</b>                |           |      |
| Single                               | 26        | 1.4  |
| Married                              | 142       | 90.7 |
| Widowed                              | 91        | 4.7  |
| Separated/divorced                   | 61        | 3.2  |
| <b>Religion</b>                      |           |      |
| Christian                            | 490       | 25.5 |
| Muslim                               | 1198      | 62.4 |
| Traditional religion                 | 232       | 12.1 |
| None                                 | –         | –    |
| <b>Education level</b>               |           |      |
| None                                 | 19        | 5.1  |
| Quranic education                    | 307       | 16.0 |
| Primary                              | 763       | 39.7 |
| Secondary                            | 544       | 28.3 |
| Tertiary                             | 306       | 15.1 |
| <b>Sources of information</b>        |           |      |
| Non-formal                           | 959       | 49.9 |
| Formal                               | 961       | 50.1 |
| <b>Household size</b>                |           |      |
| 1–5                                  | 255       | 13.3 |
| 6–10                                 | 660       | 34.4 |
| 11–15                                | 469       | 24.4 |
| 16–20                                | 298       | 15.5 |
| 21–25                                | 142       | 7.4  |
| 26–30                                | 96        | 5.0  |
| <b>Years of experience</b>           |           |      |
| 1–10                                 | 488       | 25.4 |
| 11–20                                | 717       | 37.3 |
| 21–30                                | 472       | 24.6 |
| 31–40                                | 200       | 10.4 |
| 41–50                                | 43        | 2.2  |
| <b>Membership of a farmers group</b> |           |      |
| Member                               | 1245      | 64.9 |
| Non-member                           | 675       | 35.1 |
| <b>Access to information</b>         |           |      |
| No                                   | 979       | 51.0 |
| Yes                                  | 941       | 49.0 |

Both the response and the predictors are categorical variables. The gender distribution (Table 1) reveals that the majority (91.3%) of the rice farmers interviewed were male, while female farmers numbered only 8.8% of the total. This implies that wet-season rice production in Nigeria is generally dominated by males.

**Table 2.** Parameter estimates for model of access to information.

|                               | B     | SE   | Wald   | <i>p</i> | Exp(B) |
|-------------------------------|-------|------|--------|----------|--------|
| Age                           | .109  | .050 | 4.793  | .029*    | 1.115  |
| Education                     | .159  | .056 | 7.879  | .005*    | 1.172  |
| Sources of information        | -.069 | .095 | 0.521  | .471     | 0.934  |
| Experience of farmers         | .005  | .051 | 0.009  | .923     | 1.005  |
| Household size                | -.032 | .034 | 0.866  | .352     | 0.969  |
| Gender                        | -.146 | .176 | 0.692  | .405     | 0.864  |
| Membership of a farmers group | .343  | .104 | 10.858 | .001*    | 1.409  |
| Constant                      | -.751 | .235 | 10.178 | .001     | 0.472  |

B = parameter estimate; -2 log-likelihood = 2633.43; Cox and Snell's  $R^2 = 0.014$ ; Nagelkerke's  $R^2 = 0.019$ ; chi-square = 27.71\*; overall correct prediction = 54.4%.

\* $p < .05$

The age distribution of the rice farmers shows that 27.3% were aged 41–50 while 37.8% were aged 51–60. This shows that the majority of the rice farmers were at an active age. In terms of marital status, the results indicate that the majority (90.7%) of the respondents interviewed were married and only 1.4% were single. In terms of religion, 62.4% were Muslims, followed by Christians with 25.5%. Analysis of the education level of the farmers shows that the majority had received a formal education, with 39.7% at primary level, 28.3% at secondary level and 15.1% at tertiary level. Those with an informal education (Quranic education) constituted 16.0% of the total and farmers without any form of education numbered only 5.1% of the total. Formal sources of information constituted 50.1%, while non-formal sources constituted 49.9%. The majority (34.4%) of the farmers had a household size in the range of 6–10 members, followed by 11–15 with 24.4%. The least number of household members was 26–30 with 5.0%.

The distribution of the rice farmers according to their number of years of experience in farming indicates that 37.3% of the respondents had experience of between 11 and 20 years, followed by 25.4% with experience in the range of 1–10 years; the lowest percentage (2.2%) was those with experience in the range of 41–50 years. In terms of membership of community-based farmers groups or associations, the majority (64.9%) of the respondents belonged to a farmers group or association, while the remaining 35.1% were not members of any group or association. The analysis was carried out using the Statistical Package for the Social Sciences (SPSS), version 21.

### Logistic model specification

A logistic regression model was used to determine the attributes for the prediction of dichotomous responses on access to information. This method is useful in this

situation where the prediction of access or no access to information is based on the values of a set of predictor variables. Let  $Y$  be the dichotomous response variable, which can assume the value of 0 or 1, where 0 = no access to information and 1 = access to information. If  $X_i$ ,  $i = 1, \dots, 7$  represents the attributes of rice farmers, the logistic model is given by

$$P(Y) = 1/[1 + \exp - (\alpha + \sum_{i=1}^7 \beta_i X_i)] \quad (1)$$

where  $\alpha$  = a constant term;  $\beta_i$  = the coefficients of the predictor variables; and  $X_i$  = the vector of the predictor variables (attributes).

The logit transformation obtained by taking the logarithm of both sides is

$$\text{logit } P(Y) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 \quad (2)$$

where  $Y = 1$  if the respondent has access to information and  $Y = 0$  if the respondent has no access. The predictor variables specified as determinants of access to information are:  $X_1$  = age (years);  $X_2$  = education level;  $X_3$  = sources of information (1 = formal, 0 = informal);  $X_4$  = years of experience;  $X_5$  = household size (number);  $X_6$  = gender (1 = male, 0 = female); and  $X_7$  = membership of a farmers group or association (1 = yes, 0 = no).

### Results

The binary logistic regression model showed a good fit with the data, with a correct prediction of 54.4% (Table 2), indicating the capability of the model to predict access to information by rice farmers. The diagnostic statistics showed a significant chi-square value of 27.71 at the 5% level. This also signifies a good fit of the explanatory variables included in the logistic model.

The parameters estimated in Table 2 indicate that the coefficients of age and education were positive and significant at the 5% and 1% levels, respectively. The results further show that membership of a farmers group was significant and positively associated with access to information at the 1% level. Membership of a farmers group, education and age share the maximum contribution to the prediction of access according to Wald values (Table 2). Membership of a farmers group shows the greatest contribution in forecasting access to information according to Exp(B), which gave an odds ratio value of 1.409.

## Discussion

This study attempted to determine the attributes that affect access to information among rice farmers in Nigeria. The significant variables for the prediction of access to information, given several predictor variables, were identified using logistic regression analysis. Age, education level and membership of a farmers group or association were significant and positive predictors of access to information among Nigerian rice farmers. The significance of age with regard to access to information is probably due to the fact that older farmers are more experienced. This is in agreement with Lawal et al.'s (2016) study, which found that age had a positive and significant relationship with access to agricultural knowledge and information. Ajah et al. (2017), Assogba et al. (2017), Mohamed (2003) and Obisesan (2013) also found that age influenced farmers' credit accessibility. This also concurs with Kega et al. (2015), who, in a study of Kenyan farmers' knowledge of rice blast disease, found that age had a significant influence on their knowledge of rice blast disease.

The result that education was a significant predictor of access to information by rice farmers confirms that education enlightens people's horizon. This is in agreement with Assogba et al. (2017), Obisesan (2013) and Oke et al. (2019), who found that the number of years of schooling, literacy and education, respectively, influenced farmers' credit accessibility.

The significance of membership of a farmers group with regard to access to information confirms well-established results. It also means that like minds coming together can organize and access information of mutual interest. This is supported by Lawal et al. (2016) in their study on access to agricultural knowledge and information, and Assogba et al. (2017) and Obisesan (2013), who argue that membership of a farmers group had positive effects on access to credit.

## Conclusions

This work has identified the significant attributes that affect access to information among rice farmers in Nigeria. Several attributes were considered but those that significantly affected access to information were age, education level and membership of a farmers association.

The general impulse of the findings is that librarians, as well as donors, development agencies and field agricultural extensionists who are helping to contribute to meaningful development in agriculture, will understand farmers better. Moreover, with the useful information on the socio-economic characteristics of rice farmers provided in this study, one can determine how to make information available to the rice-farming population. In addition, the study has contributed some significant evidence to the limited body of knowledge on access to information and equally attempted to fill some of the gaps.

Librarians, as the gatekeepers of knowledge, have a fundamental role to play. They should engage with the rice-farming communities within their locality and carry out community analysis to understand their attributes. This will guide them in dividing the farmers into groups according to their attributes for easy access to and understanding and appreciation of information. Librarians should ensure that an authentic record of the community analysis is kept safe for future use. The groupings will play an essential role in enabling librarians to repackage information according to the farmers' attributes. Any rice farmer in need of information will find it to be easily accessible in the library. Librarians should also disseminate information using the rice farmers' attributes. This is to ensure that each farmer has access to information. Equally, they could create opportunities with each group to educate them. This is a way of supporting learning and literacy in order to adapt in this ever-changing information society. This would shape new ideas and perspectives that are central to creative and innovative farming. As a consequence, rice farmers would be able to access information using their peculiar attributes anywhere if the information in libraries is repackaged according to their attributes.


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# An assessment of health information literacy among women in rural Lake Zone, Tanzania

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## Abstract

This article presents the results from a descriptive cross-sectional survey that was conducted to assess the health information literacy skills of women of childbearing age in rural Lake Zone, Tanzania. A total of 349 women were involved in the study. The study found that most rural women in the study area have low levels of health information literacy. The aggregate scores of health information literacy indicate a mean of 42.86% with a normal distribution curve, and estimated close-to-zero skewness (0.172) and kurtosis (−0.297) measures. The causal relationships between health information literacy and women's socio-demographic factors indicate a positive and statistically significant effect ( $p < .01$ ) of women's level of education, income, ownership of means of communication and access to health facilities on their level of health information literacy. The women's inadequate ability to access, read, understand, appraise and use health information is a barrier to their acquisition of relevant health information. Enhancing the health information literacy skills of these women is most likely to improve their health outcomes.

## Keywords

Health information, information literacy, women of childbearing age, rural Lake Zone, Tanzania

## Introduction

Many women of childbearing age in rural Tanzania are reported to face challenges in accessing health-care services (Ministry of Health et al., 2016). Such challenges include the long distances involved in reaching health-care facilities, which limits the women's utilization of reliable and relevant health-care services and, in particular, their access to and usage of health information (Hanson et al., 2017; Ministry of Health et al., 2016). Evidence from past studies in Tanzania (Hanson et al., 2017; Mwangakala, 2016) shows that many women residing in rural areas are usually served by dispensaries. These are typically lower-level health facilities that, in addition to facing shortages of various resources, lack health-care providers with the adequate competencies and skills to deliver relevant health information to these women (Mwangakala, 2016; Songstad et al., 2012).

In fact, the long distances involved in reaching health-care facilities and the shortage of qualified health-care providers in many rural areas has compelled women living in these areas to seek health information from community health workers and other informal sources, including traditional birth attendants and their immediate family members (Kassim and Katunzi-Mollel, 2017; Mwangakala, 2016). However, even though evidence (e.g. Ekoko, 2020) suggests that these sources of information are considered by the women to be valuable and relevant, they have been criticized due to their limited knowledge of human health matters (Kassim and Katunzi-Mollel,

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2017; Malata and Chirwa, 2011). Unlike professional health-care providers, community health workers receive less training on various health issues, whereas the other informal sources do not receive any formal training at all (Greenspan et al., 2013).

Overall, the informal nature of the various sources of health information used by women residing at a distance from health facilities puts many women at risk of making decisions based on health information that is of questionable quality (Kassim and Katunzi-Mollel, 2017). This risk is higher for women with inadequate health information literacy skills because they are likely to be unable to evaluate the health information they obtain from such sources. The lack of these competencies impairs women's ability to make informed decisions on their own health and that of those in their care, thus affecting their utilization of the available health-care services. In fact, evidence from past studies (Hirvonen, 2015; Mojoniyo, 2011; Zimmerman, 2017) shows that there is an association between high levels of health information literacy and active health-care-seeking behaviour and the effective utilization of health-care services among patients. Therefore, improving health information literacy is imperative for increasing people's control over their health and enhancing their health decision-making processes. Health information literacy is considered as one of the critical factors in the promotion of various aspects of public health (Salem et al., 2018).

It is in view of this background that there was an urgent need to assess the levels of health information literacy of women of childbearing age in rural areas of the Lake Zone regions of Tanzania. This is essential for devising an intervention that will help to empower women in rural and remote areas with the requisite health information literacy skills that will enable them to find, appraise and use relevant health information in their health decision-making processes. The study was informed by the following key questions: 'What are the health information literacy skills of women of childbearing age in rural areas in the Lake Zone regions of Tanzania?' and 'How do demographic and socio-economic factors influence the health information literacy skills of women of childbearing age in rural areas in the Lake Zone regions of Tanzania?'

## Literature review

There has recently been a growing recognition of the importance of health information literacy in both public health and health promotion. The overwhelming amount of health information in the information society has made it critical to have health information

literacy programmes to help consumers of health information evaluate the quality and validity of the health information they receive from different sources. By definition, health information literacy refers to a

set of abilities needed by individuals to recognize health information need, identify likely sources of information to meet the needed information, assess the quality and applicability of the provided information to a specific situation, analyse, understand, and use that information to make appropriate health decisions. (Shipman et al., 2009, p. 294)

The underlying objective of health information literacy is to help people become more receptive towards health information, as well as increasing their willingness to act on the information received (Hirvonen, et al., 2015). For this reason, health information literacy is widely considered to be a fundamental tool for empowering communities to improve their health (Ghosh, 2013).

Research has demonstrated that people with adequate levels of health information literacy can take responsibility for their health and that of those in their care (Ghosh, 2013; Hirvonen, 2015; Mojoniyo, 2011; Zimmerman, 2017). Studies have, for instance, associated high levels of health information literacy with active maternal health-information-seeking behaviour (Hirvonen, 2015), the effective utilization of antenatal care, and healthy and successful pregnancies (Mojoniyo, 2011). Other studies have reported that mothers with adequate levels of health information literacy are more likely to have healthier children than those with inadequate levels (e.g. Zimmerman, 2017).

By contrast, inadequate levels of health information literacy have been associated with poor health decision-making (Heijmans et al., 2015), inadequate self-care and a lack of preventive behaviours (Soltani and Dickinson, 2005), and increasing rates of both hospitalization and mortality among women (Mahdizadeh and Solhi, 2018). Studies have also shown that women with inadequate levels of health information literacy are more likely to seek and access health information from non-credible sources, thus endangering their health (Kassim and Katunzi-Mollel, 2017; Mbekenga et al., 2021). This inadequacy is a barrier to women's access to relevant health information that would help them make appropriate health decisions. As such, public health interventions to enhance the health information literacy skills of women are pivotal for them to access relevant health information. In other words, with adequate levels of health information literacy, women are more likely to

receive relevant health information, which is essential in empowering them to make informed health decisions (Benard and Chipungahelo, 2017).

Several factors have been reported to influence the health information literacy skills of women of childbearing age. Socio-demographic factors such as education, income, marital status and age have been reported by numerous studies as determinant factors of health information literacy. Many studies, for instance, have associated higher levels of health information literacy with higher levels of education (Dumenci et al., 2014; Eriksson-Backa et al., 2012; McKee et al., 2015; Mbekenga et al., 2021; Sahn et al., 2012). In contrast, only a few studies have found no association between educational attainment and levels of health information literacy (see Muhanga and Malungo, 2018), thus suggesting that while education can be considered an important factor for health information literacy, in some contexts it is not.

Similar to education, other studies, such as that by Ngoh (2009), have found that health information literacy may also be affected by the patient's ability to accurately interpret both the written and oral health information provided by health-care providers. This, however, according to Ngoh (2009), is because most of the health information that is provided to patients is presented in a format that is too complex for the average person to understand, thus affecting their health information literacy. Studies have also reported a significant relationship between income and health information literacy (e.g. Dumenci et al., 2014; Hirvonen et al., 2015). According to these studies, patients with a low income are more likely to have inadequate levels of health information literacy compared to those with higher incomes. As such, income is also considered an important determinant of health information literacy.

Furthermore, studies have reported a significant association between marital status and health information literacy (Kassim and Ndumbaro, 2020; Mbekenga et al., 2021; Muhanga and Malungo, 2018). In these studies, women who are married are reported to have higher levels of health information literacy compared with those who are not married. In terms of age, different findings have been reported. While some studies have found an insignificant relationship between age and health information literacy (e.g. Eriksson-Backa et al., 2012), others have found a significant relationship between the two (e.g. Muhanga and Malungo, 2018). The differences in the findings of these studies may be because they were conducted in two different settings, thus suggesting that while some factors may be applicable in one context, they

may not apply in another. With this, it can be concluded that context is also one of the most important factors that need to be considered when making conclusions about people's health information literacy (see Ghanbari et al., 2016).

Although various studies have acknowledged the importance of health information literacy in improving health among women of childbearing age (e.g. Benard and Chipungahelo, 2017; Heijmans et al., 2015; Hirvonen, 2015; Mahdizadeh and Solhi, 2018; Mojonyola, 2011; Zimmerman, 2017), research in this area, particularly in developing countries like Tanzania, is scarce. Only a few studies have specifically assessed the health information literacy skills of women of childbearing age in rural Tanzania (see Kassim and Ndumbaro, 2020; Mbekenga et al., 2021). Other available studies on health information literacy in Tanzania have focused on medical librarians (Haruna et al., 2017) and health-care providers and agricultural officers (Wema, 2013). Other past studies have almost exclusively focused on the accessibility of health information (Benard and Chipungahelo, 2017; Mwangakala, 2016) and sources of health information for women in rural settings (Hanson et al., 2017; Kassim and Katunzi-Mollele, 2017).

Therefore, given the fact that health information literacy is more of a context-specific concept, the limited research attention paid to this area in Tanzania means that there is limited empirical evidence on the same. This means that there is limited documented evidence on which to base decisions regarding the health information literacy of women of childbearing age in rural Tanzania. As such, assessing the health information literacy of women of childbearing age in these areas is imperative for informing interventions that are geared to address the health information literacy deficiencies of these women.

## Methods

This study employed a descriptive cross-sectional survey research design to assess the health information literacy of women of childbearing age in rural areas in the Lake Zone regions of Tanzania. The four regions in the Lake Zone – Shinyanga, Simiyu, Mara and Kagera – were involved in the study. These regions were purposively selected because they are reported to have a large number of women who face problems associated with access to health care (Hanson et al., 2017; Ministry of Health et al., 2016). From the four regions, four rural districts – one from each region (Shinyanga rural in Shinyanga, Bariadi in Simiyu, Musoma rural in Mara, and Bukoba rural in Kagera) – were selected. In each of the districts, one ward was



**Table 1.** Number of women of childbearing age in the selected districts of the regions.

| District        | Total target population | Estimated sample size | Actual sample size |
|-----------------|-------------------------|-----------------------|--------------------|
| Bariadi         | 319,067                 | 88                    | 91                 |
| Musoma rural    | 309,526                 | 86                    | 90                 |
| Bukoba rural    | 481,327                 | 133                   | 90                 |
| Shinyanga rural | 279,245                 | 77                    | 78                 |
| <b>Total</b>    | <b>1,389,165</b>        | <b>384</b>            | <b>349</b>         |

Source: Tanzania Population and Housing Census 2012 (National Bureau of Statistics, 2013).

purposely selected for the study. These were Iselamagazi (Shinyanga rural), Dutwa (Bariadi), Kemondo (Bukoba rural) and Mugango (Musoma rural). These wards are the administrative headquarters of the councils of the selected districts.

The study involved women of childbearing age (between 15 and 49), who were conveniently selected with the help of community health workers in the respective districts. The Tanzania Population and Housing Census 2012 (National Bureau of Statistics, 2013) was used as a sampling frame to obtain the required sample size for the study. The sample size was calculated using a Cochran formula (see Bartlett et al., 2001), which assumes a fixed sample size of 384 respondents with a 95% confidence level and 5% sampling error. In total, 349 respondents were included in the study (see Table 1). The inclusion criteria for the study were being a woman aged 15–49 and being a permanent resident of the selected districts in the four studied regions.

The data for the study was collected using a face-to-face questionnaire on health information literacy adopted from previous studies (Kaboudi et al., 2017; Montazeri and Tavousi, 2014) but modified to fit the local context. The questionnaire consisted of questions on the demographic characteristics of the respondents and five aspects of health information literacy: access to health information, reading, comprehension, appraisal and decision-making skills. The data was analysed using IBM SPSS version 21 and Microsoft Excel. While descriptive statistics were used to analyse the socio-demographic features of the respondents, inferential statistics (chi-square test and regression) were used to find the association between the demographic features of the respondents and the five aspects of health information literacy. The aggregate scores of the health information literacy aspects were then calculated using Microsoft Excel through the following formula:

$$\text{Aggregate score} = \frac{\text{Raw score} - \text{Minimum possible raw score}}{\text{Maximum possible raw score} - \text{Minimum possible raw score}} \times 100$$

Ethical clearance was obtained for the study from the Tanzania National Institute for Medical Research. Further, research clearance for the study was granted by the respective authorities in the four studied regions. Informed consent was also obtained from each participant involved in the study. Participation in the study was voluntary and the participants were informed that they had the right to withdraw from the study at any time. The participants were also assured that the study would ensure their confidentiality and anonymity.

## Results

### *Demographic and economic characteristics*

The results from the study (see Table 2) indicate that the respondents' mean age was 31.5, implying a younger population. The majority of the respondents in all four districts were married and Christians. A significant number of the women had attained a primary level of education, while very few, particularly in rural Shinyanga (2.6%) and Bukoba (1.1%), had attained a university education. A significant number of the women were engaged in either farming or small businesses, with a monthly income of less than 50,000 Tanzanian shillings (TZS; the equivalent of US\$22).

### *Ownership of means of communication and availability of and distance to health facilities*

A significant number of the women respondents (46%) in all four districts reported to own a radio as a means of communication. In contrast, a lesser number (31%) owned television sets. Regarding mobile phones, the majority of the women reported to own a regular mobile phone rather than a smartphone (see Table 3). The results on the availability of health-care facilities indicate that there were neither higher-level health facilities nor any information centres across all the wards selected in the four sampled districts. In most cases, these wards were served by dispensaries (Bariadi, Musoma rural and Bukoba rural) and health centres (Shinyanga rural, Musoma rural and Bukoba rural). These findings, therefore, demonstrate that there were health facilities in all the studied wards, but of different levels and capacity.

The study's results further suggest that the distance to health facilities has been reduced as a substantial number of the women surveyed were residing within a 5 km radius of health facilities (see Table 3). In

**Table 2.** Demographic and economic characteristics of women of childbearing age.

|                                  | Shinyanga rural (%) | Bariadi (%) | Musoma rural (%) | Bukoba rural (%) |
|----------------------------------|---------------------|-------------|------------------|------------------|
| <b>Age group</b>                 |                     |             |                  |                  |
| 15–19                            | 9.0                 | 8.8         | 16.7             | 8.9              |
| 20–24                            | 23.1                | 22.0        | 21.1             | 23.3             |
| 25–29                            | 5.1                 | 1.1         | 3.3              | 7.8              |
| 30–34                            | 25.6                | 18.7        | 22.2             | 16.7             |
| 35–39                            | 12.8                | 16.5        | 15.6             | 15.6             |
| 40–44                            | 19.2                | 25.3        | 18.9             | 22.2             |
| 45–49                            | 5.1                 | 7.7         | 2.2              | 5.6              |
| Mean age 31.5                    |                     |             |                  |                  |
| <b>Marital status</b>            |                     |             |                  |                  |
| Single                           | 28.2                | 12.1        | 10.0             | 17.8             |
| Married                          | 60.3                | 70.3        | 66.7             | 60.0             |
| Separated                        | 5.1                 | 4.4         | 3.3              | 11.1             |
| Divorced                         | 3.8                 | 8.8         | 10.0             | 7.8              |
| Widowed                          | 1.3                 | 2.2         | 3.3              | 3.3              |
| N/A                              | 1.3                 | 2.2         | 6.7              | 0.0              |
| <b>Religion</b>                  |                     |             |                  |                  |
| Christian                        | 89.7                | 86.8        | 71.1             | 74.4             |
| Muslim                           | 10.3                | 6.6         | 26.7             | 25.6             |
| Traditional                      | 0.0                 | 2.2         | 2.2              | 0.0              |
| Other                            | 0.0                 | 4.4         | 0.0              | 0.0              |
| <b>Education</b>                 |                     |             |                  |                  |
| Non-formal                       | 7.7                 | 7.7         | 2.2              | 11.1             |
| Primary                          | 52.6                | 64.8        | 67.8             | 65.6             |
| Primary school dropout           | 5.1                 | 2.2         | 1.1              | 6.7              |
| Secondary school dropout         | 5.1                 | 3.3         | 10.0             | 0.0              |
| Secondary school O level         | 19.2                | 18.7        | 15.6             | 11.1             |
| Secondary school A level         | 0.0                 | 0.0         | 0.0              | 0.0              |
| Vocational or technical graduate | 2.6                 | 1.1         | 0.0              | 2.2              |
| University graduate              | 2.6                 | 0.0         | 0.0              | 1.1              |
| Other                            | 5.1                 | 2.2         | 3.3              | 2.2              |
| <b>Occupation</b>                |                     |             |                  |                  |
| Farmer                           | 30.8                | 33.0        | 38.9             | 42.1             |
| Petty businesswoman              | 46.1                | 53.9        | 28.9             | 34.4             |
| Employee                         | 7.6                 | 4.4         | 1.1              | 2.2              |
| Casual labourer                  | 0.0                 | 0.0         | 2.2              | 3.3              |
| Dependent                        | 15.4                | 8.8         | 28.9             | 17.8             |
| <b>Income (TZS)</b>              |                     |             |                  |                  |
| < 50,000                         | 14.1                | 20.9        | 56.7             | 45.6             |
| 50,000–100,000                   | 30.8                | 16.5        | 14.4             | 28.9             |
| 150,000–200,000                  | 25.6                | 26.4        | 6.7              | 12.2             |
| 250,000–300,000                  | 14.1                | 15.4        | 3.3              | 2.2              |
| Other                            | 15.4                | 20.9        | 18.9             | 11.1             |

contrast, very few women (1.3% in Shinyanga rural) resided more than 5 km from health facilities.

### *Women's levels of health information literacy*

The analysis of the women's levels of health information literacy was based on five aspects of health information literacy: access to health information and the ability to read, understand, appraise and use health

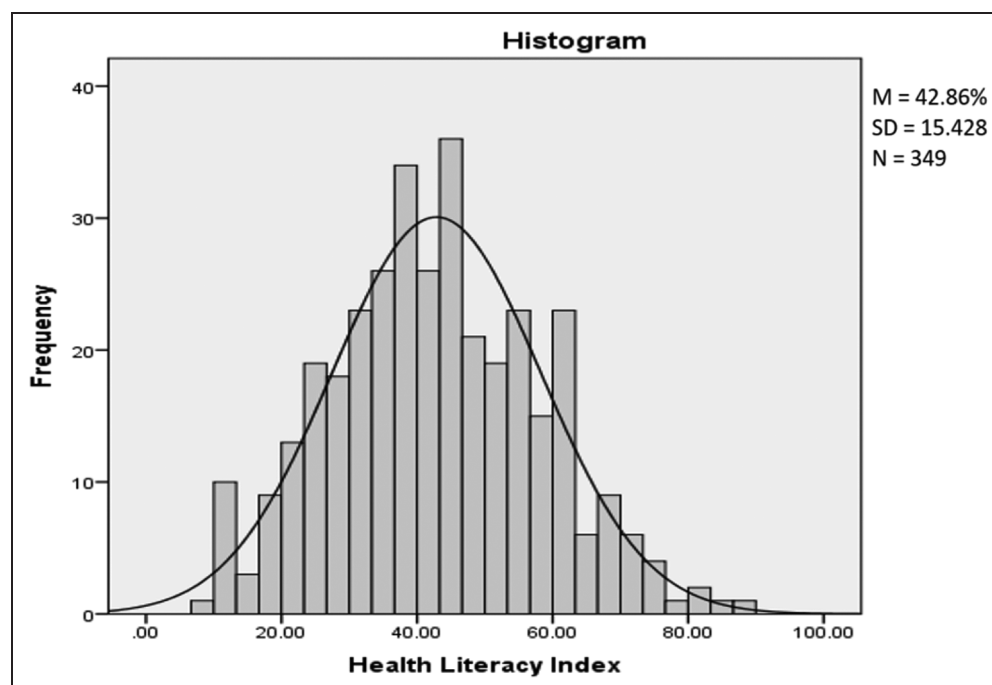
information for decision-making. To determine the aggregate levels of health information literacy, the five aspects were aggregated into four adequacy levels: inadequate, problematic, sufficient and excellent. The maximum scores for reading, accessing, appraising, understanding and decision-making were 4, 7, 8, 5 and 10, respectively. This resulted in the total aggregate minimum and maximum scores ranging from 34 to 170. The results on the aggregated levels of health

**Table 3.** Ownership of means of communication and availability of and distance to health facilities.

|                                         | Shinyanga rural (%) | Bariadi (%) | Musoma rural (%) | Bukoba rural (%) |
|-----------------------------------------|---------------------|-------------|------------------|------------------|
| <b>Means of communication</b>           |                     |             |                  |                  |
| Television                              | 43.6                | 20.9        | 24.4             | 37.8             |
| Radio                                   | 56.4                | 28.6        | 52.2             | 48.9             |
| Smartphone                              | 34.6                | 22.0        | 16.7             | 11.1             |
| Regular mobile phone                    | 55.1                | 68.1        | 66.7             | 74.4             |
| <b>Availability of health facility</b>  |                     |             |                  |                  |
| Dispensary                              | 0.0                 | 100.0       | 0.0              | 100.0            |
| Health centre                           | 100.0               | 0.0         | 100.0            | 100.0            |
| Hospital                                | 0.0                 | 0.0         | 0.0              | 0.0              |
| Health information centre               | 0.0                 | 0.0         | 0.0              | 0.0              |
| <b>Distance to health facility (km)</b> |                     |             |                  |                  |
| 0–1                                     | 23.1                | 12.1        | 3.3              | 0.0              |
| 2–3                                     | 53.8                | 45.1        | 73.3             | 26.7             |
| 4–5                                     | 21.8                | 42.9        | 23.3             | 73.3             |
| 6–10                                    | 1.3                 | 0.0         | 0.0              | 0.0              |
| 10+                                     | 0.0                 | 0.0         | 0.0              | 0.0              |

**Table 4.** Health information literacy of women.

|             | Shinyanga rural | Bariadi    | Musoma rural | Bukoba rural |
|-------------|-----------------|------------|--------------|--------------|
| Inadequate  | 42 (53.8%)      | 68 (74.7%) | 63 (70.0%)   | 72 (80.0)    |
| Problematic | 26 (33.3%)      | 15 (16.5%) | 19 (21.1%)   | 18 (20.0%)   |
| Sufficient  | 9 (11.5%)       | 8 (8.8%)   | 8 (8.9%)     | 0 (0.0%)     |
| Excellent   | 1 (1.3%)        | 0 (0.0%)   | 0 (0.0%)     | 0 (0.0%)     |

**Figure 1.** Frequency statistical distribution graph of health information literacy. The horizontal axis represents health literacy index which ranges from 0 to 100 (0.0–50.0 for inadequate, 50.1–66.0 for problematic, 66.1–84.0 for sufficient, and 84.1–100 for excellent).

**Table 5.** Women's access to health information.

| Access                                                                                                                                        | Never       | Rarely     | Sometimes   | Usually     | Always     |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|-------------|-------------|------------|
| I could find sufficient maternal health information that I need from different sources                                                        | 48 (13.8%)  | 65 (18.6%) | 108 (30.9%) | 109 (31.2%) | 19 (5.4%)  |
| I could find information about healthy eating                                                                                                 | 72 (20.6%)  | 59 (16.9%) | 82 (23.5%)  | 123 (35.2%) | 13 (3.7%)  |
| I could find health information on mental health, such as depression and stress                                                               | 204 (58.5%) | 62 (17.8%) | 45 (12.9%)  | 32 (9.2%)   | 6 (1.7%)   |
| I could find the health information that I need about an illness                                                                              | 44 (12.6%)  | 65 (18.6%) | 141 (40.4%) | 79 (22.6%)  | 20 (5.7%)  |
| I could find the health information required for health problems and diseases such as high blood pressure and high blood sugar and fat levels | 173 (49.6%) | 72 (20.6%) | 56 (16.0%)  | 38 (10.9%)  | 10 (2.9%)  |
| I could find health information about the use of traditional medicines during pregnancy                                                       | 178 (51.0%) | 42 (12.0%) | 58 (16.6%)  | 42 (12.0%)  | 29 (8.3%)  |
| I could find health information about family planning                                                                                         | 49 (14.0%)  | 29 (8.3%)  | 92 (26.4%)  | 122 (35.0%) | 57 (16.3%) |

**Table 6.** Ability to read health information.

| Reading                                                                              | Very difficult | Difficult  | Neither difficult nor easy | Easy        | Very easy  |
|--------------------------------------------------------------------------------------|----------------|------------|----------------------------|-------------|------------|
| Reading educational health material                                                  | 54 (15.5%)     | 18 (5.2%)  | 65 (18.6%)                 | 159 (45.6%) | 53 (15.2%) |
| Reading specific health instructions from providers                                  | 68 (19.5%)     | 25 (7.2%)  | 96 (27.5%)                 | 127 (36.4%) | 33 (9.5%)  |
| Reading medical and other health information in hospitals and medical centres        | 75 (21.5%)     | 38 (10.9%) | 79 (22.6%)                 | 116 (33.2%) | 41 (11.7%) |
| Reading leaflets, brochures and guidelines on medical tests, ultrasound or radiology | 140 (40.1%)    | 62 (17.8%) | 49 (14.1%)                 | 65 (18.6%)  | 33 (9.5%)  |

*Understanding health information.*

information literacy for women of childbearing age for each region are summarized in Table 4.

The distribution of health information literacy indicates that the majority of the women had an inadequate level of health information literacy (Shinyanga rural: 53.8%; Bariadi: 74.7%; Musoma rural: 70.0%; Bukoba rural: 80%). Very few respondents in all four districts had either sufficient or excellent levels of health information literacy. Further analysis of the statistical distribution of health information literacy was conducted (see Figure 1). The results from this analysis indicate a mean of 42.86% and a statistical distribution with a normal distribution curve, and the estimated close-to-zero skewness (0.172) and kurtosis (-0.297) measures, which support the observation that the majority of the rural women in the study area had low levels of health information literacy.

The women's health information literacy levels were further analysed separately based on the five aspects using a five-point Likert scale, with 1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *usually* and 5 = *always* for the aspects of access, understanding, appraisal and decision-making, and 1 = *very difficult*, 2 = *difficult*,

3 = *neither difficult nor easy*, 4 = *easy* and 5 = *very easy* for the reading aspect.

**Access to health information.** Access to relevant health information is critical for women's ability to make informed decisions about their health. Conversely, the lack of such information increases the chances of women making erroneous health decisions that might have negative health outcomes for the women themselves and those in their care.

The results from the analysis (see Table 5) indicate that the women in all four regions had a relatively higher level of health information literacy with regard to access to maternal health and family planning information. In contrast, the women's levels of literacy were low in respect of accessing information on healthy eating, mental health, traditional medicines, and the control of blood pressure, high blood sugar and fat levels.

**Ability to read health information.** Reading is one of the most important aspects of health information literacy as it enables people to comprehend different health

**Table 7.** Respondents' ability to comprehend different health information.

| Understanding                                                                                                                                | Never       | Rarely     | Sometimes   | Usually     | Always      |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|-------------|-------------|-------------|
| I understand the recommendations for a healthy diet                                                                                          | 57 (16.3%)  | 33 (9.5%)  | 106 (30.4%) | 133 (38.1%) | 20 (5.7%)   |
| I understand health providers' instructions about my health                                                                                  | 19 (5.4%)   | 48 (13.8%) | 105 (30.1%) | 124 (35.5%) | 53 (15.2%)  |
| I understand the medical and maternal health information (such as admission and consent forms) in hospitals, clinics and health-care centres | 81 (23.2%)  | 53 (15.2%) | 96 (27.5%)  | 86 (24.6%)  | 33 (9.5%)   |
| I understand the signs and information in hospitals, clinics and health-care centres                                                         | 198 (56.7%) | 40 (11.5%) | 56 (16.0%)  | 41 (11.7%)  | 14 (4.0%)   |
| I understand usage instructions written on prescribed drugs                                                                                  | 31 (8.9%)   | 22 (6.3%)  | 43 (12.3%)  | 125 (35.8%) | 128 (36.7%) |
| I understand the advantages and disadvantages of treatment offered by a physician                                                            | 138 (39.5%) | 51 (14.6%) | 35 (10.0%)  | 51 (14.6%)  | 74 (21.2%)  |
| I understand written information for preparing for medical tests such as ultrasound or radiology                                             | 273 (78.2%) | 29 (8.3%)  | 21 (6.0%)   | 14 (4.0%)   | 12 (3.4%)   |
| I understand information about family planning from health providers                                                                         | 54 (15.5%)  | 37 (10.6%) | 84 (24.1%)  | 123 (35.2%) | 51 (14.6%)  |

**Table 8.** Respondents' ability to appraise health information.

| Appraisal                                                                           | Never       | Rarely     | Sometimes   | Usually     | Always    |
|-------------------------------------------------------------------------------------|-------------|------------|-------------|-------------|-----------|
| I could identify good and reliable sources of health information                    | 69 (19.8%)  | 47 (13.5%) | 107 (30.7%) | 107 (30.7%) | 19 (5.4%) |
| I could appraise health-related information provided in print formats               | 166 (47.6%) | 55 (15.8%) | 55 (15.8%)  | 58 (16.6%)  | 15 (4.3%) |
| I could appraise health-related information broadcasted on the television and radio | 164 (47.0%) | 36 (10.3%) | 63 (18.1%)  | 70 (20.1%)  | 16 (4.6%) |
| I could appraise health-related recommendations from my relatives and friends       | 75 (21.5%)  | 54 (15.5%) | 95 (27.2%)  | 98 (28.1%)  | 27 (7.7%) |

*Decision-making.*

information presented in a written format. In fact, people with adequate levels of literacy are more likely to access and understand health information provided in different formats than those with inadequate levels of literacy. As such, the former are more likely to be informed and able to make informed health decisions than the latter. The results from this study (see Table 6) show that a considerable number of the women in the studied regions were able to read health information. With this ability, the women are considered to be well positioned to be informed about various health matters. However, the women found it difficult to read information about medical tests, ultrasound and/or radiology contained in leaflets and brochures.

Women's understanding of the health information provided by health-care professionals is critical for their efficient and effective utilization of both health-care services and, in particular, health information. To assess the women's ability to understand

health information, the study presented information on various health topics and asked the respondents to indicate if they understood the information or not (see Table 7).

The findings demonstrate that the women's levels of understanding of health information varied depending on the type of information. While such understanding appeared to be satisfactory for some health topics, it was poor for other topics. Specifically, nearly two-thirds of the women reported that they understood healthy diet recommendations provided by health-care professionals. On the other hand, no significant variation was found in the respondents' understanding of medical information, since their overall understanding of the instructions on prescribed drugs was high. On this, only a few respondents reported to have never (8.9%) or rarely (6.3%) understood such information. Of the eight topics presented, the women's understanding of two topics ('written information for preparing

**Table 9.** Respondents' ability to make informed decisions.

| Decision-making                                                                                                | Never       | Rarely      | Sometimes   | Usually     | Always      |
|----------------------------------------------------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|
| When facing illness, I know where or whom I should consult                                                     | 5 (1.4%)    | 36 (10.3%)  | 74 (21.2%)  | 154 (44.1%) | 80 (22.9%)  |
| When my physician suggests that I should take medication to improve my health, I follow their instructions     | 11 (3.2%)   | 21 (6.0%)   | 84 (24.1%)  | 125 (35.8%) | 108 (30.9%) |
| I am health-conscious in all circumstances                                                                     | 59 (16.9%)  | 118 (33.8%) | 110 (31.5%) | 55 (15.8%)  | 7 (2.0%)    |
| I consider the nutritional value of foods when shopping                                                        | 203 (58.2%) | 42 (12.0%)  | 48 (13.8%)  | 42 (12.0%)  | 14 (4.0%)   |
| Even when I do not have any symptoms, I visit a doctor for an annual check-up                                  | 198 (56.7%) | 51 (14.6%)  | 64 (18.3%)  | 27 (7.7%)   | 9 (2.6%)    |
| I avoid consuming substances that increase my weight                                                           | 197 (56.4%) | 66 (18.9%)  | 62 (17.8%)  | 18 (5.2%)   | 6 (1.7%)    |
| I avoid doing or eating things that increase my blood pressure                                                 | 189 (54.2%) | 37 (10.6%)  | 53 (15.2%)  | 45 (12.9%)  | 25 (7.2%)   |
| I think about diet, exercise, stress management or other health-related issues during pregnancy and childbirth | 77 (22.1%)  | 110 (31.5%) | 75 (21.5%)  | 68 (19.5%)  | 19 (5.4%)   |
| I ask a doctor questions or get a second opinion from other sources of information                             | 54 (15.5%)  | 56 (16.0%)  | 116 (33.2%) | 87 (24.9%)  | 36 (10.3%)  |
| I communicate my health knowledge to others                                                                    | 43 (12.3%)  | 40 (11.5%)  | 99 (28.4%)  | 121 (34.7%) | 46 (13.2%)  |
| I apply health-related information to my own life and that of people close to me                               | 30 (8.6%)   | 47 (13.5%)  | 121 (34.7%) | 93 (26.6%)  | 58 (16.6%)  |

for medical tests such as ultrasound or radiology, and signs and information in hospitals, clinics, and health care centres') was inadequate.

**Appraising health information.** Given the informal nature of the various sources of information that women use in rural areas and the risks that such sources pose in their decision-making processes, the study found it important to assess the women's ability to appraise health information from different sources. The assessment was based on the understanding that this ability is crucial in women's informed health decision-making. The results in Table 8 indicate that although more than half of the respondents were able to identify good and reliable sources of health information, a sizable number had problems appraising health information obtained from different sources. Further, the findings show that a significant number of the women had never or rarely appraised any source of health information. In most cases, the women had problems appraising print health information and that presented via television and radio.

The availability of health information makes people knowledgeable about their health and enhances their decision-making regarding the same. Therefore, to further explore the health information literacy of women in the study areas, this study targeted the women's ability to use information to make decisions about their health and that of those in their care. This

**Table 10.** Association of demographic and socio-economic factors with health information literacy.

| Variable                       | $\chi^2$ | df | P    |
|--------------------------------|----------|----|------|
| Age group                      | 12.203   | 18 | .837 |
| Marital status                 | 16.304   | 15 | .362 |
| Religion                       | 4.753    | 9  | .855 |
| Education                      | 117.313  | 21 | .000 |
| Income group                   | 22.783   | 12 | .030 |
| Television ownership           | 19.164   | 3  | .000 |
| Radio ownership                | 7.424    | 3  | .070 |
| Smartphone ownership           | 17.26    | 3  | .001 |
| Regular mobile phone ownership | 7.659    | 3  | .054 |
| Dispensary                     | 10.617   | 3  | .014 |
| Health centre                  | 3.062    | 3  | .382 |
| Distance to health facility    | 12.522   | 9  | .185 |

was done through a set of questions covering a number of health matters. Health information on a number of topics (see Table 9) was presented to the women, who were asked to indicate if they made decisions based on them or not. The findings reveal that an insignificant number of women were able to make health decisions based on the information, while most of the women were unable to do so. For instance, the findings show that just over a third (35.8%) of the women surveyed indicated that they usually followed medication and health-care providers' instructions.

**Table 11.** Regression analysis of association of demographic and socio-economic factors with health information literacy.

| Model                         | Unstandardized coefficients |       | Standardized coefficients |  | t-value | p    | VIF   |
|-------------------------------|-----------------------------|-------|---------------------------|--|---------|------|-------|
|                               | $\beta$                     | SE    | $\beta$                   |  |         |      |       |
| $R^2$                         | 0.900                       |       |                           |  |         |      |       |
| Adjusted $R^2$                | 0.896                       |       |                           |  |         |      |       |
| F-value                       | 251.734                     |       |                           |  |         |      |       |
| p                             | .000                        |       |                           |  |         |      |       |
| Number of observations        | 349                         |       |                           |  |         |      |       |
| <b>Age groups</b>             | 1.850                       | 0.429 | .176                      |  | 4.313   | .000 | 5.586 |
| <b>Education</b>              | 4.696                       | 0.411 | .349                      |  | 11.433  | .000 | 3.135 |
| <b>Means of communication</b> |                             |       |                           |  |         |      |       |
| Television                    | 5.498                       | 1.913 | .067                      |  | 2.874   | .004 | 1.850 |
| Radio                         | 2.963                       | 1.694 | .044                      |  | 1.749   | .081 | 2.144 |
| Smartphone                    | 5.506                       | 2.250 | .055                      |  | 2.447   | .015 | 1.690 |
| Regular mobile phone          | 8.438                       | 1.789 | .151                      |  | 4.718   | .000 | 3.443 |
| <b>Income (TZS)</b>           |                             |       |                           |  |         |      |       |
| < 50,000                      | 8.257                       | 2.360 | .107                      |  | 3.498   | .001 | 3.153 |
| 50,000–100,000                | 6.032                       | 2.600 | .063                      |  | 2.320   | .021 | 2.445 |
| 100,000–200,000               | 6.091                       | 2.736 | .056                      |  | 2.226   | .027 | 2.118 |
| 200,000+                      | 3.527                       | 3.461 | .023                      |  | 1.019   | .309 | 1.667 |
| <b>Dispensary</b>             | 2.671                       | 1.750 | .042                      |  | 1.527   | .128 | 2.570 |
| <b>Health centre</b>          | 5.806                       | 2.045 | .110                      |  | 2.839   | .005 | 5.007 |

Further, more than half (58.2%) of the women were found never to consider nutritional value when buying food, while a substantial number had decision-making problems regarding their diet, stress management and exercise.

#### *Association of demographic and socio-economic factors with health information literacy*

The results of the association between health information literacy and the women's demographic characteristics and socio-economic factors are presented in Table 10. The results indicate that the associations of education, income, television and smartphone ownership, and access to a dispensary with health information literacy are statistically significant at 5% or less. Similarly, radio ownership and regular mobile phone ownership have a significant association with the women's health information literacy levels, at 10%. This implies that these variables are the primary determinants of the health information literacy of the women in the studied area. In contrast, age group, marital status, religion and distance to the health-care facility have an insignificant association with the women's health information literacy.

The relationships between the women's demographic and socio-economic factors and their level

of health information literacy were also tested using the ordinary least squares method. The results show that the model has a high explanatory power, as indicated by  $R^2 = 0.9$ . The overall model is also significant, as indicated by the  $F$ -value being significant at  $p < .01$ . A test of strong linear association between the explanatory variables (i.e. multicollinearity) revealed that the model does not suffer from this problem, as indicated by low variable inflation factor (VIF) values with  $M = 2.9$ , which is far less than the cut-off point of 10 for strong multicollinearity. Further, the results indicate that education and access to various means of communication had a positive and statistically significant effect on health information literacy (see Table 11).

#### **Discussion**

This study has assessed the health information literacy levels of rural women in the Lake Zone regions of Tanzania. The analysis of the health information literacy levels of the women reveals that there was a low level of health information literacy among women in the study area. In fact, these results appear to explain the results of previous studies which have shown that the majority of women of childbearing age in rural areas of the Lake Zone of Tanzania have

problems associated with access to health care (Hanson et al., 2017; Ministry of Health et al., 2016). This is arguably an expected situation considering that the low levels of health information literacy among the women are likely a barrier to their access to and use of relevant health information that could otherwise help them in making appropriate health decisions.

The study has also found that a significant number of women in the study area had gone through some formal education, although most were primary school leavers. Nevertheless, attending formal education had most likely increased the women's chances to interact with different sources of health information, thereby boosting their health information literacy. In fact, a test of the association between health information literacy and the women's demographic characteristics has confirmed that a statistically significant association exists between the education and health information literacy levels of the women. These results are consistent with those of previous studies (Dumenci et al., 2014; McKee et al., 2015; Sahm et al., 2012), suggesting that education is paramount to overall health information literacy. People with higher formal education attainment can comprehend health information and more easily apply it than those with low formal education levels or no education.

The present study has also revealed an association between age and the limited health information literacy of the respondents. The positive and significant association between age and health information literacy can be attributed to older women's responsibility for various people's health, which compels them to acquire health information literacy skills since, unlike young women, they need to engage in health-information-seeking activities. It is also evident from the results that income had a positive effect on the health information literacy of the women respondents. However, for women with higher incomes, the relationship is not statistically significant, implying that a higher income is not a determinant of adequate health information literacy in this population. This is, however, contrary to what has been reported in previous studies conducted elsewhere (Dumenci et al., 2014; McKee et al., 2015).

The fact that the majority of the surveyed women (> 60%) were married indicates that they had a wide range of health information needs for themselves and their families. Thus, possession of adequate levels of health information literacy was crucial for them because it facilitated their access to and use of relevant health information for informed decision-making.

The availability of health-care facilities and distance to health-care facilities are major determinants

of the uptake of various health services among rural populations (Mwangakala, 2016). Therefore, this study's revelation that there are health facilities (health centres and dispensaries) in all the studied wards suggests that women's access to health-care services and health information from professional health-care providers was good. However, this is not entirely true because this and previous studies (Hanson et al., 2017; Mwangakala, 2016) have shown that people in rural areas are still served by lower-level health facilities, such as dispensaries. The quality of the health-care services provided by these facilities may significantly influence their utilization. The findings from the regression analysis, for instance, have shown that access to dispensaries had a positive but insignificant effect on health information literacy, while access to health centres had a significant positive effect. Such a difference can be associated with the differences in the services provided and resources available at these types of health facilities. For instance, dispensaries are typically small health facilities with few staff and resources, and hence are likely to provide services of lower quality compared to other higher-level health facilities. Evidence from previous studies, for instance, suggests that the suboptimal care in these facilities discourages their utilization (Kohi et al., 2018; Konje et al., 2020; Songstad et al., 2012). As such, this may affect the health information literacy of the women living in these areas.

It is recognized that means of communication, such as television, radio and mobile phones, have an enormous potential to influence people's health-related behaviours and perceptions (Kaboudi et al., 2017). In fact, ownership of such means of communication is critical for people to receive health information to help them in their decision-making processes. Similarly, the ownership of these means of communication in this study was found to have a significant positive effect on the health information literacy of the women in the studied wards. The statistical significance of the effect of these media, however, differs; Specifically, radio ownership had a marginally significant effect on health information literacy, which may be explained by the content or effectiveness of means of communication such as television, which has additional visualization effects for conveying information to audiences. Television broadcasts are often associated with visual or pictorial presentations that are memorable and easy to comprehend. Further, television is more engaging and influential than other major media outlets.

There is enough evidence to show the role of mobile phones in augmenting health-care services,



particularly for underserved populations (Lee et al., 2019; Mangone et al., 2016; Uddin et al., 2017). As such, the positive effect that mobile phones had on the women's health information literacy in this study is understandable. As seen in the results of this study, a substantial number of women own mobile phones. Ownership of mobile phones, as well as the issue of the health information sent through them, may explain levels of exposure to health information and hence correlate positively with health information literacy. However, of all the women who owned mobile phones, only a relatively small number (between 11.1% and 34.6%) owned smartphones. It is likely that these women were at an advantage compared to those who did not have smartphones. This is because, with a smartphone, one can browse the Internet and access different health information to that received via text messages. This could make such women relatively more well informed.

Patients with limited reading skills tend to know less about their ailments, be worse at managing their care, and be less likely to take preventive measures for their health (Graham and Brookey, 2008). Therefore, this study's finding that more than 40% of the women in the study sites experienced difficulties when reading information about medical tests, ultrasound and/or radiology is concerning. This can be partly attributed to the relatively low level of formal education among the women and the information being presented in technical language that cannot easily be understood. Therefore, this finding underscores the importance of using plain language when communicating health information to ensure its comprehension and utilization (Shiber et al., 2018). The findings of this study further reveal that nearly half of the women had problems accessing health information. The most difficult health information to access was on mental health, the use of traditional medicines, and how to control blood pressure, high sugar and fat levels. Women's inability to access such information may contribute to an increase in both the severity and burden of these conditions, which are considered as obstacles to women's socio-economic development (Miszkurka et al., 2012). Similarly, the inability to access information on the use of traditional medicines may contribute to poor adherence to allopathic medicines, thus increasing the severity of diseases, as reported in previous studies (e.g. Liwa et al., 2017).

Another important finding is that no significant variation was found in the respondents' understanding of medical information. The results indicate that the women had a better understanding of medical prescriptions but a problematic understanding of

information about medical tests and the health signs and symbols used around medical facilities. The study has also found that over 67% of the women had problems in appraising health information in a print format, while more than half had difficulties in appraising information on the television and radio. These results reflect the finding that a significant number of women did not own any means of communication used to disseminate health information. However, unlike previous studies (Kassim and Katunzi-Mollel, 2020; Madula et al., 2018), it is interesting to note that a considerable number of the women in the present study were able to interact with their health-care providers. Such interaction is likely to enhance discussions between women and their health-care providers – discussions that are crucial for patients' involvement in their health care. It is also worth noting that most of the women in this study were able to communicate and share health information with others, and to apply the health information obtained to both their own health and that of those close to them. It is apparent that sharing health information among women increases the exposure of this information to other women who for various reasons are unable to access health-care services, hence reducing deficiencies in health information.

While this study has shed light on the health information literacy skills of women of childbearing age in rural Tanzania, it also has some limitations. The study did not look at the entire rural area of the Lake Zone, as only specific wards were selected from the sampled regions. Also, the use of convenience sampling to select the study participants limits the generalization of the study's findings, as the selected participants may not be representative of other women in the Lake Zone. As such, the study's findings may not be applicable to other rural areas and should be interpreted with caution. An assessment of the health information literacy skills of women of childbearing age using a more representative sample in the rural Lake Zone of Tanzania is required.

## Conclusion

The findings of this study demonstrate that most women in the four studied regions had inadequate health information literacy. In fact, very few women were found to have sufficient or excellent health information literacy. It is also evident from this study that the majority of the women had problems in all five aspects of health information literacy (reading, accessing, understanding, appraising and using health information in decision-making processes). Further, the observed significant

associations between health information literacy and women's levels of education, income, ownership of means of communication such as a television and mobile phone, and access to health facilities suggest that these variables are primary determinants of the health information literacy of women in rural settings. On the whole, the results of this research provide evidence for the need to enhance the health information literacy skills of women of childbearing age in most rural and remote areas of Tanzania. This is important, given that inadequate health information literacy, as found in this study, is a threat to health, as it increases the probability of people making erroneous health decisions that may have negative repercussions for their health and that of those in their care. Enhancing the health information literacy skills of these women is most likely to result in better health outcomes, thereby moving towards health equity in rural populations.

This study therefore recommends that apart from providing health information to women in rural areas, health-care providers should empower them with the requisite health information literacy skills so that they are able to appraise health information obtained from different sources. Further, given that most of the women in the studied communities were found to have access to mobile phones, efforts to sensitize women to use mobile phones to access health information should be strengthened. This should be done alongside empowering women with the important skills of how to successfully utilize these tools to access such information. It is also imperative that health-care providers use plain and jargon-free language when disseminating health information to women. Written health information should be supported with oral information so that every woman, regardless of her level of literacy, can benefit from the information provided.

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# Information needs and delivery channels: Experimental evidence from Cambodian smallholders

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## Abstract

Despite numerous policy interventions, poverty still exists. Those most harshly affected are people living in rural areas of low-income countries, regions that are often characterized by information asymmetries leading to market failure. The widespread growth of information and communications technologies (ICTs) in remote areas across the world holds immense potential for lifting the information barriers of the rural poor. However, there is little evidence of the effectiveness of delivery channels, which might be one reason why digital advice differs in its impact. Seeking to ascertain how smallholders can best be served by ICT, the authors investigated information needs and effective ICT delivery channels. Sociodemographic and ICT-related data was collected and a framed field experiment was conducted with smallholders in Cambodia; they were asked to build an object while using various delivery channels for instruction. Employing different regression techniques and matching algorithms, the experiment reveals that multisensory instructions trump all others.

## Keywords

Extension services, didactics, pictures, audio, multisensory learning, poverty

## Introduction

Despite global efforts and major progress, around 10% of the world's population still lives on less than US\$1.90 per day (World Bank, 2021). The vast majority of the global poor reside in rural areas, depending on agriculture as their primary source of livelihood (World Bank, 2018). These rural areas are often characterized by poor physical infrastructure and a lack of essential services. This increases search and transaction costs for smallholder farmers, impeding them in making optimal decisions with respect to their farm business (Aker et al., 2016). To combat poverty, national and international policy therefore often focuses on smallholder farmers' business development by promoting, for example, access to technologies, markets and coping mechanisms in times of difficulty (Food and Agriculture Organization,

2017b). One particularly prominent support channel to reduce search and transaction costs is the information provided through extension workers (Cui et al., 2018; Fabregas et al., 2019).

While in-person extension services have proven to be a beneficial tool – for example, for driving the productivity of smallholders (Cui et al., 2018; Davis et al., 2020; Norton and Alwang, 2020) – extension work in its traditional form is an extremely costly, time-consuming, non-standardized and difficult-to-scale intervention (Anderson and Feder, 2007). Moreover, evidence shows that extension work might not

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reach all farmers equally (Banerjee and Duflo, 2011). Furthermore, the overall capacity of extension services – which include human and financial resources, knowledge and infrastructure – tends to be low in low- and middle-income countries (Davis et al., 2020). This leads to a ratio of extension workers to farmers of 1 to 1000 (or higher) in many countries (Anderson and Feder, 2007; Davis et al., 2010).<sup>1</sup> The lack of infrastructure in particular can be a problem, as many smallholder farmers live in remote rural areas and thus the transaction costs for visiting one farmer can increase considerably when extension agents struggle with ways to reach them (Davis et al., 2020).

The recent boom in digital hardware around the globe offers great potential for contacting smallholder farmers more efficiently (Aker, 2011). Mobile phones have spread rapidly across the world over the past two decades – in many countries even to the most marginalized regions. Mobile cellular subscriptions in low-income countries rose from 0.11% in 2000 to 60.4% in 2018 (World Bank, 2021). The 2017 Gallup World Poll estimates that about 80% of individuals residing in low-income countries possess a mobile phone (Demircuc-Kunt et al., 2018).<sup>2</sup> This spread of communication devices presents opportunities for digital development by reducing the transaction costs of useful information and education, as well as enabling the monitoring of public services (Aker and Blumenstock, 2015; World Bank, 2016). Information and communications technologies (ICTs) can therefore be a game changer for unserved or underserved areas in the extension realm (Davis et al., 2020; De Silva and Ratnadiwakara, 2008). Increasingly, more projects around the globe are utilizing ICTs for extension programmes (e.g. see Aker, 2011; Fabregas et al., 2019). While there were 33 active digital advisory services for smallholders in 2010, this number had increased to 288 by January 2020 (Phatty-Jobe et al., 2020).

However, while ICT offers promise with regard to improving the lives of smallholders, empirical evidence on the impacts of ICT-based extension services on agricultural adoption, behaviour and welfare is mixed (Aker et al., 2016; Otsuka and Fan, 2021). For example, Cole and Fernando (2012) found that digital agricultural extension improved education levels, drove positive change in management practices, and increased the adoption of more effective inputs by Indian farmers. However, other studies have found no significant effect of digital extension services on the betterment of the livelihoods of farmers (Nakasone et al., 2014). Additionally, Ndimbwa et al. (2021) found that Tanzanian smallholder farmers

rated most of the channels used to deliver agricultural information and knowledge either as extremely or very ineffective.

Due to the heterogeneous impact of ICT on the lives of rural residents, Aker et al. (2016: 45) suggest that ‘existing efforts to create ICT for agriculture interventions information would benefit from more careful groundwork including information “needs” assessment’. Aker et al. (2016) point out that while there were over 140 active ICT services for agriculture development at the time of their study, it was a priori not clear whether such programmes would reach the target population. Therefore, not only information needs but also effectiveness (among other things) should be investigated on a small scale before developing and rolling out extensive and costly ICT services. Nakasone et al. (2014) also highlight the importance of investigating both information needs and how the necessary information can be delivered to be effective. Delivery channels are especially important with respect to more complicated topics such as agricultural practices, which cannot be properly conveyed via a text message. While there has been a considerable increase in digital advisory services to date (Fabregas et al., 2019; Phatty-Jobe et al., 2020), evidence of information needs and effective delivery channels is nonetheless scarce, with no evidence stemming from rural Cambodia.

The major problem with ICT for smallholder farmers is as follows: while there are many projects in place, it is often unclear whether these projects are actually effective in transferring information properly to the farmer. This includes both conveying the information needed and the delivery channels used (Aker et al., 2016; Food and Agriculture Organization, 2017a; Nakasone et al., 2014).

### **Aim and objectives of the study**

The aim of this study is to understand how smallholder farmers can best be served with information by ICT so that they can grow their farm business. Thus, we investigate both information needs and effective information delivery channels. More specifically, our objectives include:

1. Analysing recent literature and our primary data set to reveal the specific information needs of smallholder farmers, including less complex information, such as price and weather data, and more complex information, such as cultivation practices and correct input use.

2. Analysing recent literature and our framed field experiment to illicit effective ways to convey information to smallholder farmers.
3. Synthesizing the findings with regard to information needs and effective ways to convey information to establish practical recommendations on how smallholders can best be served by ICT.

To this end, we undertake a study of rural Cambodia. We focus on Cambodia as a least developed country with agriculture as the backbone of the economy (Asian Development Bank, 2014; United Nations, 2018). Moreover, Cambodia presents a unique case with respect to information- and knowledge-sharing, as most of the country's educational infrastructure had to be rebuilt from scratch in the 1980s (Ke and Babu, 2018). Thus, while it is important across the globe, it is of especially high importance for policy-makers in this region to understand the needs of smallholder farmers and to address these effectively in order to promote sustainable economic growth.

## Literature review

This section presents selected literature on information needs and information delivery. We restricted the review to studies from low-income economies or lower-middle-income economies so that the information was relevant to our study region. Furthermore, we searched for peer-reviewed articles considering a low-income population with a special focus on smallholder farmers or the rural population in general. We utilized common search engines such as Google Scholar for our literature research, using related keywords such as 'information needs', 'information delivery', 'information channels' and 'ICT'.

### Information needs

There is a large range of information demands and they are site- and time-specific, although market and weather information, as well as more complex information – such as information about the application of fertilizers, disease management and the cultivation of crops – appears to be important in a general sense (Phiri et al., 2018).

Phiri et al. (2019), for example, used a mixed-methods approach to investigate the information needs of 202 rural smallholders in Malawi. Their findings suggest that crop husbandry, pest and disease control, and market and weather information were the most important information needs. Also relying on a mixed-methods approach, Babu et al. (2012) assessed the information needs of 576 Indian rice farmers,

finding that their most important needs included disease management, pest management, pesticide application and fertilizer application. Lokanathan and Kapugama (2012) investigated information needs quantitatively and qualitatively. They looked at 505 smallholders and 447 agricultural microenterprises in four Asian countries – namely, Bangladesh, India, Sri Lanka and Thailand – and found that over an entire crop cycle, information on fertilizers, market prices and pesticides held importance.

Understanding information needs is important for advisory services, as an advisory service can only be effective if it offers what people need. However, not all types of information are the same. While it is relatively easy to supply a smallholder with market price information via a simple phone (e.g. a text message), effectively informing a farmer how to apply fertilizer or cultivate crops is more complex. Globally, 'less complex' information is predominantly provided through ICT (Aker, 2011; Phatty-Jobe et al., 2020). Aker (2011: 639) suggests that this might be because 'less complex' information such as price and weather data is not only easier to transmit, but also easier to gather; ICT programmes that provide more complex information on agricultural practices are rare, probably because 'this information is more nuanced and difficult to convey'. Aker et al. (2016: 43) suggest that these 'more complicated concepts' call for different delivery mechanisms, such as imagery.

In line with the literature, it is of particular interest to understand how to convey both less complex and complex information effectively to smallholder farmers, especially when relaying information digitally.

### Information delivery

Agricultural information can be delivered either via personal meetings or through ICTs, or a mixture of both. Traditionally, information has most often been delivered through (1) demonstrations, where a number of farmers gather round a trainer, who demonstrates the new technique; (2) farmer field schools, where approximately 25 farmers meet together with a trained facilitator once a week on a local field to compare two plots over a cropping season; and (3) farmer-to-farmer extension, where one trained farmer trains multiple other farmers (Cai and Abbott, 2013; Franzel et al., 2015; Plant Production and Protection Division, 2015). However, physical extension for rural smallholders has its drawbacks. For example, smallholders tend to live in remote areas that are difficult to reach by extension agents, or they lack human resources or motivation, and extension agents may lack accountability (Aker, 2011). Advisory work

through ICTs offers a way to deliver information more cost-effectively compared to physical extension.

Digital devices – especially mobile phones – have reached some of the most marginalized regions of the world (Demirguc-Kunt et al., 2018; Phatty-Jobe et al., 2020) – a trend that offers new ways to overcome the drawbacks of traditional advisory services. Digital advisory services can utilize many channels to reach farmers besides simple or smartphones, such as television, radio or computers. Hoang (2020), for example, used a quantitative questionnaire to study the use of ICT for acquiring agricultural information among 250 smallholder farmers in Vietnam. The findings suggest the use of a wide range of ICT tools for accessing information, with mobile phones, television and radio broadcasts being the most popular. Sangbua-puan and Guha (2016) studied information delivery to 150 rice farmers in Thailand through information kiosks. They used a quantitative survey to illicit basic sociodemographic information and the impact on knowledge and skills of an information kiosk that was set up for their experiment. The authors found that farmers utilized such kiosks and self-reported that the information delivery was useful to them and the community as a whole. Given all of the options, the literature shows that, due to network restrictions and technical illiteracy, among other things, the most important tool to reach smallholders appears to be the mobile phone (Aker et al., 2016; Phatty-Jobe et al., 2020).

With respect to delivery channels, theory offers a useful framework – namely, the multisensory learning framework. It is put forward by a profound stream within the cognitive neuroscience literature, suggesting the beneficial effects of sensory enrichment for processing and remembering information (Mayer et al., 2015; Shams and Seitz, 2008). Due to the novel understanding of multisensory interactions (Ghazanfar and Schroeder, 2006), Shams and Seitz (2008) suggest that learning can involve multisensory processes at any given stage. This, in turn, offers important insights into learning patterns and thus the design of effective training protocols. While some educators have already acknowledged multisensory learning strategies (Montessori, 2013), new neuroscientific evidence further strengthens this approach. Targeting multiple senses – for example, through visual and auditory stimuli – can enhance learning when teaching new material to students compared to targeting a single sense – such as using only auditory stimuli (Lehmann and Murray, 2005; Lurii, 1987; Montessori, 2013).

The most common delivery channel for digital advisory services for smallholders is the voice. This

can be through interactive voice response (IVR), out-bound voice dialling or helplines, as well as voice messages or radio broadcasts (Aker, 2011; Phatty-Jobe et al., 2020). The second most common way to deliver information is via text channels, such as short message service (SMS) and unstructured supplementary service data (USSD; Phatty-Jobe et al., 2020). However, more diverse delivery channels are emerging. Access to the Internet and the rise of smartphones has sparked the development of online solutions for information delivery – for example, through multimedia content such as pictures, animations and videos on web pages and applications (Aker, 2011; Gakuru et al., 2009; Phatty-Jobe et al., 2020; Saravanan et al., 2015).

The literature is mixed about which delivery channels farmers prefer. Lokanathan and Kapugama (2012) highlight that face-to-face advisory services are the most preferred by Asian farmers, followed by SMS. The success of voice- and SMS-based information services in low- and middle-income countries also suggests the popularity of certain delivery channels. However, despite preferences or popularity in the market, scientific investigations of the effectiveness of either channel are scarce.

Thus, while many studies have concentrated on conveying information to smallholder farmers, it remains unclear how farmers can best be served with information by ICT in order to grow their farm business sustainably. In particular, the open questions include: (1) what kind of (less complex and more complex) farm information is needed by smallholder farmers (where there is no evidence from rural Cambodia) and (2) which delivery channels are actually effective in conveying complex information in particular to smallholder farmers.

## Research area and methodology

### Research area

Our study considers smallholder farmers from north-eastern Cambodia. With a gross national income per capita of US\$1,075, Cambodia is clustered as a least developed country (United Nations, 2018). While experiencing economic growth over recent years, Cambodia is nevertheless among the poorest countries in the region and was thus deemed a reasonable area in which to conduct our study (World Bank, 2021). Furthermore, the country presents itself as a suitable area to study the life of smallholder farmers as approximately 82% of Cambodians are farmers and most are rural smallholder farmers (Sotha, 2019), with each household having on average less than two hectares (Sotha, 2019).



Within Cambodia, we selected the poorest province – Ratanakiri (Asian Development Bank, 2014) – to undertake our data collection (see Appendix 1). We visited 16 villages situated south of the capital of Ratanakiri. While the capital is a rather modern city, the villages surrounding it are traditional and inhabited by ethnic minorities (Padwe, 2020). The inhabitants represent 12 ethnic groups, including Jarai, Lao, Tompoen and Khmer. Of the 150,000 citizens of Ratanakiri, 88% live in rural areas and predominantly depend on smallholder agriculture (Asian Development Bank, 2014; Ritzema et al., 2019). Typically, the farmers in the province cultivate rice for their own consumption. Cassava, cashews and rubber are the main cash crops (Ritzema et al., 2019).

Cambodia is still marked by its recent past, where the Communist Party of Kampuchea (1975–1979) intended to radically and brutally turn Cambodia into a rural, classless society (Chum, 2012; Pheng et al., 2020). For example, today the country lacks an educational infrastructure and crucial experts such as experienced extension officers (McNamara, 2016). Extension structures were destroyed and had to be rebuilt after 1979 (Global Forum for Rural Advisory Services, 2021; McNamara, 2016). Thus, Cambodia presents itself as an extreme version of other developing countries, where the rural population often lacks access to education and extension (World Bank, 2018).

In recent years, despite multiple political initiatives, the agricultural advisory infrastructure in Cambodia has still faced challenges.<sup>3</sup> One major concern is the lack of staff for advisory services. Estimations from 2009 suggest that there were 1,244 extension workers in Cambodia (Global Forum for Rural Advisory Services, 2021). Other estimates from 2010 suggest a ratio of 5.6 extension workers per 100,000 farmers (Ke and Babu, 2018), representing an extension-worker-to-farmer ratio of 1 to 17,857. Nevertheless, the Cambodian Ministry of Agriculture, Forestry and Fisheries is striving to modernize Cambodia's agricultural sector. For example, the agricultural extension policy of 2014 aims at demand-driven extension with a pluralistic advisory system (Ministry of Agriculture, 2015).

### *Sampling procedure*

The data collection took place from August to October 2018. The sample is spread over 16 villages in the province of Ratanakiri and allows us to analyse the heads of 280 smallholder farmer households. Every participant needed to have at least basic skills in speaking and understanding the national language,

Khmer. Since there were no household lists for the region available to researchers, we relied on the expert knowledge of the extension workers from the regional government. Together with the respective village officials, they carefully selected participants to generate a cross section of each village, paying particular attention to randomizing characteristics such as age, gender, education and income level. Local enumerators guided the participants throughout the research sessions, while one author accompanied the enumerator team throughout the entire data collection period. Each participant first answered the questions on the questionnaire and then participated in the experimental session. After approximately three hours, the participants received payment equivalent to a day's wage.

### *Research components*

To investigate our research questions, we used two main components to collect quantitative data: a comprehensive survey to assess household demographics, information needs and hardware availability, and a between-subject-design framed field experiment.<sup>4</sup> Thus, we designed the research components to be complimentary to each other. While the questionnaire investigated information needs, the experiment thoroughly captured the effectiveness of information delivery channels. To reach our final objective, we aim to combine the insights generated to investigate how useful information can best be delivered to smallholders.

*Questionnaire.* We conceptualized the questionnaire by starting with a comprehensive literature review to create a qualitative questionnaire for a pre-field visit in March 2018. We conducted 18 interviews with smallholder farmers in the study region and multiple interviews with experts such as village and commune chiefs, as well as extension officers. Following the insights from the qualitative research,<sup>5</sup> we developed a concise quantitative questionnaire, which we tested in Cambodia again during a pilot phase among both students and smallholder farmers. Following some adjustments, we finalized the questionnaire for this study.

### *Experiment*

*Set-up.* Stemming from the call for more careful groundwork to understand how ICT can effectively reach smallholder farmers (Aker et al., 2016; Nakasone et al., 2014), we developed a framed field experiment. Experiments emerge from the discipline of behavioural economics, where psychological and

**Table 1.** Experiment groups (designed by the authors).

| Group             | Name           | Sense(s)           | Design                                                                                   | Practical implications                         |
|-------------------|----------------|--------------------|------------------------------------------------------------------------------------------|------------------------------------------------|
| Control group     | Demonstrative  | Multiple           | Enumerator builds the object in front of the participant and explains each step in Khmer | Demonstrative extension session in the village |
| Treatment Group 1 | Audio          | Hearing            | Each step is pre-recorded in Khmer and played from a mobile device                       | Mobile voice message                           |
| Treatment Group 2 | Pictures       | Vision             | Each step is illustrated by a set of coloured pictures (standard Lego)                   | Mobile picture instructions                    |
| Treatment Group 3 | Audio–pictures | Hearing and vision | Treatments 1 and 2 together – participant can look at pictures and play audio            | Mixture of application of Treatments 1 and 2   |

economic schools of thought merge to gain insights into the actual human behaviour for a given complex (Camerer and Loewenstein, 2003; Friedman et al., 1994). For the experiment, the farmers were asked to build an object with building blocks within a given time frame. A Lego (2000) tower appeared to be suitable following our pilot test, as most of the participants were able to assemble one.<sup>6</sup> Before building with the Lego (see Appendix 2), each participant randomly received one of four possible sets of instructions (treatments) derived from multisensory learning theory (Mayer et al., 2015; Shams and Seitz, 2008).

As seen in Table 1, the instructions comprised two treatment groups that addressed one human sense (i.e. audio instructions and picture instructions); one treatment group that addressed two human senses (i.e. audio–picture instructions); and a control group that addressed multiple human senses at the same time (i.e. demonstrative instructions). We designed the treatments to fit our target group and thus ensured that the participants would not need skills for reading, writing or calculation. Moreover, we chose the treatments to fit the circumstances (e.g. by considering practical implications that needed little mobile data). All of the treatments were translated and realized together with agricultural students from Cambodia. All of the content of the treatments was designed in a standardized way, following the eight-step instruction structure put forward by Lego (for an overview, see Figure 1; for the written instructions, see Appendix 2).

**Design.** Following the pilot among smallholder farmers from the target region, we set the time limit for the experiment at 10 minutes to make the experiment neither too easy nor too difficult for the participants. The basic structure of the experiment can be seen in Figure 2. The participants received the instructions without any time limit. The instructions they

received were drawn by lots. During this pre-construction phase, the participants were also allowed to see the Lego pieces. Once the instruction phase was over, the time started ticking and the participants had a maximum of 10 minutes to build the tower. During this time, they could also decide to stop ahead of time, either because they felt they had finished or they wanted to give up. On finishing, we counted the number of errors made in building the tower, with a maximum of 16 errors. The number of errors (hereafter referred to as mistakes) functions as our performance measure.<sup>7</sup> A mistake was defined as a brick laid incorrectly or not used at all.

**Treatments.** Our treatments can be described as follows:

- **Audio:** this treatment group received instructions based solely on vocal stimuli. A voice slowly explained how to build the Lego tower in basic Khmer, the national language. The audio had to be played and listened to once, completely, before the building phase started. Then, while building the Lego tower, the participant could listen to the various sections as often as they liked. In order to listen to the audio, the participants received a tablet, which was operated by the enumerator. Practically, it can be thought of as a voice message received via phone, but – to take a step back – this could even be instructions over the radio or a phone call.
- **Pictures:** this treatment group received instructions based solely on visual stimuli. Here, the participants received the standard series of Lego picture instructions. The participants were asked to study the instructions carefully before the time started and the building phase began. Once the time had started, the

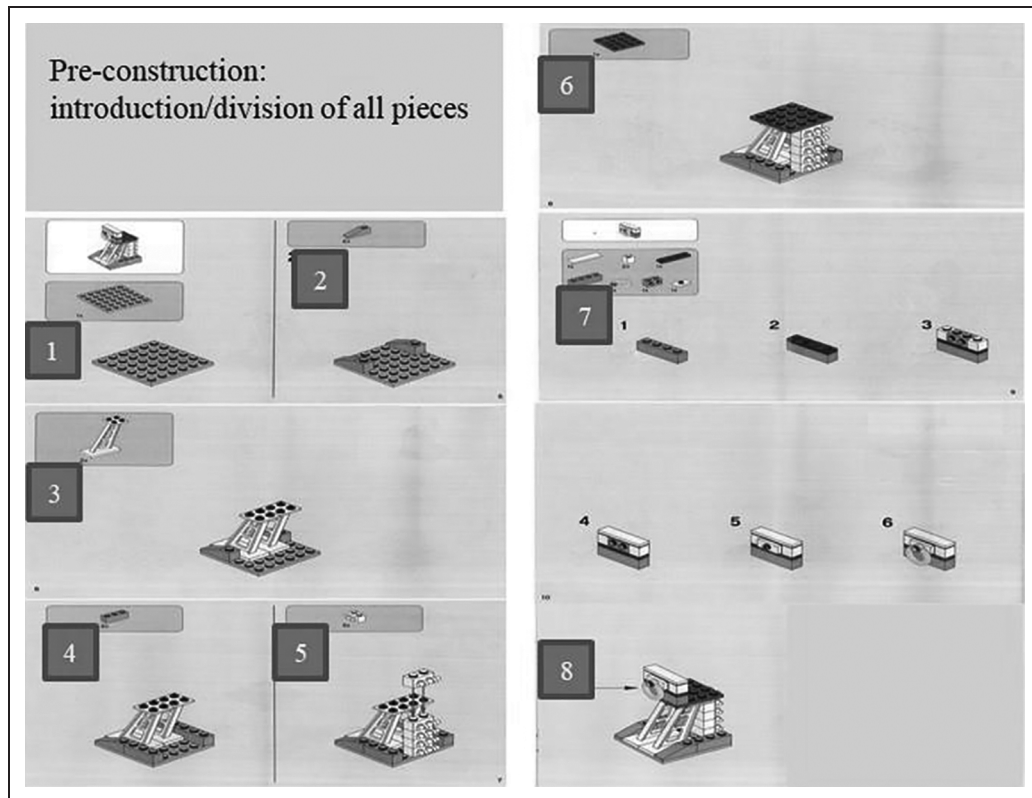


Figure 1. Eight-step instructions (modified by the authors) based on original Lego instructions.

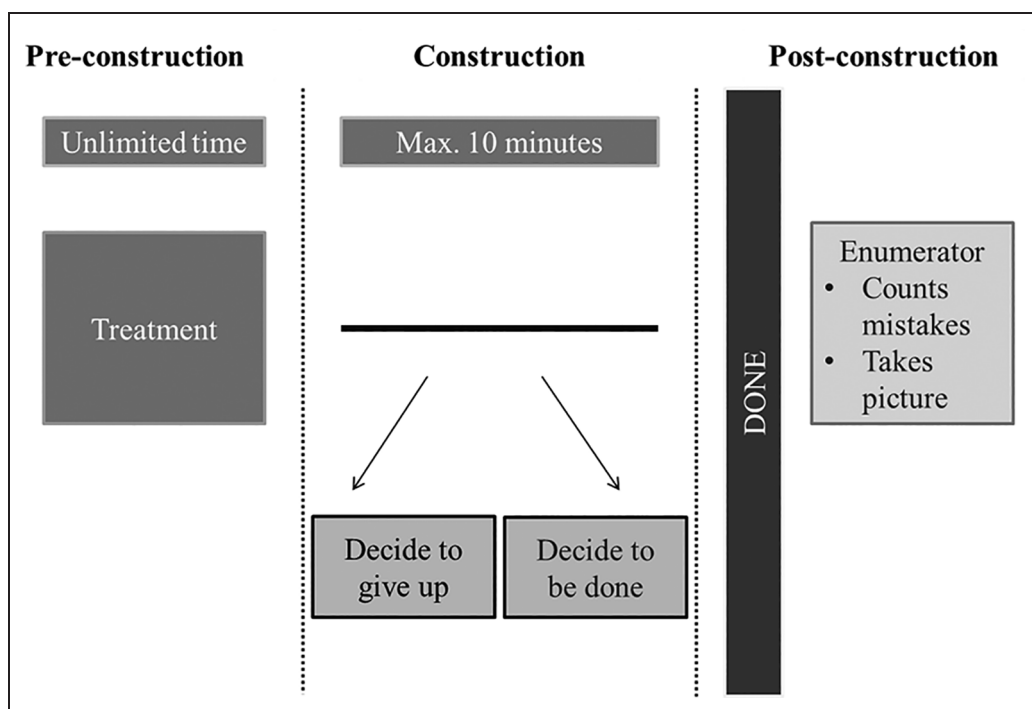


Figure 2. Experiment logic (designed by the authors).

participants were allowed to revisit the picture instructions at any time. The idea here was that, with pictures from an e-learning class, an

individual can always use the learning material as an expedient. Thus, we allowed the participants to keep the pictures throughout the task to

make it as realistic as possible. Practically, it can be thought of as pictures being received via phone or a series of picture instructions.

- *Audio-pictures*: this treatment combined the above-mentioned auditory and visual treatments. It was derived as a treatment to address two senses – rather than solely one – and be practical. Knowledge designed as pictures or voice recordings can be easily spread over the Internet while not requiring much mobile data (compared to a video). The participants had to listen to the recording completely while looking at the respective steps in the picture instructions. Once the time had started and the building phase began, the farmers were always in possession of both the audio recording and the pictures, and could revisit them at any time. Practically, this can be thought of as pictures being sent via phone and an additional phone call or recording explaining the pictures.
- *Demonstrative*: this treatment was designed as the control treatment, as it mirrored one of the most common instruction practices used by extension officers in Cambodia (Cai and Abbott, 2013; McNamara, 2016). Extension workers themselves or model farmers often present a certain practice in front of a group of farmers during a training session. The farmers are then asked/encouraged to try the practice that has been demonstrated on their own farm. Thus, in this treatment, an enumerator constructed the Lego tower in front of the participants, again following the exact same eight steps as in all the other treatments. The enumerator constructed the tower once - providing all explanations in Khmer - answered questions and then deconstructed it afterwards. Subsequently, all of the pieces were given to the participants, whereupon the time started and the building phase began. Once the participants had begun building, they were not allowed to ask any more questions or receive any assistance from the enumerator. This rule was important as we wanted it to model the real-life situation where farmers are left alone with an application after the extension training session is over. During the demonstration, the farmers were allowed to take notes or do whatever they felt would help them afterwards in the building process. However, none of the farmers showed any effort to internalize the instructions other than concentrating on the enumerator.

*Validity*. We ensured external validity – that is, the transferability of our findings to real-life settings – by designing the experiment as a framed field experiment. Accordingly, we used a non-standard subject pool and framed the experiment in a field context using an imposed environment to reveal the subjects' behaviour that was similar to their real-world behaviour (Charness et al., 2013; Harrison and List, 2004). We did so to understand how the smallholder farmers behaved given their natural surroundings, where distractions from animals, large family settings or imperfect equipment and facilities, among others, had to be considered. This aided us in revealing data on actual behaviour in the farmers' normal life settings.

To ensure internal validity – that is, that the outcome was merely due to the treatment given and nothing else – we employed a between-subject design. Accordingly, we divided our sample randomly into various groups and every participant received only one treatment. We did so to avoid carry-over effects (Charness et al., 2012). Moreover, to control for the influence of the heterogeneity of technical skills among the participants, we conducted the experiment without capturing the technical know-how of the participants. The scope of our experiment was to reveal promising delivery channels that could then be used to design information systems and not to assess technical know-how. Furthermore, as is common in psychology (Madsen and Stenheim, 2015), we did not directly incentivize our experiment.

We decided on the Lego tower for both internal and external validity reasons. As it was an object that was unknown to the smallholder farmers, and we could thus control for previous knowledge, it strengthened the internal validity of the experiment. However, another reason was that complex information is often new to farmers – for example, how to plant a previously unknown crop or how to use a new technology that a farmer has never seen before. While there might be some previously developed skills to build on, using a new technology can be a new, previously unknown world for a farmer. The same applied for the Lego tower – it was unknown and the farmers depended on the instructions to build it correctly.

### *Approach to data analysis*

To investigate the farmers' information needs, we descriptively analyse the information provided in the comprehensive section about digitization on our questionnaire. Further, we estimate a multiple linear regression model to investigate the information

delivery channels – that is, the effectiveness of the different treatments employed in our experiment.<sup>8</sup> In our model, the dependent variable – mistakes – represents a counting variable ranging from 0 (the participant made zero mistakes in building the Lego tower, which represents the best possible outcome) to 16 (the participant made the maximum number of possible mistakes in building the Lego tower, which represents the worst possible outcome). The variables describing the study group (see Table 2) are included as control variables. The respesicte equation is specified as follows:

$$\text{Mistakes}_i = \alpha + \beta_1\text{ControlGroup} + \beta_2\text{TreatmentAudio} + \beta_3\text{TreatmentPictures} + \beta_4\text{TreatmentAudio-Pictures} + \beta_5\text{Age} + \beta_7\text{CanCalculate} + \beta_8\text{CanRead} + \beta_6\text{Education} + \beta_9\text{Gender} + \beta_{10}\text{MaritalStatus} + \epsilon_i$$

$$i = 1, \dots, N, \quad (1)$$

In equation (1), *i* represents the individual responses of each participant and  $\epsilon_i$  is assumed to be the random error term. The variables of control group, treatment audio, treatment pictures and treatment audio–pictures are included as dummy variables.<sup>9</sup> As a final step, we employ propensity score matching, calculating the matched effect of the treatment on the outcome variable, mistakes, using the condition variables age, can calculate, can read, education, gender and marital status. The results were estimated using Stata 15 and are presented in the following section.

## Results

### Sample

Clustered in their respective intervention groups, Table 2 depicts the characteristics of our study group.<sup>10</sup>

The farmers in our sample were on average 40 years old. They possessed, on average, about three

years of formal education. Moreover, on average, about 50% of our sample could read and 60% stated that they were able to perform calculations. Additionally, roughly half of our sample was female (there were slightly more females than males, especially in the audio group) and most often our participants were married. As some of the variables appear to deviate in the group comparison, we have conducted a regression analysis to control for sociodemographic influences. In addition to personal characteristics, we collected information on household hardware and the state of extension work from the perspective of the farm managers. As presented in Table 3, out of the 280 farmers, 211 stated that there was regular extension work going on in their village. Of these 211, 152 stated that they had participated in an extension session. We then asked the 152 farmers how they rated the quality of the extension services received. Most of the farmers rated the extension work as *good* or *slightly good*.<sup>11</sup> In general, those who had participated appeared to be rather satisfied with the services. However, one in four of the farmers stated that they did not really understand what was being taught during the extension sessions. Furthermore, we wanted to know more about the usefulness of the extension sessions. Roughly half of the participants (107 out of 211) stated that although they had found themselves in situations in their fields where they could apply the insights taught during an extension session, by that point they had forgotten what exactly had been taught. Five out of the 280 farmers stated that they had had some kind of experience with digital advisory services.

Internet access and hardware ownership were quite prevalent (see Table 4). Of the 280 farmers, 108 stated that there was Internet access in their household. Moreover, 73% of the households possessed at least

**Table 2.** Sociodemographics of full sample and by group (N = 280).

| Variables                   | Full sample | Control (demonstrative) | Treatment 1 (audio) | Treatment 2 (pictures) | Treatment 3 (audio–pictures) |
|-----------------------------|-------------|-------------------------|---------------------|------------------------|------------------------------|
| N                           | 280         | 117                     | 38                  | 38                     | 87                           |
| Age <sup>a</sup>            | 39.64       | 40.26                   | 38.08               | 48.76***               | 36.16***                     |
| Can calculate <sup>b</sup>  | 0.60        | 0.56                    | 0.68                | 0.71*                  | 0.56                         |
| Can read <sup>b</sup>       | 0.52        | 0.48                    | 0.53                | 0.61                   | 0.52                         |
| Education <sup>a</sup>      | 2.94        | 2.82                    | 3.55                | 2.89                   | 3.02                         |
| Gender <sup>c</sup>         | 0.59        | 0.50                    | 0.68                | 0.66                   | 0.55                         |
| Martial status <sup>d</sup> | 0.87        | 0.87                    | 0.79                | 0.97*                  | 0.86                         |

\*\*\**p* < .01, \*\**p* < .05, \**p* < .1

<sup>a</sup>In years.

<sup>b</sup>1 = yes, 0 = no.

<sup>c</sup>1 = female, 0 = male.

<sup>d</sup>1 = married, 0 = other.

**Table 3.** Status of extension services in Ratanakiri ( $N = 280$ ).

| ICT                               | Unit                                 | Result |
|-----------------------------------|--------------------------------------|--------|
| Training in the village           | 1 = yes, 0 = no (count)              | 211    |
| Participation in training         | 1 = yes, 0 = no (count)              | 152    |
| Evaluation of training            | 1 = very low to 6 = very high (mean) | 4.22   |
| Forget training when needed       | 1 = yes, 0 = no (count)              | 107    |
| Participation in digital training | 1 = yes, 0 = no (count)              | 5      |

one simple phone and 49% owned at least one smartphone. While computers and tablets were rarely owned, DVD players, television sets and radios were more prevalent. This is in line with the global trend that simple phones are more prevalent than smartphones among rural communities (Phatty-Jobe et al., 2020). The results are also similar to the findings of Hoang (2020), who found that Vietnamese smallholder farmers used mobile phones, television and radio to meet their information needs.

We also asked the farmers about the utilization of their ICTs. As seen in Table 5, the farmers were already using their hardware to access information.<sup>12</sup> With their simple phones, the farmers most

**Table 4.** ICTs available in households ( $N = 280$ ).

| ICT             | Frequency | %  |
|-----------------|-----------|----|
| Internet access | 108       | 37 |
| Simple phone    | 203       | 73 |
| Smartphone      | 137       | 49 |
| Radio           | 76        | 27 |
| Television      | 71        | 25 |
| DVD player      | 70        | 25 |
| Tablet          | 0         | 0  |

**Table 5.** Utilization of ICTs ( $N = 280$ ).

| Utilization                    | Simple phone<br>( $n = 203$ ) | Smartphone<br>( $n = 137$ ) | Radio<br>( $n = 76$ ) | Television<br>( $n = 71$ ) |
|--------------------------------|-------------------------------|-----------------------------|-----------------------|----------------------------|
| <b>Business</b>                |                               |                             |                       |                            |
| Price information              | 84 (41%)                      | 56 (41%)                    | 37 (49%)              | 26 (37%)                   |
| Demand information             | 70 (34%)                      | 46 (34%)                    | 28 (37%)              | 19 (27%)                   |
| Supply information             | 63 (31%)                      | 37 (27%)                    | 26 (34%)              | 15 (21%)                   |
| <b>Education</b>               |                               |                             |                       |                            |
| General agricultural education | 23 (11%)                      | 56 (41%)                    | 50 (66%)              | 32 (42%)                   |
| In case of an incident         | 39 (19%)                      | 23 (17%)                    | 12 (16%)              | 4 (6%)                     |
| Before decision-making         | 11 (5%)                       | 11 (8%)                     | 11 (14%)              | 0 (0%)                     |
| Other                          | 10 (5%)                       | 43 (31%)                    | 35 (46%)              | 30 (42%)                   |

commonly accessed price information. Accessing price information was also a popular activity when using a smartphone, the radio or television. However, other business information was also accessed via the hardware in their household. For example, about one-third of the farmers who possessed a simple phone also used it to access demand information – the same proportion is evident for smartphone owners. With respect to education, the farmers were already using their hardware for general agricultural education. Radio in particular (with 66% of radio owners), television (42%) and smartphones (41%) were popular for accessing agricultural education. The simple phone appears to have little importance with respect to education relative to other devices. Interestingly, the farmers stated that they also used smartphones, radio and television to a large degree for purposes ‘other’ than business or education. This is not the case for simple phones, where only 10 out of the 280 farmers stated that they used them for other purposes. ‘Other’ purposes often included use for fun or staying in contact with relatives. However, we did not ask about the channels used. Notably, the predominance of accessing price information in particular mirrors a global trend (Phatty-Jobe et al., 2020).

### Information needs

Table 6 depicts the information that the smallholder farmers in our sample would like to receive via phone. We presented the seven items listed in Table 6 to the farmers and asked whether they would like to receive that information (yes or no). We also included an additional item, ‘other’, where the farmers could express their additional information demands. With 87%, the highest demand was for cultivation information, referring to which crops to grow and how to grow them. This is followed by price information for outputs and inputs, respectively. Over half of our farmers were interested in receiving information

**Table 6.** Information demand over the phone (N = 280).

| Information                 | Frequency | %  |
|-----------------------------|-----------|----|
| Cultivation information     | 244       | 87 |
| Price information (outputs) | 230       | 82 |
| Price information (inputs)  | 210       | 75 |
| Weather information         | 188       | 67 |
| Pesticide application       | 171       | 61 |
| Fertilizer application      | 163       | 58 |
| Crop alternatives           | 110       | 39 |

about pesticide and fertilizer application. Thirty-nine percent requested information on crop alternatives, such as other crops that suited the soil and circumstances of the farmer.

The information needs stated by the smallholder farmers in our sample are somewhat in line with what is suggested in the literature. Market information – which includes prices for outputs and inputs – is a commonly stated information demand (Phiri et al., 2018). However, most commonly, the farmers asked for information on a rather complex topic – namely, cultivation. This can include information on which crops to grow and how to grow those crops correctly. Conveying this information requires many nuances and must be well thought through to stick with the smallholder farmer effectively. The same applies for fertilizer and pesticide application. The importance of information on fertilizer application is also highlighted by the cross-country study conducted by Lokanathan and Kapugama (2012).

With respect to systematizing the farmers’ information needs, crop cultivation and information on pesticide and fertilizer application fall in the category of more complex information, as conveying this information requires more than transferring mere numbers. Price information and weather information, on the other hand, fall in the category of less complex information, as no in-depth explanation is required to transmit these data points. Thus, the most strongly needed information – cultivation information – is a complex topic (Aker et al., 2016), and the delivery channels for this information need to be well thought out.

**Information delivery**

To assess the effectiveness of the information delivery channels, we analysed the performance of the farmers with respect to their treatment in the experiment. Table 7 shows the resulting coefficients and associated standard errors of the multiple linear regression analysis. To analyse our treatments, we used the control group (demonstrative) as our baseline

**Table 7.** Results of the multiple regression analysis to explain Mistakes (N = 280).

|                         | Baseline control group (demonstrative) |       |
|-------------------------|----------------------------------------|-------|
|                         | Coefficient                            | SE    |
| <b>Treatment</b>        |                                        |       |
| Audio                   | 3.109***                               | 1.065 |
| Pictures                | 5.870**                                | 1.092 |
| Audio–pictures          | 2.213***                               | 0.803 |
| Age                     | 0.126***                               | 0.027 |
| Can calculate           | −2.188**                               | 0.985 |
| Can read                | −0.257                                 | 1.086 |
| Education               | −0.188                                 | 0.150 |
| Gender                  | −0.172                                 | 0.717 |
| Marital status          | −0.048                                 | 0.830 |
| Constant                | 2.433                                  | 1.890 |
| R <sup>2</sup>          | 0.264                                  |       |
| Adjusted R <sup>2</sup> | 0.240                                  |       |

\*\*\*p < .01, \*\*p < .05, \*p < .1

scenario. Our interventions appeared to make a crucial difference when it came to success in the experiment. Compared to the control group, the participants receiving the audio treatment made on average (c.p.) 3.109 mistakes more; the participants receiving the Picture treatment made on average (c.p.) 5.870 mistakes more; and (3) those receiving the audio–pictures treatment made on average (c.p.) 2.213 mistakes more (all significant at a statistical significance level of 1%). Thus, the control group performed the best, making, on average, the fewest errors compared to the treatment groups. The second-best performer was the audio–pictures group, followed by the audio treatment. By far the worst performance was using picture instructions. These results are also mirrored when considering the completed trials. Appendix 3 reveals that the completed–not-completed ratio is worst for the pictures group, as most of the participants did not finish building the tower. The ratio for the audio group is balanced; slightly more participants did not complete the task in the audio–pictures group; and slightly more participants did complete the trial in the demonstrative group. This descriptive overview underlines that pictures can be clustered as the weakest instruction tool.

With respect to the control variables, we found that age had a positive statistically significant effect on the mistakes performance measure at the 1% level. Thus, if a participant was one year older, their number of mistakes increased by 0.126 c.p. on average. Moreover, the ability to calculate had a statistically

**Table 8.** Results of nearest neighbour matching.

| Comparison (Control = demonstrative) | <i>n</i> (treatment) | <i>n</i> (control) | Average treatment effect on the treated | SE    | <i>t</i> |
|--------------------------------------|----------------------|--------------------|-----------------------------------------|-------|----------|
| Audio                                | 38                   | 35                 | 3.039                                   | 1.430 | 2.125    |
| Pictures                             | 38                   | 30                 | 5.645                                   | 1.527 | 3.696    |
| Audio–pictures                       | 87                   | 56                 | 2.621                                   | 1.082 | 2.421    |

**Table 9.** Results of radius matching.

| Comparison (Control = demonstrative) | <i>n</i> (treatment) | <i>n</i> (control) | Average treatment effect on the treated | SE    | <i>t</i> |
|--------------------------------------|----------------------|--------------------|-----------------------------------------|-------|----------|
| Audio                                | 38                   | 117                | 2.650                                   | 1.213 | 2.186    |
| Pictures                             | 38                   | 117                | 6.412                                   | 1.88  | 5.397    |
| Audio–pictures                       | 87                   | 117                | 1.977                                   | 0.871 | 2.269    |

significant effect (at the 5% level) on the outcome variable. If a participant could calculate, they would on average (c.p.) make 2.188 fewer mistakes in the experiment. Here, the education variable had no statistically significant effect on performance in the experiment. The same applied for gender and marital status, as well as whether or not the participant could read.

To check the robustness of our results, we also employed a negative binomial regression. The results are presented in Appendix 4, as the magnitude and direction of the effect are similar to the effects depicted in Table 7. Furthermore, we conducted propensity score matching to check the robustness of our findings. Tables 8 and 9 show the results of the nearest neighbour matching and radius matching techniques, respectively. For our matching, we calculated the matched effect of the treatment on the outcome variable, mistakes. The treatment variable was the given treatment group (audio, pictures or audio–pictures) and we matched these to the control group (demonstrative). We conditioned our matching on the same variables as those employed in the regression – namely, age, can calculate, can read, education, gender and marital status.

The effects of the nearest neighbour matching, as well as the radius matching, are all statistically significant at the 5% level. The average treatment effects on the treated all show the same direction and magnitude as the results from the multiple regression analysis and the negative binomial regression analysis: pictures performs the worst, with an average treatment effect on the treated of 5.65 in the nearest neighbour matching and 6.41 in the radius matching. In

other words, a person in our sample receiving the picture instructions made, on average, 5.65 (or 6.41) more mistakes compared to a similar person (with respect to the condition variables) receiving the demonstrative treatment. This effect is very similar to the results from Table 7, where a person receiving the picture treatment made on average 5.87 more mistakes compared to a person receiving the demonstrative treatment. The nearest neighbour matching and radius matching also confirm that people receiving the audio treatment performed slightly better than those receiving the pictures treatment, but worse than people receiving the audio–pictures treatment.

The results mirror the predictions made by multisensory learning theory. The audio and pictures treatments had a unisensory design, whereby they merely targeted either vision or hearing. These groups show the weakest results. The audio–pictures treatment targeted both senses and the participants appeared to experience a higher quality of learning by receiving information through two channels. The demonstrative group shows the highest success rate, which can be explained by multisensory learning theory. In this instruction, the participants could use their vision and hearing, and could even handle the materials. It was an experience that targeted multiple senses simultaneously. Moreover, one explanation for the good performance in this group might be that the participants were used to this kind of instruction from school or extension sessions (211 out of the 280 farmers had participated in extension sessions before). Furthermore, the participants gained a personal face-to-face experience, meaning that they could engage with the enumerator.



## Discussion

### Information needs

As seen in Table 5, the farmers in our sample already used their devices to access price information. The fact that they nevertheless demanded price information reveals that the current information might not be sufficient. One explanation could be that they are currently calling someone at the market for prices, while advisory services could deliver the information in a systematic and transparent way. This would be in line with findings from previous studies that highlight the importance of the source of information and its trustworthiness. Without sufficient trust in an information source, the information is not likely to stick with the person who receives it (Aker et al., 2016). The same applies for general agricultural information (Table 5). The farmers already accessed agricultural information, especially using their smartphones, radio or television. However, this information might not be sufficient, as there was still a high demand from the farmers for information on, for example, cultivation. One explanation might be that general radio broadcasts or television shows might not deliver the specific, customized information that a farmer needs. Raj et al. (2011) studied the impact of a customized information system on the productivity of farmers in India, finding that information needed to be tailor-made to increase the economic performance of the farmers.

### Information delivery

In general, non-digital and digital channels are available for information delivery. While the drawbacks of non-digital extension services include the strong need for and dependence on human resources, the difficulty of scaling and relatively high costs (Aker, 2011; Maulu et al., 2021), there are also drawbacks identified with respect to digital channels. For example, studies conducted by Akpabio et al. (2007) and Munyua et al. (2009) identify that expensive transmission equipment, costly up-front investments for developing learning material such as radio productions, expensive interconnectivity and the lack of electricity are preventing extension workers from utilizing ICT for information delivery (Maulu et al., 2021). Thus, when investigating digital delivery channels, these potential hurdles should be kept in mind.

Our results underpin the effectiveness of demonstrations in the field or model farmer approaches. However, through a non-digital channel (i.e. the extension worker physically visiting the village or household), demonstrations entail many drawbacks, such as being very costly. The use of videos has been

suggested for translating demonstrations into the digital domain, as videos too are multisensory and close to a physical demonstration. However, streaming videos requires a lot of mobile data and battery power, which is relatively expensive for smallholder farmers and therefore presents major hurdles for success. Thus, diving deeper into the results, they also suggest that more cost-effective digital advisory services can work when they address multiple senses and ensure a feeling of personal engagement. For example, an audio–pictures treatment could be a cost-cutting way (compared to demonstrations) of communicating with farmers through mobile phones. As suggested in the literature (Aker et al., 2016; Phatty-Jobe et al., 2020), advisory services for rural communities have a better chance of success when targeting simple phones rather than smartphones, and using as little data as possible. Therefore, an IVR system or helpline might be a good starting point. Tailored voice assistance could replace some of the visits of extension workers, and would reach individuals more regularly as well as cut costs (Aker, 2011).

Furthermore, it is interesting that the pictures treatment performed so weakly, as we used the coloured picture instructions offered by Lego. We therefore expected the images to be by far the most intuitive instructions. One reason for this strong aberration might be that farmers are unfamiliar with this kind of instruction. Further research might be needed to clarify this interesting finding. This also hints at an answer to the idea put forward by Aker et al. (2016), who suggest that imagery might be a delivery channel that can be used to convey more complex topics. Against our intuition, this would appear to be the least effective channel to use (relative to the other channels in our experiment).

### ICT for smallholder farmers

In our specific case of rural Cambodia, extension services are rare, while the state is eager to set up a more supportive advisory infrastructure for farmers. Moreover, the digital infrastructure and equipment in households present challenges for ICT interventions. In particular, 63% of households reported no Internet access (see Table 4), which makes the streaming of e-learning material over a smartphone rather challenging. However, the majority (73%) of the farmers could be reached via simple phones and roughly half of the sample (49%) could be reached via a smartphone. Moreover, roughly one in four of the farmers reported owning a television, radio or DVD player.

Furthermore, the results reveal that smallholders in rural Cambodia are most urgently demanding

complex information on cultivation practices, followed by market information and input information. Moreover, using demonstrations as a delivery channel appears to be the most promising method for effectively conveying information, followed by bisensory and unisensory delivery modes.

Thus, we suggest to policymakers that smallholder farmers can best be served by ICT through digital services targeted at simple phones that convey complex information – specifically, crop cultivation information – with a delivery channel that addresses multiple senses. However, as simple phones cannot receive videos or access applications, and given that many smallholder farmers cannot read properly (in our sample, 52%), multisensory products appear to be rather difficult to design. Therefore, programmes could also use television broadcasts as a complementary strategy. However, the information provided has to fit the needs of the farmers and preferably have a feedback option, otherwise television programmes might also not have any impact on the livelihood of smallholders.

Another way of conveying information could be by using IVR systems or helplines, and possibly complementing them with visits from extension officers, farmer training programmes or television broadcasts. For example, information needs could be collected through a helpline to then produce regular television broadcasts based on those specific needs. Furthermore, recordings might be a useful complementary delivery channel, as 25% of our sample had a DVD player. Stored information might be helpful for farmers in general. In our survey, roughly 50% stated that they did not remember information provided by an extension officer when they actually needed it. This also makes sense as illiterate farmers cannot take notes during an extension session. Therefore, a trained farmer in the village who can be approached in times of need or a DVD recording might be useful for timely access to information.

### Concluding remarks

The main objective of this study was to investigate how smallholder farmers in rural Cambodia could best be served with information by ICT, as to date it has not been clear how to communicate (especially complex) information to smallholder farmers effectively.

Specifically, we investigated the information needs of smallholder farmers with respect to their farm business and effective ways in which to convey information. For this purpose, we collected data on the sociodemographics of and ICT in the households of

280 smallholder farmers in rural Cambodia, as well as their information demands. We also conducted a framed field experiment with the same study group to investigate effective information delivery channels. In synthesis, our field study reveals that (1) the farmers' greatest information demands related to crop cultivation and they asked for more information on prices, the weather, and pesticide and fertilizer application, and (2) information delivery worked best when multiple senses were addressed. The farmers receiving a demonstration instruction performed best in building the Lego tower, followed by farmers receiving the audio–pictures instruction, the audio instruction, and the pictures instruction, respectively. Furthermore, on average, a higher level of literacy and a younger age were statistically significant variables for increasing success in the experiment.

Taken together, we thus recommend very specifically that the Cambodian government set up an IVR system for an information campaign on cultivation practices. For this, policymakers could run a marketing campaign, informing farmers about the number they can call for cultivation information on the most typical crops and maybe also promising new crops. Once the farmers know where to call, they can dial the number of the IVR system whenever needed and be automatically informed about the most frequently asked questions. This could be accompanied by a radio or television cultivation information campaign and extension workers visiting the villages.

Following on from our findings, we recommend generally that policymakers on a national level and in similar geographical settings aim for hybrid extension service systems, where extension agents complement digital information delivery. Also, we recommend aiming for multisensory learning material and material that can be stored and thus revisited by farmers whenever needed. Furthermore, while in our specific region there were no farmers' associations reported, these groups could be used to deliver information without the need for every individual to possess a mobile phone or other hardware. The associations could receive printed material to hand out and undertake public viewing events of, for example, videos of cultivation practices.

As mobile phones (both simple phones and smartphones) are on the rise among smallholder farmers internationally, the possibilities to reach out to farm managers through technology are increasing, which, in turn, is increasing ways of delivering high-quality advisory services using ICTs. For businesses aiming to implement ICT products with smallholders, we strongly recommend first undertaking an in-depth market analysis and investigating which delivery

channel is most effective – for example, by using a framed field experiment as presented in this study.

Moreover, further research aimed at understanding which delivery channels are effective or not could yield many benefits. While Cambodia suited the objectives of this study, it would be interesting to repeat the study in a different cultural setting – for example, an African country – for a broader generalization of our findings. Larger studies in particular, involving a random-control-trial design, could strengthen the external validity of our experiment and reaffirm and/or extend our findings. Furthermore, changing the incentivization structure by employing a direct incentivizing scheme might reveal interesting results and function as a further robustness check. Additionally, further research to investigate effective information delivery could study how farmers can best request information or explore the differences in outcomes given the digital literacy of smallholder farmers. We suggest that policymakers and institutions in general that are working on digital advisory services should incorporate delivery channels that address multiple senses in a complementary way to potentially increase learning outcomes.

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### Supplemental material

Supplemental material for this article is available online.

### Notes

1. In Africa, the ratio of extension worker to farmers is estimated to be 1 to 4000 (Phatty-Jobe et al., 2020).
2. Gallup's worldwide research undertakes continuous surveys among individuals in more than 150 countries. The research represents more than 98% of the world's adult population. Individuals are randomly selected and the results are nationally representative (Gallup, n.d.).

3. For an overview of the extension landscape in Cambodia, see Ke and Babu (2018).
4. A copy of the respective questionnaire sections on information needs and hardware availability can be found in Appendix 5.
5. The relevant findings from the qualitative research were that the smallholder farmers reported crucially lacking information; tended to have at least a simple phone in their household; tended to have at least poor Internet connectivity (a second-generation cellular network) in their village; and possessed only very limited mobile data. We used these insights as a core motivation to design our experiment, as it appeared meaningful to the study region, and as the basis for our lists in the quantitative survey (see Appendix 5).
6. Lego is an international brand that produces building blocks from which a wide variety of objects of varying difficulty can be built. The chosen tower is recommended for children aged 5–12. Lego sells around the world through online shops and has stores in Europe, North and South America, and China.
7. While different performance measures could have been thought of – such as the time needed to build the tower – we decided on mistakes as this was the most relevant for practical implications. In reality, it was of secondary importance if one farmer needed more time to complete the task relative to their colleagues, whereas it was of primary importance whether or not they were able to complete the task correctly. For example, it is more important to apply pesticides in the way that a trainer has instructed rather than apply pesticides in the fastest way possible, regardless of the correctness of the application method.
8. Before undertaking this part of the analysis, we checked for the standard assumptions of multiple linear regression (Gujarati and Porter, 1999). We employ a multiple linear regression analysis as the residuals of the dependent variable are normally distributed. We checked for normality of the residuals of the dependent variable using the 'predict' command after conducting the multiple linear regression analysis and plotting the results of the distribution of the residuals. However, as our dependent variable is a counting, non-negative variable, we also employed a Poisson model as a robustness check for our calculations. As we observed overdispersion, we used a negative binomial model with the same parameters as given above for the linear regression analysis.
9. The dummy variable takes the value 1 if the participant was part of the given treatment group, and 0 if the participant was not part of the given treatment group. Thus, the dummy variables are mutually exclusive, as each participant in the sample could only be part of one treatment group.
10. For the non-binary variables, as the data is not normally distributed, we conducted a Mann–Whitney U test (results shown in the Table) to compare the groups pairwise. For robustness, we conducted a Kruskal–

Wallis equality of population rank test to compare the groups simultaneously. The Kruskal–Wallis test revealed similar results, indicating that age is the only variable that is statistically significantly different at the 1% level among the groups. The baseline in both tests was the (demonstrative) control group.

11. The farmers were asked to rate the quality of the extension services they had attended. The possible answers ranged from 1 = *very low quality* to 6 = *very high quality*.
12. DVD players and tablets are not depicted as the farmers did not use DVD players for any of the categories shown and none of the farmers in our sample possessed a tablet.

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# Factors influencing the use of agricultural information by Vietnamese farmers

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## Abstract

This study examined the factors affecting the use of agricultural information by Vietnamese cereal farmers. A sample size of 245 cereal farmers was selected and surveyed. The participants were classified into small, medium and large cereal farmers. Descriptive statistics and inferential statistics were applied to analyse the data. The results show that large farmers used information from preferred traders, extension workers, input suppliers, mobile phones and the Internet; smaller farmers employed information from cooperatives, the farmers' union and television. Large farmers had more access to information on soil preparation, pest/weed control, harvesting, and market and input prices, while small farmers accessed information on inorganic fertilisers. The regression analysis shows that the characteristics of gender, farming experience, participation in training programmes and community-based organisations, access to the Internet and television, information obtained from preferred traders, the Commune Peoples' Committee, extension workers, cooperatives, the farmers' union and input suppliers significantly affected farmers' use of agricultural information ( $\chi^2 = 140.784$ ,  $p < .000$ ).

## Keywords

Cereal farmers, factors, agricultural information, regression analysis, Vietnam

## Introduction

Agricultural information, including new and more efficient farming practices, the market price of inorganic fertilisers, pest and disease management strategies, temperature, rainfall and new crop varieties, is considered a key factor in agricultural production. It plays a significant role in improving the productivity, quality and effectiveness of agricultural production. Some research (Haile et al., 2019; Mokotjo and Kalusopa, 2010) suggests that farmers need appropriate, reliable and up-to-date information to make the right decisions and successfully manage farm-related issues leading to enhanced agricultural production. Prior studies (Abebe and Cherinet, 2018; Hoang, 2020a) show that farmers in developing countries have sourced a wide range of agricultural information

from agricultural extension officers, preferred collectors, local markets, friends and other farmers to market their agricultural produce. Farmers in developing countries seek different types of agricultural information, including, but not limited to, improved production practices, new technologies, pest and disease management, and marketing strategies for agricultural produce (Ajani, 2014; Aonngerthayakorn and Pongquan, 2017). Recently, many farmers in developing nations, including Vietnam, have used information and communications technology (ICT) tools such as

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mobile phones, radio and television broadcasts to increase agricultural information for their production and marketing activities (Hoang, 2020d; Mittal and Mehar, 2016). According to Alavion and Allahyari (2012), ICT can assist farmers in accessing agricultural information such as marketing information more easily and in a more timely manner. Some researchers (e.g. Treinen and Elstraeten, 2018) suggest that the utilisation of ICT tools provides farmers with a good chance to enhance crop productivity and develop marketing networks through improved access to important information on agricultural services, government policies about agricultural development and markets, potential market choices and agribusiness.

However, many farmers in developing nations continue to face challenges in utilising important agricultural information (Phiri et al., 2018; Zhang et al., 2016). Several reasons – including the possession of small-scale farmland, financially limited access to new and reliable technology services, and a lack of knowledge and skills to use up-to-date and reliable information due to a low level of education – could account for this situation (Ghatak and Roy, 2007; Phiri et al., 2018; Tadesse, 2008). According to some researchers (Aonngerthayakorn and Pongquan, 2017; Koskei et al., 2013), a number of factors associated with the socio-economic characteristics of farms/households can affect farmers' use of agricultural information. In order to impart important agricultural information to farmers and facilitate an improvement in their production and marketing, it is necessary to understand the factors that affect their use of agricultural information (Aonngerthayakorn and Pongquan, 2017; Magesa et al., 2020; Opara, 2008). However, the determinants of cereal farmers' use of agricultural information in developing countries, including Vietnam, are not scientifically well documented. There is no known study that has looked at factors that shape cereal farmers' use of agricultural information for production and marketing.

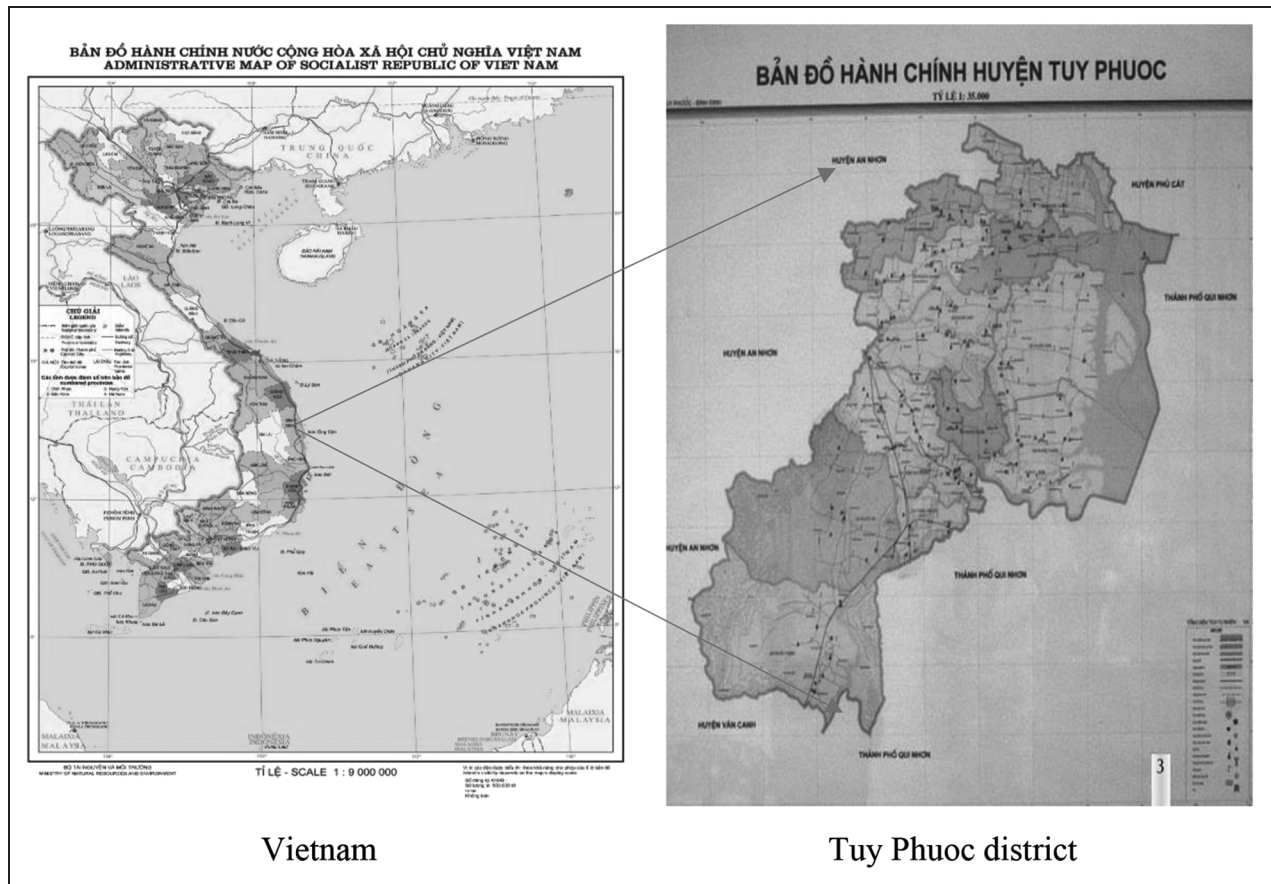
In recent years, the government of Vietnam has encouraged farmers to use up-to-date and reliable agricultural information with the aim of improving agricultural productivity and farmers' income (Kaila and Tarp, 2019; VietNamNews, 2017). A number of agricultural activities have been implemented in Vietnam by extension workers to disseminate up-to-date and reliable agricultural information to farmers (Ministry of Agriculture and Rural Development, 2018). Vietnamese farmers are encouraged to use ICT tools such as mobile phones (Hoang, 2020d) to access agricultural information. However, the type and intensity of use of agricultural information by Vietnamese cereal farmers is not well documented. Little is formally

known about how agricultural information is used by cereal farmers. The factors that impact cereal farmers' use of agricultural information for production and marketing must be understood in order to determine how best to deliver agricultural information that meets their needs. The primary purposes of this study are to (1) describe the socio-economic profile of Vietnamese cereal farmers; (2) evaluate the level of use of agricultural information by the farmers; and (3) determine the factors that affect the farmers' use of agricultural information in production and marketing.

## Literature review

Research into farmers' use of agricultural information such as marketing information, crop varieties and new farming practices has been undertaken in some developing nations (Fidelugwuowo, 2021; Hoang, 2020d; Koskei et al., 2013; Lwoga et al., 2011; Magesa et al., 2020; Mahindaratne and Min, 2019; Ndimbwa et al., 2020). The mainstream literature indicates that the use of agricultural information varies among farmers, and the extent of farmers' use of agricultural information is likely to be connected with their socio-economic characteristics, including education level, household size, income, farming experience and access to ICTs (Aonngerthayakorn and Pongquan, 2017; Diekmann et al., 2009; Koskei et al., 2013; Olanrewaju and Farinde, 2014). However, little research has assessed the intensity of farmers' use of agricultural information for production and marketing. In addition, there is no known research that has examined the use of agricultural information by cereal farmers in developing countries, including Vietnam. Moreover, the findings documented in the existing literature are not in agreement across the studies. Koskei et al. (2013) investigated the use of agricultural information by smallholder tea farmers in Kenya and found that the Kenyan smallholder tea farmers' use of agricultural information was positively associated with their education level. However, in a study by Aonngerthayakorn and Pongquan (2017), who examined the use of agricultural information by rice farmers in Thailand, it was found that Thai rice farmers' education level had no impact on their use of agricultural information. Koskei et al. (2013) also found that household size and off-farm income had positively significant relationships with Kenyan farmers' use of agricultural information. In contrast, Aikins (2014) investigated the use of agricultural information by cocoa farmers in Ghana and found that Ghanaian cocoa farmers' use of agricultural information was negatively associated with their household size. The author also found that the farmers' use of





**Figure 1.** The study region (Vietnam Department of Survey, Mapping and Geographic Information (DSM), 2017).

agricultural information was not associated with their farming experience, which is not consistent with the findings of Aonngerthayakorn and Pongquan (2017) or Diekmann et al. (2009), who undertook a study in the USA. Ajani (2014) examined the use of ICT for agricultural transformation in sub-Saharan Africa and found that farmers' use of agricultural information was positively associated with their access to the Internet. The results from a study by Hoang (2020d) undertaken in Vietnam suggest that there is a relationship between smallholders' use of agricultural information and their use of mobile phones, radio networks/broadcasts and television. However, Hoang's (2020d) research did not explore what factors had influenced smallholders' use of agricultural information.

Taken together, it can be seen that the extent of farmers' use of agricultural information is context-dependent. Although farmers' use of agricultural information is influenced by their characteristics, the way these characteristics influence their use varies, depending on the contexts and farming systems in which the farmers operate. An investigation into the factors that influence Vietnamese cereal farmers' use of agricultural information will provide useful

insights into the factors that shape farmers' use of agricultural information for production and marketing in developing countries. Such insights will contribute greatly to the literature examining the determinants of farmers' use of agricultural information, as well as highlight aspects that need to be considered when developing policies to improve farmers' use of agricultural information for production and marketing in developing nations.

## Methodology

### Study site and description

This research was conducted in the Tuy Phuoc district of Vietnam (see Figure 1; Vietnam Department of Survey, Mapping and Geographic Information (DSM), 2017). The Tuy Phuoc district covers an area of 216.77 km<sup>2</sup>. Agricultural production is the main component in the district and made up about 83% of the gross output of the district in 2019 (Binh Dinh Statistical Office, 2020). More than 90% of the population of the Tuy Phuoc district reside in rural areas and participate in farming activities (Binh Dinh Statistical Office, 2020). According to the Tuy Phuoc District People's Committee (2019), promoting the

development of agricultural production is the focus of the development policy of the district. The agriculture in the Tuy Phuoc district comprises crops, livestock and fisheries, with crops being the most important activity for the majority of farmers. Cereals – including rice, maize and millet – are the key crops in the Tuy Phuoc district and hence central for agricultural development (Tuy Phuoc District People's Committee, 2019). The cereal farmers mainly produce and market rice, maize, millet and potatoes. Generally, they often crop rice and maize in the spring season and then plant rice, millet and potatoes in the summer season. The district of Tuy Phuoc was chosen for this study because it is highly representative of cereal-related production and marketing systems in the central area of Vietnam. These production and marketing systems are portrayed to be a significant source of agricultural information used by farmers in Vietnam.

#### Sample, instruments, data collection and data analysis

In order to investigate the use of agricultural information by cereal farmers in the district of Tuy Phuoc, a cross-sectional survey design was applied (De Vaus, 2014). A multi-stage sampling strategy was used in this research. A stratified sampling method depicted in the relevant literature (Agresti and Finlay, 2009; De Vaus, 2014) was then employed to categorise small ( $\leq 3500 \text{ m}^2$ ), medium ( $3600\text{--}6000 \text{ m}^2$ ) and large farm ( $> 6000 \text{ m}^2$ ) households. Finally, a simple random sampling technique was used to choose 245 farm households for the study, consisting of 80 small, 75 medium and 90 large households.

A four-section quantitative structured questionnaire was developed to gather data. The first section of the questionnaire comprised statements on sources of agricultural information used for cereal production and marketing. The second section consisted of statements on the intensity of agricultural information used by farmers, and this was measured by a 5-point Likert scale (1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often). The third section contained statements on the types of agricultural information used for cereal production and marketing. The statements on the types of agricultural information used for producing and marketing cereals were prepared based on the relevant literature (Aongernthayakorn and Pongquan, 2017; Hoang, 2020c; Tuy Phuoc District People's Committee, 2019) and listed beforehand. The final section gathered socio-economic information on the cereal farmers. The questionnaire was piloted with 15 cereal farmers and reviewed by a group of experts from a university for

face and content validity. Five enumerators were employed to manage the questionnaires in the field, and the survey was implemented from August to November 2020. The data was analysed using SPSS version 20. Descriptive statistics and inferential statistics, including chi-square tests and analysis of variance (ANOVA), were used (Agresti and Finlay, 2009). The multinomial logistic regression analysis technique was employed to determine the factors that affected cereal farmers' use of agricultural information. According to scholars (Deressa et al., 2009; Friedman et al., 2010), the multinomial logistic regression analysis technique should be used when the dependent variable of the logistic regression analysis has more than two ordinal or nominal categories. For this research, the multinomial logistic regression model employed was

$$\text{Logit}(P_i) = \text{Ln} \left[ \frac{P_i}{1 - P_i} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_i X_i + e$$

$\text{Ln} [P_i/1 - P_i]$  = logit for farm sizes;  $P_i$  = non-use of agricultural information;  $1 - P_i$  = use of agricultural information;  $X_i$  = independent variable;  $\beta_i$  = parameters to be estimated; and  $e$  = error term.

The independent variables were carefully selected from the relevant literature (Aikins, 2014; Ajani, 2014; Aongernthayakorn and Pongquan, 2017; Diekmann et al., 2009; Hoang, 2020d; Koskei et al., 2013; Magesa et al., 2020; Minten et al., 2014) and based on the key characteristics of the cereal farmers in the study area. Table 1 describes the characteristics of the hypothesised variables in the farmers' use of agricultural information.

## Results

### Socio-economic characteristics of cereal farmers

Table 2 describes the main characteristics of the cereal farmers participating in this research. The average age of small farmers ( $M = 3.40$ ,  $SD = 1.19$ ) was higher than that of large farmers ( $M = 3.38$ ,  $SD = 1.10$ ) and medium farmers ( $M = 3.29$ ,  $SD = 1.18$ ). However, the results of the ANOVA indicated that the farmers' age was not statistically different among farm sizes. The level of education of large farmers ( $M = 3.40$ ,  $SD = 0.96$ ) was higher than that of small farmers ( $M = 3.28$ ,  $SD = 1.24$ ) and medium farmers ( $M = 3.28$ ,  $SD = 1.05$ ), but it was not statistically significant. Similarly, the average farming experience of large farmers ( $M = 5.06$ ,  $SD = 1.12$ ) was longer than that of medium farmers ( $M = 4.78$ ,  $SD = 1.29$ ) and small farmers ( $M = 4.76$ ,  $SD = 1.41$ ), and this

**Table 1.** Hypothesised variables in farmers' use of agricultural information.

| Variables                      | Explanation                                    | Measurement                                                          |
|--------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| <b>Dependent variables</b>     |                                                |                                                                      |
| Agricultural information users | Use of agricultural information                | 1 = small farmer<br>2 = medium farmer<br>3 = large farmer            |
| <b>Independent variables</b>   |                                                |                                                                      |
| AGE                            | Age of farmers                                 | Numeric <sup>a</sup>                                                 |
| EDULEV                         | Level of education of farmers                  | Numeric <sup>b</sup>                                                 |
| FAREXP                         | Farming experience                             | Numeric <sup>c</sup>                                                 |
| INCOME                         | Total annual income                            | Vietnamese dong                                                      |
| GENDER                         | Gender of farmers                              | 1 = male, 0 = female                                                 |
| CREDITPA                       | Participation in credit programmes             | 1 = yes, 0 = no                                                      |
| TRAINPA                        | Participation in training programmes           | 1 = yes, 0 = no                                                      |
| CBOPA                          | Participation in community-based organisations | 1 = yes, 0 = no                                                      |
| IUPT                           | Intensity of use of preferred traders          | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IUC                            | Intensity of use of cooperatives               | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IUCPC                          | Intensity of use of Commune People's Committee | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IUEW                           | Intensity of use of extension workers          | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IUTV                           | Intensity of use of television                 | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IURNB                          | Intensity of use of radio networks/broadcasts  | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IUMP                           | Intensity of use of mobile phones              | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IUI                            | Intensity of use of the Internet               | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IUFU                           | Intensity of use of farmers' union             | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |
| IUIS                           | Intensity of use of input suppliers            | 1 = rarely, 2 = sometimes, 3 = moderately, 4 = often, 5 = very often |

<sup>a</sup>1 = 18–24; 2 = 25–34; 3 = 35–44; 4 = 45–54; 5 = 55–64; 6 = 65+.

<sup>b</sup>1 = no schooling; 2 = primary school; 3 = junior high school; 4 = senior high school; 5 = technical training; 6 = college degree; 7 = university degree; 8 = postgraduate; 9 = other.

<sup>c</sup>1 = 1–2; 2 = 3–5; 3 = 6–8; 4 = 9–11; 5 = 12–15; 6 = 16–20; 7 = 21–25; 8 = 26+.

difference was also not statistically significant. The average income of large farmers ( $M = 7.67$ ,  $SD = 2.32$ ) was higher than that of medium farmers ( $M = 6.98$ ,  $SD = 2.17$ ) and small farmers ( $M = 6.60$ ,  $SD = 2.98$ ). The results of the ANOVA showed that the annual income of the cereal farmers was statistically different among farm sizes.

More than half of the large (63.3%) and medium (54.6%) farmers and about one-third (37.5%) of the small farmers were male. In contrast, only about one-third (36.6%) of the large farmers, less than half (45.3%) of the medium farmers and more than half (62.5%) of the small farmers were female. Chi-square tests showed that the gender of the farmers was

statistically different among the different categories. About two-thirds (67.7%) of the large farmers, half (49.4%) of the medium farmers and 40% of the small farmers participated in training programmes, whereas more than half of the small (60%) and medium (50.6%) farmers and one-third (32.3%) of the large farmers did not take part in these programmes. Chi-square tests indicated that farmers' participation in training programmes was statistically different among farm sizes. More than half of the large (65.6%) and medium (65.4%) farmers and about one-third (37.5%) of the small farmers took part in credit programmes. On the other hand, more than half (62.5%) of the small farmers and about one-third of the medium

**Table 2.** Main characteristics of cereal farmers.

| Socio-economic characteristics                 |        | Small farmers | Medium farmers | Large farmers | ANOVA/<br>$\chi^2$ tests | <i>p</i> |
|------------------------------------------------|--------|---------------|----------------|---------------|--------------------------|----------|
| Age                                            |        | 3.40 (1.19)   | 3.29 (1.18)    | 3.38 (1.10)   | 1.03                     | .395     |
| Education level                                |        | 3.28 (1.24)   | 3.28 (1.05)    | 3.40 (0.96)   | 1.25                     | .281     |
| Farming experience                             |        | 4.76 (1.41)   | 4.78 (1.29)    | 5.06 (1.12)   | 1.01                     | .425     |
| Income                                         |        | 6.60 (2.98)   | 6.98 (2.17)    | 7.67 (2.32)   | 3.05***                  | .001     |
| Gender                                         | Male   | 30 (37.5)     | 41 (54.6)      | 57 (63.3)     | 11.58***                 | .003     |
|                                                | Female | 50 (62.5)     | 34 (45.3)      | 33 (36.6)     |                          |          |
| Participation in training programmes           | Yes    | 32 (40.0)     | 37 (49.4)      | 61 (67.7)     | 13.72***                 | .001     |
|                                                | No     | 48 (60.0)     | 38 (50.6)      | 29 (32.3)     |                          |          |
| Participation in credit programmes             | Yes    | 30 (37.5)     | 49 (65.4)      | 59 (65.6)     | 17.11***                 | .000     |
|                                                | No     | 50 (62.5)     | 26 (34.6)      | 31 (34.4)     |                          |          |
| Participation in community-based organisations | Yes    | 33 (41.2)     | 43 (57.3)      | 58 (64.4)     | 9.49***                  | .009     |
|                                                | No     | 47 (58.8)     | 32 (42.7)      | 32 (35.6)     |                          |          |

Note. The values in parentheses are standard deviations and percentages, and outside parentheses are means and numbers.  
\*\*\**p* < .01.

**Table 3.** Intensity of cereal farmers' use of agricultural information sources.

| Information sources        | Small farmers<br><i>M (SD)</i> | Medium farmers<br><i>M (SD)</i> | Large farmers<br><i>M (SD)</i> | ANOVA   | <i>p</i> |
|----------------------------|--------------------------------|---------------------------------|--------------------------------|---------|----------|
| Preferred traders          | 3.47 (0.77)                    | 3.70 (0.61)                     | 3.86 (0.76)                    | 4.41*** | .002     |
| Cooperatives               | 3.38 (1.10)                    | 3.97 (0.69)                     | 3.72 (0.99)                    | 1.74 ** | .038     |
| Commune People's Committee | 2.32 (1.04)                    | 2.30 (0.83)                     | 2.22 (0.95)                    | 0.60    | .487     |
| Extension workers          | 1.98 (0.80)                    | 1.90 (0.82)                     | 2.28 (1.12)                    | 9.32*** | .000     |
| Television                 | 3.28 (1.28)                    | 3.94 (1.07)                     | 3.78 (1.15)                    | 3.80*** | .005     |
| Radio networks/broadcasts  | 3.87 (0.64)                    | 4.01 (0.62)                     | 4.01 (0.55)                    | 1.58    | .194     |
| Mobile phones              | 3.96 (0.58)                    | 3.98 (0.47)                     | 4.18 (0.63)                    | 3.98 ** | .020     |
| Internet                   | 1.87 (0.90)                    | 2.14 (1.03)                     | 2.52 (1.32)                    | 4.72*** | .001     |
| Farmers' union             | 1.92 (0.90)                    | 2.33 (1.03)                     | 2.21 (1.01)                    | 2.16 *  | .074     |
| Input suppliers            | 2.31 (0.92)                    | 2.44 (1.04)                     | 2.75 (1.27)                    | 5.14*** | .001     |

\**p* < .1. \*\**p* < .05. \*\*\**p* < .01.

(34.6%) and large (34.4%) farmers did not participate in these programmes. Chi-square tests revealed that farmers' participation in credit programmes was statistically different among farm sizes. More than half of the large (64.4%) and medium (57.3%) farmers and about 41% of the small farmers participated in community-based organisations, while more than half (58.8%) of the small farmers, about 43% of the medium farmers and about one-third (35.6%) of the large farmers did not take part in these organisations. Chi-square tests indicated that farmers' participation in community-based organisations was statistically different among farm sizes.

#### *Intensity of using agricultural information from sources*

The farmers in the study region used preferred traders, cooperatives, the Commune People's Committee,

extension workers, television, radio networks/broadcasts, mobile phones, the Internet, the farmers' union and input suppliers as sources of agricultural information. The farmers were asked to rate the extent of use of agricultural information from the sources on a 5-point Likert scale (1 = *rarely*, 2 = *sometimes*, 3 = *moderately*, 4 = *often*, 5 = *very often*). Table 3 reports the intensity of the farmers' use of agricultural information sources. For preferred traders, large farmers ( $M = 3.86$ ,  $SD = 0.76$ ) used agricultural information more frequently than medium farmers ( $M = 3.70$ ,  $SD = 0.61$ ) and small farmers ( $M = 3.47$ ,  $SD = 0.77$ ). In terms of cooperatives, medium farmers ( $M = 3.97$ ,  $SD = 0.69$ ) employed agricultural information more often than large farmers ( $M = 3.72$ ,  $SD = 0.99$ ) and small farmers ( $M = 3.38$ ,  $SD = 1.10$ ). The results of the ANOVA revealed that the intensity of the farmers' use of agricultural information

**Table 4.** Types of agricultural information utilised by cereal farmers.

| Types of information               | Small farmers (%) | Medium farmers (%) | Large farmers (%) | $\chi^2$ tests | <i>p</i> |
|------------------------------------|-------------------|--------------------|-------------------|----------------|----------|
| <b>Pre-planting/planting stage</b> |                   |                    |                   |                |          |
| Temperature                        | 72 (33.2)         | 65 (30.0)          | 80 (36.9)         | 0.439          | .803     |
| Amount of rainfall                 | 70 (33.3)         | 62 (29.5)          | 78 (37.1)         | 0.884          | .656     |
| Seed quality                       | 74 (32.3)         | 68 (29.7)          | 87 (38.0)         | 2.596          | .273     |
| Soil preparation                   | 44 (27.7)         | 58 (36.5)          | 57 (35.8)         | 8.628**        | .013     |
| Water distribution                 | 59 (30.4)         | 59 (30.4)          | 76 (39.2)         | 2.956          | .222     |
| Herbicides/pesticides              | 35 (27.1)         | 50 (38.8)          | 44 (34.1)         | 8.963**        | .011     |
| Pest and weed control              | 35 (25.4)         | 48 (34.8)          | 55 (39.9)         | 8.026**        | .018     |
| Organic fertilisers                | 28 (27.7)         | 25 (24.8)          | 48 (47.5)         | 8.653**        | .013     |
| Inorganic fertilisers              | 46 (38.0)         | 41 (33.9)          | 34 (28.1)         | 7.796**        | .020     |
| Water management                   | 36 (30.0)         | 30 (25.0)          | 54 (45.0)         | 7.301**        | .026     |
| <b>Harvesting stage</b>            |                   |                    |                   |                |          |
| Harvesting                         | 35 (25.4)         | 46 (33.3)          | 57 (41.3)         | 7.704**        | .021     |
| Transportation                     | 31 (30.7)         | 28 (27.7)          | 42 (41.6)         | 1.771          | .413     |
| Storage                            | 41 (35.7)         | 33 (28.7)          | 41 (35.7)         | 0.926          | .629     |
| <b>Marketing stage</b>             |                   |                    |                   |                |          |
| Present market prices              | 41 (25.3)         | 54 (33.3)          | 67 (41.4)         | 11.110***      | .004     |
| Future market prices               | 29 (23.6)         | 39 (31.7)          | 55 (44.7)         | 10.611***      | .005     |
| Farm gate prices                   | 20 (27.0)         | 14 (18.9)          | 40 (54.1)         | 14.421***      | .001     |
| Input prices                       | 38 (26.8)         | 42 (29.6)          | 62 (43.7)         | 8.122**        | .017     |

\*\**p* < .05. \*\*\**p* < .01.

from the sources of preferred traders and cooperatives was statistically different among farm sizes. In reference to the Commune People's Committee, small farmers ( $M = 2.32$ ,  $SD = 1.04$ ) utilised agricultural information more often than medium farmers ( $M = 2.36$ ,  $SD = 0.824$ ) and large farmers ( $M = 2.22$ ,  $SD = 0.95$ ).

Large farmers ( $M = 2.28$ ,  $SD = 1.12$ ) used agricultural information from extension workers more often than small farmers ( $M = 1.98$ ,  $SD = 0.80$ ) and medium farmers ( $M = 1.90$ ,  $SD = 0.82$ ). However, medium farmers utilised agricultural information from television more frequently than small farmers and large farmers. The results of the ANOVA showed that the intensity of the farmers' use of agricultural information from extension workers and television was statistically different among farm sizes. With regard to radio networks/broadcasts, small farmers ( $M = 3.85$ ,  $SD = 0.64$ ) used agricultural information less frequently than large farmers ( $M = 4.01$ ,  $SD = 0.50$ ) and medium farmers ( $M = 4.01$ ,  $SD = 0.62$ ). Regarding mobile phones, the Internet and input suppliers, large farmers ( $M = 4.18$ ,  $SD = 0.63$ ;  $M = 2.52$ ,  $SD = 1.32$ ;  $M = 2.75$ ,  $SD = 1.27$ , respectively) employed agricultural information more frequently than medium ( $M = 3.98$ ,  $SD = 0.47$ ;  $M = 2.14$ ,  $SD = 1.03$ ;  $M = 2.44$ ,  $SD = 1.04$ , respectively) and small farmers ( $M = 3.96$ ,  $SD = 0.58$ ;  $M = 1.87$ ,  $SD = 0.90$ ;

$M = 2.31$ ,  $SD = 0.92$ , respectively). The results of the ANOVA showed that the intensity of the farmers' use of agricultural information from mobile phones and the Internet was statistically different among farm sizes. In respect of the farmers' union, medium farmers ( $M = 2.33$ ,  $SD = 1.03$ ) employed agricultural information more often than large farmers ( $M = 2.21$ ,  $SD = 1.01$ ) and small farmers ( $M = 1.91$ ,  $SD = 0.90$ ). The results of the ANOVA revealed that the intensity of the cereal farmers' use of agricultural information from the farmers' union was statistically different among farm sizes.

#### Types of information used by cereal farmers

Table 4 presents the types of agricultural information utilised by the cereal farmers participating in this research. It can be seen that all of the cereal farmers, despite farm sizes, were interested in using information on temperature (such as knowing the warmest and coldest months each year in order to adjust cereal planting dates), rainfall, seed quality, water distribution (pre-planting/planting stage), transportation and storage (harvesting stage). The chi-square tests showed that there was no statistical difference among farm sizes. However, there were less small farmers (27.7%, 27.1% and 25.4%, respectively) interested in using information on soil preparation (such as knowing methods of adding

**Table 5.** Factors affecting cereal farmers' use of agricultural information.

| Independent variables                          | Small farmers |      |        | Medium farmers |      |        | Large farmers |      |        |
|------------------------------------------------|---------------|------|--------|----------------|------|--------|---------------|------|--------|
|                                                | $\beta$       | $p$  | Exp(B) | $\beta$        | $p$  | Exp(B) | $\beta$       | $p$  | Exp(B) |
| Constant                                       | 9.140***      | .003 |        | 5.175          | .100 |        | -14.316***    | .000 |        |
| Age                                            | 0.332         | .180 | 1.394  | 0.093          | .672 | 1.098  | -0.426        | .101 | 0.653  |
| Gender                                         | 0.529         | .171 | 1.698  | 0.535          | .155 | 1.708  | -1.064***     | .010 | 0.345  |
| Education level                                | -0.101        | .593 | 0.903  | 0.048          | .789 | 1.049  | 0.053         | .794 | 1.055  |
| Farming experience                             | -0.303        | .165 | 0.738  | -0.245         | .260 | 0.782  | 0.549**       | .025 | 1.731  |
| Income                                         | 0.068         | .419 | 1.070  | -0.109         | .189 | 0.897  | 0.041         | .631 | 1.042  |
| Participation in training programmes           | -0.010        | .982 | 0.990  | 1.058**        | .014 | 2.881  | 1.048**       | .028 | 0.351  |
| Participation in credit programmes             | 0.677         | .100 | 1.968  | -0.404         | .310 | 0.667  | -0.272        | .525 | 0.762  |
| Participation in community-based organisations | 0.654         | .111 | 1.923  | 0.634          | .113 | 1.884  | 1.287***      | .003 | 0.276  |
| Preferred traders                              | -0.795***     | .008 | 0.451  | -0.457         | .125 | 0.633  | 1.253***      | .000 | 3.500  |
| Cooperatives                                   | -0.546**      | .017 | 0.579  | 0.357          | .113 | 1.430  | 0.189         | .385 | 1.208  |
| Commune People's Committee                     | 0.318         | .155 | 1.375  | 0.366*         | .077 | 1.442  | -0.684***     | .003 | 0.504  |
| Extension workers                              | 0.007         | .977 | 1.007  | -0.554***      | .008 | 0.575  | 0.546**       | .027 | 1.727  |
| Television                                     | -0.670***     | .000 | 0.512  | 0.106          | .545 | 1.112  | 0.564***      | .002 | 1.758  |
| Radio networks/broadcasts                      | -0.357        | .250 | 0.700  | -0.148         | .639 | 0.863  | 0.505         | .143 | 1.657  |
| Mobile phones                                  | 0.096         | .780 | 1.100  | -0.687**       | .037 | 0.503  | 0.592         | .101 | 1.807  |
| Internet                                       | -0.450**      | .027 | 0.638  | -0.425***      | .008 | 0.654  | 0.875***      | .000 | 2.398  |
| Farmers' union                                 | -0.409*       | .057 | 0.665  | 0.283          | .157 | 1.327  | 0.125         | .573 | 1.134  |
| Input suppliers                                | -0.185        | .358 | 0.831  | -0.216         | .222 | 0.806  | 0.401*        | .051 | 1.493  |

Note. Log likelihood ratio chi-square = 136.888;  $-2 \log$  likelihood = 400.015; Sig. = .000.

\* $p \leq .1$ . \*\* $p \leq .05$ . \*\*\* $p \leq .01$ .

organic material to the soil before planting), herbicides/pesticides and pest/weed control than medium (36.5%, 38.8% and 34.8%, respectively) and large (35.8%, 34.1% and 39.9%, respectively) farmers. The chi-square tests indicated that the cereal farmers' use of these types of information was statistically different among different farm sizes. In contrast, there were more large farmers (47.5%, 45.0% and 54.1%, respectively) interested in using information on organic fertilisers, water management (pre-planting/planting stage) and farm gate prices (marketing stage) than small (27.7%, 30.0% and 27.0%, respectively) and medium (24.8%, 25.0% and 18.9%, respectively) farmers. The chi-square tests revealed that the farmers' use of these types of information was statistically different among different farm sizes.

There were more small farmers (38.0%) interested in using information on inorganic fertilisers (pre-planting/planting stage) than medium (33.9%) and large (28.1%) farmers. The chi-square tests revealed that the farmers' use of information on inorganic fertilisers was statistically different among different farm sizes. In contrast, there were less small farmers (25.4%, 25.3%, 23.6% and 26.8%, respectively) interested in using information on harvesting (such as knowing harvesting dates for the spring season in order to identify planting dates for the summer season), present market prices, future market

prices and input prices (marketing stage) than medium (33.3%, 33.3%, 31.7% and 29.6%, respectively) and large (41.3%, 41.4%, 44.7% and 43.7%, respectively) farmers. The chi-square tests showed that the farmers' use of these types of information was statistically different among different farm sizes.

#### Factors affecting cereal farmers' use of agricultural information

Table 5 describes the value of the multiple logistic regression model for cereal farmers' use of agricultural information. Overall, the value of the multiple logistic regression model indicated that the prediction using this model was reasonable for decision-making. The chi-square statistics (140.784,  $p < .000$ ) were highly significant, indicating that there was a statistically significant relationship between the sets of independent variables and cereal farmers' use of agricultural information. For large farmers, there were 10 factors – gender, participation in community-based organisations, preferred traders, the Commune People's Committee, television, the Internet ( $p \leq .01$ ), farming experience, participation in training programmes, extension workers ( $p \leq .05$ ) and input suppliers ( $p \leq .1$ ) – that were statistically associated with their use of agricultural information. Among these

variables, participation in community-based organisations, preferred traders, participation in training programmes and gender played a key role in the farmers' use of agricultural information.

There were five factors – extension workers, the Internet ( $p \leq .01$ ), participation in training programmes, mobile phones ( $p \leq .05$ ) and the Commune People's Committee ( $p \leq .1$ ) – that were statistically associated with the medium farmers' use of agricultural information. Of these, the variables of participation in training programmes, mobile phones and extension workers played an important role in influencing their use of agricultural information. There were also five factors that were statistically associated with small farmers' use of agricultural information: preferred traders, cooperatives, television ( $p \leq .01$ ), the Internet ( $p \leq .05$ ) and the farmers' union ( $p \leq .1$ ). Of these, the variables of preferred traders, television and cooperatives played a major role in shaping the small farmers' use of agricultural information.

## Discussion

The present study found that participation in training programmes positively impacted the use of agricultural information among large and medium farmers. The exponential coefficients for the large and medium farmers were 0.351 and 2.881, respectively, which showed a 35.1% and 188.1% increase in use among large and medium farmers, respectively. This means that the more large and medium farmers participated in training programmes, the more they used agricultural information. It was also found that participation in community-based organisations positively affected the use of agricultural information among large farmers. The exponential coefficient for the large farmers was 0.276, which indicated a 27.6% increase in use. This suggests that the more large farmers participated in community-based organisations, the more they used agricultural information. A body of literature (Aonngerthayakorn and Pongquan, 2017; Durgun et al., 2021; Koskei et al., 2013; Lwoga et al., 2011; Magesa et al., 2020; Mtega, 2021; Mwalukasa, 2013) discusses farmers' use of agricultural information, yet the findings from this research have not been reported in any previous studies.

The study found that the intensity of use through preferred traders positively influenced the use of agricultural information among large farmers, but negatively impacted the use of agricultural information among small farmers. The exponential coefficients for the large and small farmers were 3.500 and 0.451, respectively, which suggested a 250.0% increase in use among large farmers and a 45.1% decrease in use among small farmers. This implies

that the higher the intensity of use through preferred traders, the more large farmers used agricultural information, and the less small farmers used agricultural information. In the existing literature (Aikins, 2014; Aonngerthayakorn and Pongquan, 2017; Durgun et al., 2021; Ndimbwa et al., 2020; Opara, 2008), nothing has been discussed about the importance of the intensity of using agricultural information from the source of preferred traders and its impact on farmers' use of agricultural information. In developing countries such as Vietnam, preferred traders play an important role in the marketing of agricultural produce, as highlighted in the literature (Hoang, 2020b). As such, preferred traders are a key source of agricultural information for farmers, as evidenced in this study. The present study also found that the intensity of use through cooperatives negatively impacted the use of agricultural information among small farmers. The exponential coefficient for small farmers was 0.579, which showed a 57.9% decrease in use among small farmers. This suggests that the greater the intensity of use through cooperatives, the less small farmers used agricultural information.

The study found that the intensity of use through the Commune People's Committee positively shaped the use of agricultural information among medium farmers, but negatively impacted the use of agricultural information among large farmers. The exponential coefficients for the medium and large farmers were 1.442 and 0.504, respectively, which showed a 44.2% increase in use among medium farmers and a 50.4% decrease in use among large farmers. This implies that the greater the intensity of use through the Commune People's Committee, the more medium farmers used agricultural information, and the less large farmers used agricultural information. Although several researchers (Aonngerthayakorn and Pongquan, 2017; Diekmann et al., 2009; Magesa et al., 2020) have investigated farmers' use of agricultural information, the findings from this study have not been reported in any previous research. The study also found that the intensity of use through extension workers positively impacted the use of agricultural information among large farmers, but negatively impacted the use of agricultural information among medium farmers. The exponential coefficients for the large and medium farmers were 1.727 and 0.575, respectively, which showed a 72.7% increase in use among large farmers and a 57.5% decrease in use among medium farmers. The results from the studies of Aonngerthayakorn and Pongquan (2017), Isaya et al. (2016), Lwoga et al. (2011) and Mwalukasa (2013) suggest that the higher the intensity of farmers' participation in agricultural extension initiatives, the

more they used agricultural information, which is partially supported by the results of this research.

This study found that the intensity of use through television positively impacted the use of agricultural information among large farmers, but negatively impacted the use of agricultural information among small farmers. The exponential coefficients for the large and small farmers were 1.758 and 0.512, respectively, which showed a 75.8% increase in use among large farmers and a 51.2% decrease in use among small farmers. This means that the higher the intensity of use through television, the more large farmers used agricultural information, and the less small farmers used agricultural information. The current study also found that the intensity of use through the Internet positively impacted the use of agricultural information among large farmers, but negatively impacted the use of agricultural information among medium and small farmers. The exponential coefficients for the large, medium and small farmers were 2.398, 0.654 and 0.638, respectively, which indicated a 139.8% increase in use among large farmers and a 65.4% and 63.8% decrease in use among medium and small farmers, respectively. This suggests that the greater the intensity of use through the Internet, the more large farmers used agricultural information, and the less small and medium farmers used agricultural information. The results from this study partially provide empirical support for the view of Ajani (2014) that sub-Saharan farmers' access to the Internet had a positive impact on their use of agricultural information.

Unexpectedly, this study found that the intensity of use through mobile phones negatively impacted the use of agricultural information among medium farmers. The exponential coefficient for medium farmers was 0.503, which indicated a 50.3% decrease in use. This means that the higher the intensity of use through mobile phones, the less medium farmers used agricultural information. Similarly, it was found that the intensity of use through the farmers' union negatively affected the use of agricultural information among small farmers. The exponential coefficient for small farmers was 0.665, which indicated a 66.5% decrease in use among small farmers. However, it was found that the intensity of use through input suppliers positively impacted the use of agricultural information among large farmers. The exponential coefficient for large farmers was 1.493, which indicated a 49.3% increase in use among large farmers – a finding that has not been reported in any previous studies.

This study found that the variable of gender was negatively and statistically associated with large farmers' use of agricultural information. It had an exponential coefficient of 0.345, which indicated a 34.5% decrease in use among female large farmers. This

suggests that female large farmers were in a better position to use agricultural information than male large farmers. It was also found that the farming experience of large farmers was positively and statistically associated with their use of agricultural information. It had an exponential coefficient of 1.731, which indicated a 73.1% increase in use among large farmers. This finding is consistent with the findings reported in the literature (Aonngerthayakorn and Pongquan, 2017; Diekmann et al., 2009; Koskei et al., 2013) that the length of farming experience positively affects farmers' use of agricultural information.

## Conclusions and recommendations

This study was carried out to (1) describe the socio-economic profile of cereal farmers; (2) evaluate the level of use of agricultural information by the farmers; and (3) determine the factors that affected cereal farmers' use of agricultural information. Based on the results, the key conclusions are as follows: first, the socio-economic characteristics of cereal farmers vary, reflecting diverse cereal farming systems in the study region. Second, there were significant differences in the types of agricultural information used by the cereal farmers for production and marketing. Fewer small farmers used information on soil preparation, herbicides/pesticides and pest/weed control than medium and large farmers. Similarly, fewer small farmers utilised information on harvesting, present market prices, future market prices and input prices than medium and large farmers. In contrast, more small farmers employed information on inorganic fertilisers compared to medium and large farmers.

Third, there were significant differences in the intensity of use of agricultural information between the different farmer categories. Large farmers used information from preferred traders, extension workers and input suppliers more intensively than medium farmers and small farmers. Similarly, large farmers accessed information from mobile phones and the Internet more intensively than medium and small farmers. In contrast, medium farmers applied more information from cooperatives and the farmers' union than large farmers and small farmers. Likewise, medium farmers accessed information from television more intensively than small farmers and large farmers.

Fourth, the determinants of the farmers' use of agricultural information varied among the farmer categories. Overall, access to the Internet and television were common factors that affected farmers' use of agricultural information. Other factors – gender, farming experience, participation in training programmes and community-based organisations, and



information obtained from preferred traders, the Commune People's Committee, extension workers and input suppliers – significantly shaped large farmers' use of agricultural information. In contrast, small farmers were significantly more influenced by preferred traders, cooperatives and the farmers' union.

The government of Vietnam should encourage use of the Internet and television for disseminating agricultural information to farmers. Extension programmes developed to help rural farmers access agricultural information should take into account farmers' participation in existing community-based organisations. Developing and sustaining community-based organisations, including farmers' unions, interested producer groups and agricultural cooperatives for farmers, and facilitating farmers' use of agricultural information via these organisations may be a more appropriate method to deliver information to rural farmers.

The findings from this research should be disseminated to agricultural extension developers, agricultural educators and policymakers to identify the most appropriate strategies for sharing important agricultural information with Vietnamese cereal farmers. When selecting future extension strategies to distribute agricultural information to cereal farmers, the sources of agricultural information identified in this study should be considered.

It is acknowledged that this research has some limitations. This research has provided a significant understanding of the factors that affected cereal farmers' use of agricultural information in an agricultural-based developing country. However, the data of this research was concentrated on cereal farmers. There is a need for more research in order to generalise these findings. Expanding this research to other types of farmers, such as livestock, fishery and fruit farmers, would be very interesting. Also, the research design employed in this study was cross-sectional. It only assessed farmers' views at one point in time. Farmers' views change over time as they acquire more practical knowledge, skills and experience. Therefore, more effort to assess the validity of the findings from this research is required.

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# Library makerspace in Turkey: Public and university libraries

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## Abstract

This study is intended to determine the developments in Turkey and to reveal the quality of the libraries that offer makerspace service. In the light of the data, obtained from the Ministry of Culture and Tourism at the time of the study, one university library and three public libraries where this service was offered in Turkey were examined. However, one public library was examined in detail within the scope of the study. Qualitative research methods were used, and the data collected by the semi-structured interview technique were evaluated with the descriptive analysis method. According to the results not much progress has been observed in Turkey regarding the services offered by the library makerspace. The fact that the public libraries evaluated in this study offer only one service, however, shows that they cannot fully realize the maker philosophy.

## Keywords

Library makerspace, makerspace, public library, university library

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## Introduction

Libraries, which changed the quality of their services as a result of technological developments, added creativity to their services by creating makerspaces and added applied learning to the learning center mission. In this context, the change experienced by libraries was further strengthened by concepts such as ‘the third space’ and the fourth industrial revolution. Making the emerging consumer society a part of production has been the most important feature of these places. Libraries with this space provide equal opportunity, and it is vital that they are accessible by all members of society. In the light of this, the importance of the places known as makerspaces is revealed.

With the emergence of garage culture, the repairing and reproducing phenomena, spaces called ‘makerspaces’ have become popular (Anderson, 2012: 22). The concept of ‘maker’ was first used in 2005 with the establishment of the magazine *Make: Magazine* (YALSA, 2014: 6). Dougherty claims that *Make:*

*Magazine* helps people start hobbies and learn new skills, it focuses on repair, discovery and learning within the culture of a hobby, and these hobby communities can come together through the magazine. In 2006, the first maker fair was held in California, USA. The fair, which aims to bring the readers of *Make: Magazine* together, continues to be organized and attracts attention every year (Dougherty, 2012: 11). In 2013 the number of maker fairs was 100 (Thomas, 2016: vii).

As children these days do not have as much time for free play outside of school (Thomas, 2016: vii) it eliminates their ability to produce, explore and be creative. This leads to the emergence of a society of

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individuals who lack hobbies and whose skills, such as producing and repairing, are dull. In this place, they learn because they are curious and have fun, without the worry of teachers or exams (Thomas, 2016: vii). This environment also helps foster a love of research and learning. At this point, it is necessary to re-emphasize the importance of maker fairs. Individuals, who gather for both entertainment and learning together at maker fairs, are more likely to turn to science with interest. Potential makers also get the chance to discover and understand these (makerspaces) through fairs. Milner, who believes all people are makers, stated that special people emerged as a result of supporting these aspects of individuals as they grow up, and that every child is a maker, but only some people remain like this (Thomas, 2016: xiii).

In their study about play and playfulness, Bateson and Martin (2013: 109) stated that the majority of new thoughts are realized through play and divergent thinking and unrelated thoughts are realized through playful play. This overlaps with the characteristics of the makers such as producing, rebuilding and trying to solve problems. In fact, while makers are solving problems, they play games with the materials they have in their hands and eventually try to reach a solution. The concept of 'makerspace' can be defined as the spaces where creative individuals who are included in this community can design and produce something. These places can also be described as places where learning takes place in an experimental way, where expertise and guidance are often realized by the interaction of users with each other, and learning from mistakes takes place (Eaves and Harwood, 2018: 38). Typical activities of the maker movement range from the reconstruction and assembly of products using low-cost or broken electronics and raw (including biological) materials, to the use of new technologies such as 3D printing and laser cutting for prototype (Rosa et al., 2018: 21)

Makerspaces are known by different names according to the types of services they offer, such as Dj Studio, Science Lab., Museum as Play, Robotics Learning Lab. and Arts Camp. The biggest problem of being called by different names is access to spaces. Since different names are used in Turkey, it can be a problem to access these places. The names of some makers in our country are as follows: Makerhane (Istanbul), Atölye Istanbul, Benmaker (Bursa), 3Dörtgen (Istanbul), Researcher Children's Center (Ankara), Codecamp (Istanbul), İskele47 (Istanbul).

The maker movement, depending on the production, bases itself on the re-use of the old (recycling of old, used, discarded products). Dougherty states that repairing was a commonly used skill in the past, but

this skill and the understanding of repairing disappeared over time (Dougherty, 2012: 11). Lately the DIY movement has raised the issue of repair and maintenance, and even television programs have tended in this direction. Many documentary channels have started broadcasting topics such as home repair and maintenance, and creating new products from existing materials or waste materials. There is great interest in this area especially in home decoration. As a result of the spread of DIY, a social media channel (Pinterest) was formed on this subject. The social media platform *Pinterest*, which was established in 2010, announced that it exceeded 250 million users in September 2018 (Pinterest, 2018). Dougherty, Hatch, Anderson, and others emphasize the democratization in makerspaces. The ability of individuals to design and produce with easy access to shared equipment suggests that the real strength of the maker movement is its equalizing effect (Halverson and Sheridan, 2014: 497). The basic philosophy of makerspaces is to be used by all sectors of society, to produce products through trial and error, and to gain knowledge and experience. These spaces provide access to advanced technology laboratories for individuals who are working on projects, regardless of a community, creating an institution referred to as 'everyday home engineers' in Taylor's (2016: 4) words. Research laboratories with advanced technologies normally only serve a certain group of people (such as members of an institution or organization or a student). Individuals outside of these communities are not allowed to enter this environment.

### Problem statement

As a result of the developing technology and changing user expectations, libraries have had to make innovations in their mission, vision and services. Since the establishment of libraries, their functions have been to protect information resources and to put them at the disposal of users. With this change, makerspaces, which are included in library services, spread rapidly especially in the field of librarianship abroad. In Turkey, studies have been carried out on this subject recently, and the Ministry of Culture and Tourism especially has taken this issue on its agenda and designed new library buildings with equipment that can provide this service. The meeting held in the library week of 2018 within the Ministry ("Application of the Maker Movement in Public Libraries" between March 29-30, 2018) revealed the importance given to this issue by the Ministry (Maker Movement, 2018). These institutions, which support applied learning, lifelong and self-learning, further increase their support power

with technology. In terms of public libraries, they have an important mission to present the concepts of equal access and equal opportunity to the whole country. For this reason, the provision of the makerspace service in public libraries is important in terms of providing this service equally to the whole country.

Within the scope of the study, the makerspaces in library services in Turkey were examined. Makerspaces have not yet started to serve in library types other than public and university libraries. In this context, the study aims to examine the examples available and to reveal the scope of the makerspace service offered in Turkey. The hypothesis determined within the scope of the research is as follows: "Although Makerspace is a service widely offered by libraries, it is not offered effectively in our country. "

## Literature review

The literature review, first of all, was aimed at researching the makerspaces in Turkey and determining the studies conducted on this subject. Secondly, a literature review was carried out to obtain theoretical information about the space and services of makerspaces. In the literature review, it has been found that makerspaces are generally under special structures, and that there are almost no makerspaces that provide services in the library, especially in Turkey (Doğan et al., 2020; Hatunoğlu et al., 2021; Soylu and Medeni, 2018). The makerspaces providing services in the library were identified and evaluated within the scope of the study.

The literature section of the study was examined under the main headings of makerspace and library makerspace. Under the title of makerspace, the makerspace and purpose of makerspaces are mentioned in general, while under the title of library makerspace, the importance of these spaces in libraries and their connection with libraries is mentioned. Since it is directly related to the research process under the title of library, the makerspaces in public and university libraries are also mentioned.

## Library makerspace

The involvement of makerspaces in the design and programming of the library institution is seen as a revolutionary step (Loertscher et al., 2013: 48). In the new library concept, libraries have become spaces where users are in contact, with group chats and discussions, rather than the silent spaces of traditional understanding. While libraries offer this service, based on the understanding of lifelong learning, it also undertakes missions such as socialization, intercultural meeting, learning, supporting education and

information literacy skills. This change/transformation, which spreads the functions of libraries to a very wide scope, naturally reveals the necessity of renewing their physical environment. Burke's (2014) emphasis also underlines this transformation and shows that libraries can be a part of individuals' daily life after home and work life. With this change, we can exemplify the services offered by libraries as follows: Lending tablets or computers, movie screenings, medical consultancy service, organizing meetings and seminars, using social media, creating study and playgrounds, mobile device applications, food and beverage environments, foreign language educational programs, song programs and dance performances etc. as well as many more examples (Önal, 2015: 167-168).

The makerspace service, which is among these new service types, has become widespread in Turkey as well as worldwide. Although the name of this service for libraries is conceptually new, it can actually be seen as a result of the missions that libraries have developed since their existence. Libraries change and expand their services in this context by keeping up with technology. As a result of this, the establishment of advanced technology production areas actually means the expansion of library services that change according to the development (Bossaller and Haggerty, 2018: 51). Libraries have actually created a maker culture with the services they have provided since their establishment. In 1873, the Gowanda Free Library stated that women living in the region met regularly for activities such as socializing, discussing the books they read, knitting and sewing, and in 1877 under the name of Gowanda Ladies Social Society/ Gowanda Women's Social Community they started to run their own activities (Good and Borman, 2013). As it is seen, although the socialization movement in libraries initiated by women in the 19th century lost its effectiveness over the years, it is emerging again more effectively and fundamentally in the 21st century. Historically, libraries have promoted lifelong learning through their collections and programs. With the interest shown, a new library area has emerged equipped with new digital tools such as 3D printers and laser cutters (Wang et al., 2016: 5). The Fayetteville Public Library, the New York Public Library, the Westport Public Library in Connecticut, the Chicago Public Library and the DeLaMare Science and Engineering Library at the University of Nevada, Reno are examples of this trend. These library maker pioneers started a new wave of library transformation in the 21st century (Wang et al., 2016: 5).

The fact that the basic philosophy of these spaces, known as makerspaces, is sharing, producing and

partnership can actually be interpreted as how the two spaces are in harmony with each other and that these spaces develop themselves by keeping up with the requirements of the era. Projects ranging from books to wearable technology products began to be carried out in independent learning environments in libraries, and the producers' energy was introduced to families and young people through libraries, which are social information centers (Halverson and Sheridan, 2014: 499). Young people and families who met at makerspaces together with the library institution were introduced to learning and production. All institutions and organizations related to education such as the National Aeronautics and Space Administration (NASA) or the National Science Foundation (NSF) provide support and fund for STEM comprehensive education system (Hopwood, 2012). However, it is the librarian's job to encourage information literacy, research, creativity and scientific thinking, and to represent the society in a neutral environment (Julian and Parrott, 2017: 13). Although libraries are constantly changing and developing centers, they benefit the schools and communities they support. Being able to keep up with change is seen as important for the stakeholders who support it (Julian and Parrott, 2017: 13). It is known that libraries are indispensable supporters of education. In this context, libraries will improve and renew themselves, provide services according to the requirements of the age, support the educational institution with the latest developments in technology and enable education to be presented comprehensively while increasing the importance of libraries in the eyes of the society. Bagley (2012) explained that the maker movement in libraries is about teaching users to think creatively, and look for do-it-yourself solutions before going to the store. A maker librarian's job is to help create creative people. DeLaMare Library director Tod Colegrove explained that a noisy library with a messy innovation workshop actually returned to the library's source (Rutkin, 2014). Learning from books is no longer the only way to gain knowledge. Modern society requires students to have highly specialized skills in technology and the best way to acquire these kinds of knowledge and skills is through hands-on learning. Barbara Stripling, President of the American Library Association (ALA), stated that today's library should focus on being an active learning place rather than a pool (Rutkin, 2014). She also stated that only the information that needs to be collected should be understood and applied. With the establishment of makerspace, a library becomes a central location for users to connect with each other and learn from each other, produce, exhibit and discuss, as well as capture and preserve

community information (Li et al, 2018: 127). In this case, libraries provide their other mission, socializing and learning environments, through makerspace.

### **Public library makerspace**

The inclusion of technologies that are too expensive to purchase individually (such as 3D printers) within the collection of public libraries makes access to these technologies democratic and encourages individuals to be producers rather than consumers with the opportunity to test their ideas (Gahagan, 2016: 7). Makerspaces in public libraries are different from others (providing services privately without being affiliated with an institution or organization). Primarily, makerspaces in libraries offer free service (Britton, 2012; Moorefield-Lang, 2015). In addition, public libraries provide services to users of all ages. There is no user restriction in makerspaces in public libraries, users of all ages can freely benefit from this service (Cun et al., 2019: 40). Using these places both free of charge and at any time is the biggest and most important difference from the makerspaces that offer these services privately. The democratic structure of public libraries also shows itself in this service. Makerspace shifts the role of the public library to knowledge and knowledge production rather than information consumption (Britton, 2012). With the understanding of makerspace and the introduction of these spaces, the function of providing information in libraries lost its meaning and the importance of production came to the fore not only in the consumption of information but in abstract and concrete terms. Norman (2013) states that there is a new type of service, providing space and equipment for the user participation and learning of the makerspace, in addition to many different services already available such as story times, handicraft sessions, computer training for the elderly, homework assistance and author interviews (Norman, 2013: 235). Public libraries saw it as a great opportunity to include these technologies in the library and establish a makerspace to develop their strategic plans and reach out to the young population who oppose libraries in particular. The number of libraries that offer public spaces for individuals to work on creative projects has increased (Nicholson, 2019: 336). Libraries that managed to attract the young adult population have turned into production spaces. Public library makerspaces, defined as self-learning institutions, need to leverage their power of flexibility and the principle of providing resources for their communities. (Willett, 2018: 261). At this point, while considering public libraries as institutions that provide information and resources needed by their

communities, it should not be forgotten that libraries should also provide these resources for technology and creative fields.

Makerspaces were first put into service in the library in 2006 within the scope of the Fayetteville Free Library (FFL), a public library in the state of New York (Slattera and Howard, 2013: 273). Lauren Smedley wrote a graduate project assignment/proposal to create a makerspace in a public library and FFL Executive Director Sue Considine decided to implement this project in her library, thus creating the first makerspace (McCue, 2001). From this, the makerspace, which served in a library for the first time, started to spread to other libraries over time.

### University library makerspace

Çakın (1998: 62) expresses the structure that university libraries should have with the following words: ‘Libraries really constitute one of the main building blocks of the system in research-intensive environments where competitive teaching methods are valid, where creativity is encouraged and continuous learning habits are developed. On the other hand, in environments where a rote thought of raising a routinised person is dominated by an extremely strict discipline and where research activities are not sufficiently developed in terms of quality and quantity, libraries are not as book storages as the terminology reflects and students keep their own lecture notes quiet and they cannot go beyond being organizations that provide the opportunity to work in an environment’.

It is known that today’s university libraries only use the library for studying and memorizing in the rote learning system as Çakın mentioned above. We can easily observe this in the reading rooms of university libraries. Moreover, some of the students in universities prove that this is the case. Students’ greatest concerns are passing exams (memorizing the notes given for this) and job anxiety. Apart from that, learning, self-improvement and curiosity are the last things they think about. This, perhaps, reveals the state of their pre-university education. There are also students who write projects with a desire to do research and receive awards, despite those who work only on the logic of saving the day by memorizing. The students who produce electric vehicles (Atabeygazi, 2019), who won the Board Special Award by Tübitak and the “Promotion and Dissemination Encouragement Award” set an example for the productive and creative student profile mentioned by Çakın. Students willing to research and develop have problems accessing the equipment they need. Makerspaces are important for university libraries in this context. The

university library is where students can use the equipment free of charge and as they wish because university libraries have to support students in research and development. Since makerspaces foster critical thinking and learning, they should be an important part of these libraries (Julian and Parrott, 2017: 14).

The maker movement, which is called the third industrial revolution, has gained popularity in academic fields (Anderson, 2012). In a study about makerspace for universities and research libraries about the rapidly spreading makerspace in universities, the libraries that provide makerspace service and plan to offer this service stated that this service aims to encourage learning and literacy (Davis, 2018: 110). Apart from that, makerspaces develop the learning culture and direct them to use the library. It was also stated that it provides benefits such as providing access to developing tools (such as technology) and supporting learning (Davis, 2018: 110).

The University of Nevada became the first university library to put this issue on the agenda by offering a makerspace service within the library in 2012 (Fisher, 2012). In 2013, 38 of 109 libraries that participated in a study examining makerspaces in libraries in seven countries (Australia, Canada, China, Denmark, Japan, the Netherlands and England) were determined as university libraries by Burke (Burke, 2014). As a result of the research conducted by the Association of Research Libraries (ARL) in 2015 within the 124 libraries that were members of the association, it was found that comments on the role of makerspaces in its libraries were viewed very positively. It was found that the areas established to encourage innovation, creativity, active learning and scientific communication were identified. 27% of the libraries participating in the research are currently providing this service, while 37% are still in the planning stages (SPEC, 2015: 14).

### Methods

#### *Research design and data collection*

To test the hypothesis “Although Makerspace is a service widely offered by libraries, it is not offered effectively in our country”, the first meeting was held with the Ministry of Culture and Tourism to obtain information about the libraries that offer makerspace services. Afterwards, information about the quality of the services was obtained through interviews with the directors of the public libraries.

In the context of university libraries, information about the services offered by university libraries from their web pages was examined. As a result of the examination, the only university library that



**Figure 1.** Data analysis groups.

offers this service was evaluated within the scope of the study.

The findings obtained by the interviews were evaluated with descriptive analysis. Evaluation results are explained in detail in the findings section.

A qualitative research method was used to examine the scope and elements of the makerspace service offered in libraries in Turkey. Among the qualitative research methods, a case study approach was preferred. The purpose of the case study is to understand the makerspace service offered in Turkish libraries and to reveal the details of the service. At this point, the data were collected using direct observation, semi-structured interviews and document review techniques. Simple random sampling method was used as the sampling method. The data obtained within the scope of the research were analyzed using the descriptive analysis technique. ‘Descriptive analysis is defined as a qualitative data analysis technique in which the obtained data are summarized and described according to predetermined themes’ (Sıgır, 2018: 276). In this context, the analysis of the data was made by dividing them into groups as can be seen in Figure 1.

The titles given in the table have been evaluated separately for each library.

The situation of the libraries was evaluated by explaining the data obtained during the interview, apart from the specified topics. To collect the data, a 19-question interview form was prepared, ethics committee permission was obtained from the necessary institutions, and a user consent form was prepared. Semi-structured interview questions are included in the appendix at the end of the article. The prepared interview questions were sent to the public libraries via e-mail. Since the Muş Public Library is the library that offers this service most actively, the library was visited, investigations and meetings were held with its manager. Due to the summer period, no user could be found in the public library who wanted to be interviewed. Since Sabancı University is the only library in Turkey that offers this service within the scope of university libraries, an on-site

investigation was conducted. The structured interview form was filled out by interviewing the library manager Cem Özel. In addition, during the visit to the makerspace, two students using the venue were interviewed. Other users within makerspace did not want to join the interview. The qualitative research carried out within the scope of the study was carried out in three steps. In the first step, a meeting was held with Ahmet Aldemir, Head of Library Department of the Ministry of Culture and Tourism, General Directorate of Libraries and Publications. In this meeting, the Ministry’s views and opinions on the makerspace were obtained and information about library practices was collected. In the second stage, the makerspace services offered in three public libraries (Uşak, Muş and Kırşehir) that provide makerspace services were examined through interviews and only Muş Provincial Public Library was included in the scope of evaluation because of its more qualified service and on-site inspection. Kırşehir Public Library stated that the equipment was provided, but the service phase was not passed. In the third stage, Sabancı University Information Center was visited as an example of a university library, a meeting was held with the user services manager Cem Özel, then the makerspace area was examined and the users were interviewed. The data obtained were analyzed under four headings (budget, place, staff, collection/service) within the scope of the themes specified for the descriptive analysis method.

## Findings

The findings obtained in the research were discussed under two headings separately. Public libraries and university libraries were handled one by one and examined under the titles determined for descriptive analysis.

### Public libraries

We aimed to obtain information about the content of the makerspace service that have started to be offered in public libraries in Turkey and to produce data by



creating questions in the context of the basic elements of libraries (place, collection, staff and budget). According to the data obtained from the Ministry of Culture and Tourism, it was learned that a makerspace service was offered in three Public Libraries: Uşak Public Library, Muş Public Library, Kırşehir Public Library.

A meeting was held with Ahmet Aldemir, Head of Department of the General Directorate of Libraries of The Ministry of Culture and Tourism, to obtain the views and opinions of the Ministry on this matter. Stating that the Ministry of Culture and Tourism wants to take steps towards makerspaces and that the steps taken so far have been successful, Aldemir expressed that all relevant or unrelated institutions except libraries have attempted and did not find them correct. At this point, Aldemir offered a planned, programmed and collaborative action. Aldemir stated that the Ministry focused only on wooden designs during the establishment of the makerspace service, in order to keep children away from technology. Among the positive effects of wood design business are enhanced focus and using a natural material. He also stated that the undeveloped hand muscles of children, due to technology addiction, will also develop. Furthermore, it is stated that the creation of products with their own designs will allow individuals to discover both a sense of belonging and artistic skills and interests. Claiming that the budget of the Ministry was used for the establishment of the makerspaces that have been put into service so far, Aldemir expressed that the consumable costs will be met by the libraries themselves. He stated that it would be more appropriate for librarians to provide training and support to users instead of expert staff. In addition, he stated that libraries should exist not only as places that provide information sources, but as places where skill-based experiences and practices exist, that this will keep pace with the new age. Aldemir described the inclusion of makerspace applications in libraries with the example of an internet cafe as follows: "When internet cafes became fashionable, libraries started to offer this service in a safe environment. Nowadays, makerspace is a fashionable concept, libraries should offer support in this regard, but it is wrong to become widespread and reduce its quality because every institution has entered this business, but this service should be in the library and education focus" (Aldemir, personal communication, 30 October 2019). At this point, Aldemir's concern is the emergence of widespread makerspaces with decreasing quality, deviating from the aim. These rapidly spreading places are increasing in an uncontrolled and unsystematic manner. Some institutions think that it should be in the focus of

**Table 1.** Mus population distribution.

| Mus Population   |            |
|------------------|------------|
| Years            | Population |
| 5-9              | 46,826     |
| 10-14            | 46,302     |
| 15-19            | 46,612     |
| 20-24            | 37,756     |
| Total Population | 407,992    |

(TÜİK, 2019a; TÜİK, 2019b).

education and structure accordingly, while others think that it should be in the focus of science and technology and shape their structure accordingly. This causes both the authority problem and the differences in practice.

At Kırşehir Public Library; since the makerspace in the library is not operational yet, the data on this issue could not be obtained. During the interview with the library manager, we learned that the devices were in the library but not available for use. At this point, in the meeting with the library manager, we were informed that the devices were taken to the library but that they are not used because the library has not been used yet. For that reason, Kırşehir Public Library is not included as a title.

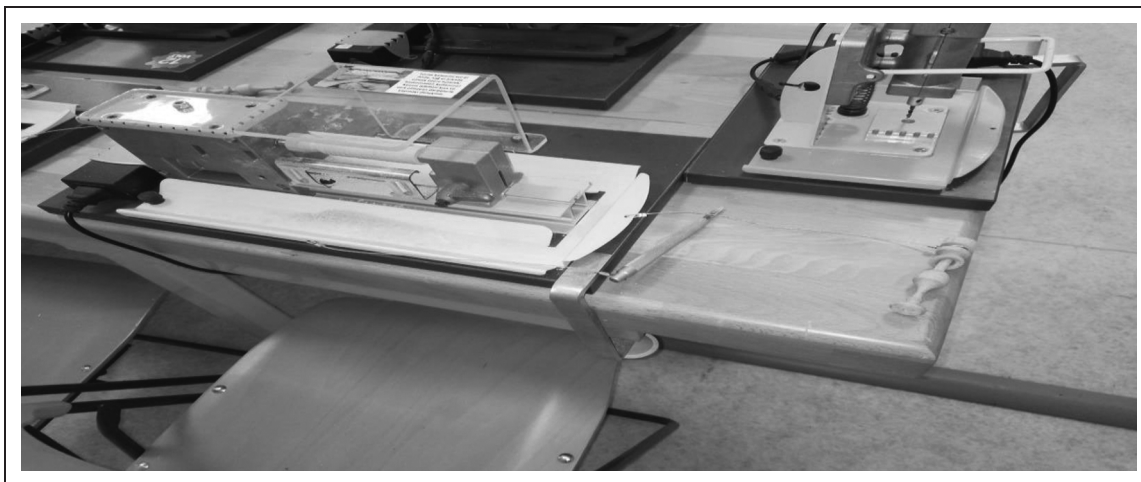
### Mus Public Library

Muş, which was located within the borders of the Nairi country of the Urartians in the 13th century BCE, hosted many civilizations (such as Scythian, Persian, Macedonian, Byzantine, and Seljuk Empire) until it came under the rule of the Ottoman Empire (Muş, 2020). According to the 2019 census data of the province, the general population was listed as 408,809 (TUIK, 2019a). The age group distribution in the general population is given in Table 1 below (TUIK, 2019b).

The 5-24 age distribution in the general population ratio is calculated as 177,496. It can be said that the age range of 5-24 is approximately one fourth of the total population. When we look at the rate of public library users in the province of Muş in 2018, it is seen that it is 143,658 (TÜİK, 2018). Again, we can say that the number of library users is one fourth of the total population. Muş Public Library (Bingöl, 1971: 53), which started as the reading room of the public house in 1932, moved to its new building in 2018. There is an adult section, a study room, a children's section, an internet access center and a periodicals section in the library (Muş Public Library, 2018).

**Table 2.** Muş Public Library makerspace information.

| Budget         | Place                                      | Staff | Collection/Service                                                                                                          |
|----------------|--------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------|
| General budget | Inside the library and inside a glass pane | 1     | Tools and equipment on wood design (lathe module, sanding saw module, drill module, hand tools set and wood mechanic table) |

**Figure 2.** Wood lathes device.

There is also a makerspace section in the library. The information given in the Table 2 is the data taken for the service called makerspace. These numbers are only valid for makerspace partitions.

The director of Muş Public Library stated that it is a very beneficial effort especially in developing the imagination and manual skills of the readers at child age, adding that in recent years such activities (such as painting, cinema screenings and theater) have caused a serious increase in the number of members. He stated that there is a technical staff member in place, who has been in service for one year, and that the courses have not yet been opened, but they are among the plans. He stated that the group of users who prefer to use the space is mostly between the ages of 10-13 and that there is no loanable material belonging to this place. He shared the information that the first aid kit was found in terms of safety precautions. The makerspace section in the library is used extensively, especially by the young population.

There are six sets of wood lathes and sawing devices (Fig 2). It is especially used by students with great interest. The purchase of consumables for the devices will be provided from the library budget. No purchase has been made yet, as the materials delivered with the devices have been used. There are plastic glasses to prevent wood dust from getting into the eyes. The place, called The Wood Design and Shaping Factory, is located in a separate section on the top floor of the library.

### University libraries

Makerspace service has started to be offered within the scope of universities in Turkey. Since the subject of the study is the makerspace service in library applications, there is only one sample that can set an example for this study. Other examples (such as Kadir Has University, METU, Nisantasi University) are the makerspaces that provide services in different units of the university. Sabancı University can be considered as the first example in Turkey as it creates a makerspace within the library. Sabancı University Information Center was visited. A meeting was held with Cem Özel, The Manager of Library User Services, and information was obtained about the makerspace service and establishment. The makerspace area, which was put into service within Sabancı University Information Center, should be seen as an important example in terms of being similar to foreign examples and offering versatile services.

### Sabancı University Information Center

Sabancı University Information Center, which was established between 1997-1998, was put into service in 1999 when the university started education (SU, 2020). The data regarding 2019 staff, students and programs of Sabancı University, which has a 20-year history, are as follows:

According to the data in Table 3; within the scope of the university, there is a postgraduate program

approximately 3-4 times larger than the undergraduate program. This can be shown as an indicator of the mission of the university as a research and science university. In addition, the fact that the university started to prepare the information center before the education period shows the importance it attaches to research and science.

Sabancı University Information Center serves in a closed area of 9,165 m<sup>2</sup> in its giant domed building, which was designed and inspired by the Ottoman architecture. It has a seating capacity of 683 people and a shelf capacity of 300,000 volumes. The Center has nine multi-functional group study rooms with 69 electronically equipped personal study squares (SU, 2020). In addition to this large collection in the information center, there is a makerspace called Collaboration Space (CS). The biggest feature of this space, parallel to makerspaces established abroad, is it bears the distinction of being first in a university library in Turkey. The four scales and other information examined for this field, which was put into service in 2017, are presented below (Table 4).

It is established on a total area of 325 m<sup>2</sup>, including the seminar room where both national and international video conferences and trainings and events will be held (BBY News, 2018). There is a wide range of equipment in the center. Equipment from all areas are provided with the idea of appealing to all users. At the meeting with Sabancı University Information Center User Services Manager Cem Özel, he described the story of the emergence of the idea of a makerspace in the library as follows:

**Table 3.** Sabancı University Information Center user statistics.

| User Statistics       |            |
|-----------------------|------------|
| User Type             | Population |
| Academic staff        | 440        |
| Administrative Staff  | 382        |
| Undergraduate student | 42.021     |
| Undergraduate Program | 13         |
| Master's Program      | 46         |
| Doctorate Program     | 15         |

**Table 4.** Sabancı University makerspace information.

| Budget            | Place                                        | Staff | Collection/Service                                                                                                                                                                                                               |
|-------------------|----------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| University Budget | Inside the library and inside the glass pane | 2     | There is a wide range of equipment such as 3D printers with different features, 3D scanners, virtual reality equipment, robotics, raspberry pi, arduino, laser cutter, drill set, photography equipment, sound recording studio. |

‘International reports were constantly being reviewed and we were following the articles about the makerspace movement in these reports. As we saw these reports, we wanted to do it, and we started small lending transactions. We thought of designing a room. We saw that our school was included in the strategic plan as an item, while looking for a place for a makerspace at the university, we said that we volunteered for this work, we were even involved in this business, and that it was included in our vision and mission. That’s how it came about.’

During the makerspace establishment process, the first decision was made about how the web page should be and what should be done about security. Cem Özel shared the information that studies were carried out on budget and staff and that the lists of materials to be purchased were obtained from faculty lecturers. The information center, which started to provide services focused on electronics and technology with the makerspace service, increased the prestige of the information center and it was stated that even the academic staff who do not use the information center frequently used the library. Cem Özel stated that the purpose of establishing a makerspace is to spread the maker culture and want everyone to come here. And Cem Özel added: ‘In the kite festival we organized as an information center last term, we supported those who could not make kites. He attended our event at the kindergarten within the university, as a result, it was a nice and interactive environment.’

There is no age limit for the user group in the makerspace service. High school summer school students use and even organize the maker camp, which is included in their curriculum, in this place. Model aircraft were built in these camps last year. Free courses are offered to users. Courses in various fields such as photography and the use of solder are given in the form of one-hour workshops. When they see a student who has interest and knowledge in any subject, they are asked to give courses in the form of a workshop. Also, users can guide each other. Since it will be a problem to find and employ experts in many subjects, it is a question of users guiding each other. Projects and workshops are organized to raise awareness of



**Figure 3.** Separate room.

makerspace for non-engineering and science students. The use of the place and consumables are offered to users free of charge. Users can develop their own prototypes. There are students who receive grants with the TUBITAK (The Scientific and Technological Research Council of Turkey) project. The university has a budget for this subject, students can apply, there are students who receive grants up to 200,000 TL. There are students who received the TUBITAK award. All fields use it, but engineering students use it more intensively. Two personnel from the engineering department are employed in the makerspace. Studies on sound insulation were carried out at the planning stage and the devices that would disturb were placed in a separate room (insulated and more in the interior). There is a separate section for the use of noisy working tools (drill, CNC machine, etc.). Entry to this section is provided with a card, and anyone without training and permission cannot enter this section. A person cannot enter the room alone, for security reasons, at least two people must enter the room. In addition, this room is monitored by cameras (Fig 3).

Special ventilation systems are available for odors and gases that may be harmful to human health, especially from devices such as 3D printers and soldering machines (Fig 4).

Photography equipment, tripod, raspberry pi etc. materials can be borrowed (Fig 5). Photo and sound recording studio, 3D printer and laser cutters can be used by appointment (See Figure 6 for a general overview of the space).

In the interview, when asked why this service should exist, Özel answered as follows:



**Figure 4.** Special ventilation system.



**Figure 5.** Photo studio.

‘Information centers became life centers. Our information center has been open 24/7 for two terms. Different student groups started to come and the user who did not come when it was open 24/7 started to come with the makerspace. It is easy to access, it does not look like a laboratory, the students are not afraid of it, the outside is completely covered with glass so that the students can enter without hesitation and see what is going on inside. There is such a trend in the



**Figure 6.** General view of Sabancı University Library makerspace.

**Table 5.** Makerspace users information.

| Student Type     | User Specialization  | Frequency of use                 | Preferred areas               |
|------------------|----------------------|----------------------------------|-------------------------------|
| Graduate student | Computer Engineering | Every day - all day              | Computer and game development |
| PhD Student      | Nano Engineering     | 1-2 days a week; 1-2 hours a day | 3D printer, laser cutter etc. |

world and it has become very common. There are many different types of services, such as guitar lenders, depending on the corporate policy. What is impressive is that students produce something.'

New devices are planned to be purchased, although the number of 3D printers is very high, it is planned to be increased since it is the most used device. It is also planned to increase the equipment in the music and photography departments.

In one-on-one interview with two engineering students who use the makerspace, they stated that this

space was sufficient for the first stage but not enough for an engineering student, and that the space should have been planned in the planning phase of the building, but nevertheless, they have spent most of their time here since the space was opened (Table 5).

The students interviewed think that they are preparing products for their work and that this place is important in terms of both time and cost. Stating that they can work efficiently with the high-performance computers and equipment found here, the users say that they receive support from the staff here. They

also stated that they had the opportunity to meet people with different experiences and to exchange information.

The space in the library is called “Collaboration Space”. It is separated from the library by a thick and soundproof glass partition. The purpose of using glass is to arouse curiosity in students who come to use the library and to make them wonder about this place.

## Discussion

Within the scope of the study, three public and one university libraries were examined. The fact that a library has not started to serve in public libraries although the devices are in the library shows that the importance and purpose of the service has not been grasped yet. In the results of the research conducted by Burke in 2013 with 109 participants from 30 US states and seven countries; 41% of the participants stated that they provide makerspace service and 36% stated that they plan makerspace service in the near future (Burke, 2014: 165). As can be seen, makerspace services in libraries spread rapidly in 2013. However, when we look at Turkey, it is observed that this service has not become widespread yet.

Considering the budget, which is the first item within the scope of the 4 themes, public libraries use the general budget, while Sabancı University benefits from the general budget of the university. There is no separate budget for makerspace in each of the 2 examples. In a study on this subject, it was learned that users were charged 2 dollars especially for simple studies (Fontichiaro, 2016: 40). In addition, Burke has suggested in this regard that makerspaces are not free, but they are not expensive (Burke, 2014: 49). Low fees are seen as a viable method to ensure the continuity of this service to be offered in libraries. In this context, a separate budget can be created for makerspaces.

Looking at the place title, it is seen that in both examples, the library building is separated by a glass partition. In the university example, it is seen that the noise-operated equipment is kept in the insulated room, aiming to keep all but a minimum noise out of the library. When we look at the literature, it is seen that makerspace workspaces are organized in two separate categories: sound and silent, and the arrangement is planned in this way (Kemp, 2013: 12). In the public library, it is seen that the service, which focuses only on wooden design, is located on the top floor to prevent the need for soundproofing inside the library. In the third section: staff, it is seen that one librarian is responsible for the public library and two engineers are responsible for the university

library. The items of “share, give, learn, participate, support” from the makerspace declaration (Hatch, 2013: 1-2) guidance is provided for users to learn and improve themselves by communicating with each other. In addition, in the study conducted by Eaves and Harwood (2018: 38), it is explained that guidance is mostly carried out by the interaction of users with each other. In this context, the fact that the makerspace manager does not include a large number of staff in the two examined examples can be seen as an indication that users allowing interaction and user guidance is applied. In addition, in a study, it was suggested that the entire library faculty should join the makerspace team in order to staff makerspace, so it was decided that all staff in the team would work two hours a week alternately. While the staff members in the team were satisfied with this situation, they reported that it was a break for them and they were excited to bring their interests and skills to the work environment (Markgraf and Hillis, 2020: 8). Finally, when we look at the collection issue, it is seen that there is only wood design equipment in the public library, and equipment in all areas in the university library. Roslund and Puckett (2014) emphasize that there should be some different equipment as per the philosophy of this movement: 3D printer, sewing machine, soldering machine, carpenter’s tool, metal-working tool. Although the theme is important at this point, it is thought that the equipment mentioned by Roslund and Puckett can provide functionality because it is not very expensive and can be used in many ways. When we look at it in this context, it is seen that the public library provides services within the scope of a certain theme (woodworking). This can be interpreted as the lack of equipment within the scope of the basic philosophy of the maker movement, the lack of understanding of the makerspace philosophy and the inability to create a maker culture. In a study, 87% of public librarians stated that the establishment of makerspace in libraries is necessary both for the training of creative talents in the fourth industrial age and for the role of libraries (Ahn and Noh, 2018: 18). Raising awareness and frequent use of these spaces by the public library users, especially children, reveals how important and necessary this service is. It can be interpreted that the makerspace, which provides service within the scope of the university library, is built just like the examples abroad and creates the maker culture because it contains all the equipment and devices. Makerspace users, which serve as part of the university library, stated that they spend most of their days and hours here, and this place should grow even if it is small. This shows how qualified and necessary the center is.

The hypothesis determined within the scope of the study was evaluated within the scope of the mentioned theme (budget, place, staff, collection). When the makerspace service offered in libraries in Turkey is examined, it has been determined that there are very few libraries offering the service. In Turkey, where there are 81 provincial public libraries, it has been observed that only 2 public libraries have limited equipment and one public library does not provide service despite having equipment. In this context, the hypothesis “Although Makerspace is a service widely offered by libraries, it is not offered effectively in our country” has been confirmed and it has been observed that the makerspace service is not provided effectively in Turkey

In addition, it does not provide services widely throughout the country. It has also been revealed that the libraries do not determine their policies and procedures while providing this service within the scope of the study. This affects the delivery of the service more effectively and efficiently.

## Conclusion

The mission of libraries, which they have maintained since their existence, has been moved to a new dimension with technology. Especially with the third space perception, libraries have become a part of daily life and have developed the mission of supporting learning. These institutions, which support applied learning, lifelong and self-learning, further increase their support power with technology. From the point of view of public libraries, it has an important mission to present the concepts of equal access and equal opportunity to the whole country. For this reason, the provision of makerspace service in public libraries is important in terms of providing this service equally to the whole country. In addition, with the dissemination of this service in university libraries, the collection of devices purchased for the projects produced within the scope of the university in a single center will prevent waste and avoid the cost of repurchasing the same device. In addition, the purchased devices will not be monopolized by one person and will be made available to the entire university. In this way, all user groups, from students to academic and even administrative staff, will contribute to both their individual development and the development of the university and science by participating in the research, project creation and production network by using the equipment and devices. With the study carried out, it can be said that the maker culture did not form and spread in the reality of Turkey. It is observed that necessary

awareness should be created for this service to become widespread, libraries should be able to provide this service, spaces should be created and a separate budget should be created for this service. It is aimed that this study will shed light on the studies on maker services in libraries to be carried out in Turkey. The makerspace services offered within the scope of public and university libraries in Turkey were determined. In addition, this study will shed light on why these services do not spread throughout the country and other researches to be made on their spread.

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## Supplemental Material

Supplemental material for this article is available online.

## Note

1. The study was produced from the author’s doctoral thesis *Creative Space Services in Libraries: Makerspace Service*

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**Ayşenur Güneş** completed her primary, secondary and high school education in Istanbul and her university education at Hacettepe University, Faculty of Letters, Library and Information Science Department. Later, she completed her master's degree at Ankara University, Faculty of Language, History and Geography, Library and Information Science Department. In 2020, she completed her doctorate in Istanbul University Faculty of Letters, Library and Information Science Department, with her doctoral thesis titled "Creative Space Services in Libraries: Makerspace Service". She worked as a specialist librarian for 1 year at Bilecik Şeyh Edebali University Library and Documentation Department. She has been working as a research assistant at Kastamonu University, Faculty of Arts and Sciences, Department of Information and Document Management since 2011. She has done academic studies on various subjects such as reading habits, children's libraries, school libraries, makerspaces and innovative library services.

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# The library as soft-power actor: A review

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## Abstract

This narrative review pursues an understanding of the relationship of libraries to the concepts of soft power and public and cultural diplomacy. The cross-disciplinary nature of the study required that the search approach include literature from both the International Relations and Library and Information Science disciplines. The analysed literature reveals three key gaps. First, research explicitly addressing the topic of ‘libraries and soft power’ is scarce. Second, the little Library and Information Science literature that addresses libraries and soft power rarely considers contemporary discourse. Third, the literature often has an implicit liberal institutionalist perspective, overlooking negative or hegemonic aspects of soft power. Given that soft power is considered increasingly relevant for representing national interests, understanding libraries’ roles and impact in international relations is significant and warrants further research.

## Keywords

Soft power, public diplomacy, information history, international librarianship, libraries

## Introduction

Libraries are increasingly recognised as global actors, contributing to international relations and exercising soft power, in both scholarly and grey literature (Australian Library and Information Association, 2018; Harris and Thaler, 2020). Few studies, however, have examined the role of libraries as soft-power actors. This literature review is undertaken from a Library and Information Science perspective, drawing on the International Relations concept of ‘soft power’ and, by extension, public and cultural diplomacy.<sup>1</sup> The insights gained from such an understanding will be useful for libraries, library funders and the community to understand how libraries can further cultural understanding and contribute to international relations.

Both the Library and Information Science literature and the International Relations literature address the concept of power. In Library and Information Science, power is primarily discussed at an organisational or social level, and has been a subject of the growing area of critical librarianship (or critlib) in

both theory and practice. In International Relations, power is addressed at one of three main levels of analysis (Singer, 1960), although other levels of analysis, such as regional, have been introduced (Buzan and Wæver, 2003; Buzan et al., 1998). First, the system (or international) level provides explanations for phenomena occurring at the level of the international political system between global actors. Second, the state (or societal) level examines the characteristics and behaviour of states as they translate into national interests. Finally, there is the individual level, whereby individual principles, beliefs and decision-making translate into national interests and power. The levels of analysis in International Relations are associated with not only different theoretical perspectives, but also their associated ontological and epistemological understandings.

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### *Significance and context*

As galleries, libraries, archives and museums (GLAM) are increasingly recognised as global actors contributing at the international level, an understanding of their role and impact in international relations is important. This can be framed within theoretical and geopolitical contexts. Through a literature review, the relevance and value of libraries to the concepts of soft power and public and cultural diplomacy can be established.

Power is a contested but key theoretical concept and context in the social sciences (Bryman, 2016: 6; Crozier, 1995: 4), especially in International Relations (Drezner, 2021; Gallarotti, 2021). Often lacking conceptual clarity, power has been considered too easy an explanation for too many problems (Crozier, 1995: 5). Empirical research in the social sciences can be quick to dismiss such an imprecise phenomenon, especially when it lacks the quantifiable characteristics of more tangible concepts that can provide causal explanations. Contradictions in reasoning then arise, whereby the analysis of power is reduced to rationalist, teleological and positivist rules-based understandings – approaches that interpret an actor's behaviour and interests as driven solely by power and rational choice (Guzzini, 2020). This is despite the normative and affective impacts of power (Crozier, 1995: 6; Solomon, 2014).

In the geopolitical context, soft power is considered increasingly relevant for representing national interests. Grincheva (2019: 745) describes this in the context of an Australian museum and its connections in the Asia-Pacific region. Relationships between GLAM institutions in the region are considered to strengthen political bonds and cultural understanding (Australian Library and Information Association, 2018). Geopolitics vis-à-vis soft power is defined by Black and Schiller (2014) as 'the territorial aspects of the projection of power by states', and aims to 'shape or affect policy in individual countries, regions, or the entire international political economy' (651). The reliance of geopolitics on systems of information to organise, interpret and disseminate national interests encompasses soft power.

National libraries are well positioned to enhance a state's soft power. The International Federation of Library Associations and Institutions (IFLA, 2020) describes how national libraries 'often serve as a national forum for international programmes and projects. They may have a close relationship with national governments, [and] may be concerned with the development of national information policies'. This also includes national cultural policy.

Additionally, the IFLA's National Libraries Section sponsors the National Organizations and International Relations Special Interest Group (IFLA, 2015). This group represents the interests and functions of national-level organisations that are engaged in international activities, exchanges, strategy and policy development. National libraries are well placed to engage with international relations activities and cooperation promoted within the profession.

### *Definition of key concepts*

**Soft power.** Traditional understandings of national power have been resource-based, focused on the exercise of power through tangible resources, such as military or economic power. This emphasis on hard power has historically neglected the behavioural and relational aspects of power. Hard power is thus power that can be measured in 'hard' or quantifiable terms (McClory, 2015: 8). The concept and term 'soft power' was popularised by American political scientist Joseph Nye in his 1990 book *Bound to Lead: The Changing Nature of American Power*. Soft power involves indirect or co-optive behaviour that uses 'attraction rather than coercion or payments' to set the agenda and influence preferences (Nye, 1990a: 31–32; 2004: 5). In International Relations, it encompasses three resources: political values, culture and foreign policy (Nye, 2004: 11). It is reliant on the ability to shape others' preferences and maintain their attraction. Nye (2021: 201) uses the metaphor of hard power being a carrot or a stick, coercion or a push, whereas soft power is a magnet, a pull or attraction. In response to criticism by Mattern (2005), Nye (2021: 202) has acknowledged that elements of coercion can be present in soft power, blurring where a behaviour might fall on a soft-to-hard-power spectrum or, as Mattern (2005: 587) argues, making the distinction between hard and soft power unsustainable.

Soft power, as influence by attraction, is not as easily quantifiable as hard-power resources may be. Indeed, Nye (2011: 19) associates soft power with 'intangible resources like institutions, ideas, values, culture, and perceived legitimacy of policies'. Nye (2004: 150) describes soft power as building on Bachrach and Baratz's (1962) concept of the 'second face of power'. Bachrach and Baratz (1962) argued that power is conceived by sociological researchers and political scientists as either centralised or widely diffused, respectively, within their communities of analysis, but the second face of power recognises that power can also be exercised indirectly by 'confining the scope of decision-making' (948) – that is, power is exercised when 'creating or reinforcing social and

political values and institutional practices that limit the scope of the political process to public consideration of only those issues' already set (948).

Over the years, Nye (2021) has clarified how soft power is defined and conceived, affirming that intangibility is not the defining criterion, despite being associated with 'culture, ideology, and institutions' – that is, 'many types of *resources* can contribute to soft power, but that does not mean that soft power is any type of *behaviour*' (201). The behavioural definition of soft power necessarily distinguishes between behaviours involving force or payment as part of the hard-power spectrum (201) and agenda-setting through behaviours of attraction and persuasion that are perceived as legitimate and invite voluntary choice from the recipient (203).

**Actors.** This review defines actors as entities that can hold agency, with agency being the 'capacity to act' (Braun et al., 2019: 788). In the context of soft power, this agency is the capacity to influence the actions or agenda of another actor. Agency is thus understood relationally. This understanding sees soft-power attraction as "codetermined" between agent and target' (Solomon, 2014: 722). This highlights soft power's affective dimensions, where power may be a 'social process of constituting what actors are as social beings, that is, their social identities and capacities' (722). Thus, following a relational understanding of actors, soft power can also be theorised relationally, with actors being understood as either the agents or the targets of soft power.

**Public and cultural diplomacy.** Public diplomacy and cultural diplomacy are both foreign policy tools and an instrumental means for states to increase their soft power (Kim, 2017: 293; Melissen, 2005). Public diplomacy is focused on information and cultural activities in the context of foreign affairs (Kim, 2017: 298). Nye (2008: 101–102) defines it through three dimensions. The first is daily communications through news media concerning domestic and foreign policy decisions. The second is strategic communications that develop symbolic themes to reinforce and advance government policy. Nye compares this dimension to the themes that would drive a political or advertising campaign, intending to persuade public opinion (102). Lastly, public diplomacy involves 'building long-term relationships that create an enabling environment for government policies' (101). This last dimension reflects how public diplomacy (and indeed soft power) is no longer conceived as a 'one-way information flow' or 'peddling' of information to foreign audiences (Melissen, 2005:

13). While still competitive at the national level and not always pursuing 'soft' goals, it is recognised that foreign *engagement* which 'builds on trust and credibility', with a long-term view, is a necessary component of foreign policy (Melissen, 2005: 13–14).

Cultural diplomacy brings art and culture into soft-power discourse (Kim, 2017: 294). The Australian government, for example, claims that 'creative excellence' is not only a cultural export, but also a tool for advancing 'Australia's interests, soft power and influence' through its promotion to international audiences and cultural collaboration (Department of Foreign Affairs and Trade, n.d.). As distinctions between cultural and information activities blur, cultural diplomacy also extends to 'communicating a country's thinking, research, journalism, and national debate' (Lending, 2000, quoted in Melissen, 2005: 22). It is often considered a type or subset of public diplomacy, though the precise relationship between the two is contested as International Relations paradigms shift and the term is regarded with interdisciplinary interest (Kim, 2017; Melissen, 2005). This article adopts Maack's definition of cultural diplomacy as

that aspect of diplomacy that involves a government's efforts to transmit its national culture to foreign publics with the goal of bringing about an understanding for national ideals and institutions as part of a larger attempt to build support for political and economic goals. (Maack, 2001: 59)

This definition acknowledges the overlap between cultural and public diplomacy rather than viewing them as entirely separate fronts. Traditionally, cultural institutions have been reluctant for their cultural relations to be seen as an instrument of public diplomacy (Melissen, 2005: 22). Cultural institutions serve national interests through 'trust-building', which is potentially damaged if perceived as a pursuit of political interests. As a tool for increasing soft power, a lack of trust and perceived legitimacy defeats the 'pull' and attractiveness of the values and ideals delivered through cultural exchange. The traditionally dominant 'realist' paradigm in International Relations considers states not to have permanent friends but only permanent interests, driven by a pursuit to maintain or gain power (Melissen, 2005: 5, 23). The rise of soft power in international relations relies on both public diplomacy and cultural diplomacy to communicate credibility. As information and cultural activities blur, and public diplomacy shifts to a long-term view of engagement and trust, cultural diplomacy is increasingly recognised as a valuable tool for building and sustaining foreign relationships.

## Literature search process

Following a brief description of the methods undertaken to source the literature discussed in this article, this review is structured into four sections. The first discusses historical case studies. A substantial amount of Library and Information Science literature using historiographical methodologies addresses soft power implicitly. While valuable, it highlights a methodological gap. Second, theoretical perspectives concerning the theme of globalisation and international library and information institutions are discussed. While engaging more substantively with International Relations theory and soft power, the theoretical perspectives have been limited to a lens of 'liberal institutionalism', which emphasises the need for international institutions to promote cooperation between states (Nuruzzaman, 2008). The third section focuses on GLAM institutions (primarily museums) and cultural diplomacy. This literature reveals a gap with regard to the subject matter on libraries. It does, however, contribute a theoretical foundation for further research on soft power in the sector. Finally, the relationship between soft power and language is addressed vis-à-vis library communications. This highlights the significance of discourse to soft power, which is missing methodologically in Library and Information Science research on this topic. This literature recognises how discourse contributes to the construction of national identity, culture and memory. These are significant themes that concern the influence of soft power and the role of, particularly, national libraries.

The literature search process aimed to achieve 'intertextual coherence' through a 'synthesised coherence' technique, piecing together theory and research previously considered unconnected (Bryman, 2016: 93). The interdisciplinary nature of the topic – libraries and soft power – meant that there was no existing consensus or research programme already communicated in the literature. Thus, the search approach and phrases connected established International Relations theory with references from the Library and Information Science discipline to construct a narrative literature review.

Most Library and Information Science literature refers to soft power only implicitly. Implicit references were identified through parallel terms such as 'cultural diplomacy' and 'cultural internationalism', and descriptions of foreign influence at the nation-state level through or by library and information organisations. Additionally, the literature from and about GLAM institutions, other than libraries, is largely

focused on 'cultural diplomacy', without explicitly referring to soft power.

'Cultural hegemony' was also included, after finding that Harris and Thaler (2020) highlight its significance and conflation with soft-power behaviour. While theories of cultural hegemony and soft power are related, as evidenced by Harris and Thaler (2020), searching with this new phrase did not uncover a significant body of research and did not fill the existing content gap on libraries and soft power. Including 'cultural hegemony' as a search term primarily aided in refining and understanding the theoretical and operational definitions of 'soft power' and 'cultural diplomacy'.

As anticipated, most of the relevant articles were an analysis of historical trends in the development of libraries and the Library and Information Science profession and organisations (Harris and Thaler, 2020; Ignatow, 2011; Yu, 2008). These historical case studies support the existence of a research gap with regard to libraries and *contemporary* soft-power influence. An additional reason for their inclusion in this literature review is to inform future research in order to fill this gap. By examining historical themes, practices and structures, history can act as a policy tool and provide insight into contemporary practice (Beddie, 2014). This is especially significant where history reflects libraries as spaces of political and social significance.

## Critical review of the literature

Libraries and other GLAM institutions have emerged as national and international actors in international relations. The terms 'international librarianship' and 'comparative librarianship' are used to describe literature on the library sector globally and international relations between libraries (Lor, 2019). Often, this literature discusses influence, cultural diffusion and national libraries as a means of legitimising national identity and the nation state (Byrne, 2007: 17–19; Laugesen, 2019; Lor, 2019: 12–13). Broadly, the current international literature has observed the strategic roles of libraries in national security (Buenrostro and Cabbab, 2019; Ignatow, 2011; Itsekor et al., 2017), national development (Coghlan and Robertson, 2014), diplomacy (Gutierrez, 2015), and international cooperation in the Library and Information Science profession (Witt, 2014a, 2014b). This has included recent recognition of the role that libraries play in achieving the United Nations' Sustainable Development Goals (Kosciejew, 2020; Missingham, 2021; Thorpe and Gunton, 2019). Other GLAM

institutions – primarily museums – have been considered as valuable international actors for cultural diplomacy and foreign policy (Cai, 2013; Flamini, 2014).

The literature addressing libraries and soft power, either explicitly or implicitly, predominantly comprises historical analyses presented as case studies from a humanities perspective with qualitative research methods (Barnhisel, 2010; Harris and Thaler, 2020; Maack, 2001; Witt, 2014a; Yi and Thompson, 2015). Harris and Thaler (2020) and Liu et al. (2017) have provided the only two published studies that explicitly recognise ‘libraries’ and ‘soft power’ in their titles, and direct attention towards libraries rather than other GLAM institutions. The other substantial publications are grey literature – primarily policy and responses from the IFLA and Australian Library and Information Association (2018).

### *Historical case studies*

Historical case studies are the dominant research method for addressing libraries vis-à-vis International Relations concepts (Black, 2016; Gutierrez, 2015; Harris and Thaler, 2020; Witt, 2014a, 2014b; Yi and Thompson, 2015). This qualitative archival research is primarily from a Library and Information Science perspective and is typically published in Library and Information Science journals. These methods, while producing research that contributes to Library and Information Science historiography, are not positioned to address the broader contemporary discourse of libraries as international actors.

The historical case studies that overtly engage with International Relations theory include Gutierrez (2015) and Harris and Thaler (2020). Gutierrez (2015) provides a historical and statistical analysis of the libraries of four cultural heritage and language centres (the British Council, Institut Français, Goethe-Institut and Instituto Cervantes). These centres aim to promote and disseminate their nation’s cultural assets through international relations and exchange. The research positions these libraries as strategic communication tools of public diplomacy. Comparatively, Harris and Thaler (2020) address the concept of soft power explicitly, focusing on the practices and policies imported into Japan’s Library and Information Science sector. They describe the soft-power influence of the USA in the post-Second World War years and ask ‘how Japanese information professionals have challenged or promoted that influence’ (33). They begin to establish a needed theoretical understanding of libraries’ and information institutions’ soft-power behaviour at the international level. This has interdisciplinary significance for the disciplines of

both Library and Information Science and International Relations, and begins to fill a gap in Library and Information Science research on libraries’ capacity to exert soft power.

Unpacking the soft-power influence of the USA on Japan’s libraries and archives confronts the discourse of soft power. This presents challenges, with the entanglement of cultural hegemony with cultural diplomacy. Following the Allied occupation of Japan, the Allied mission ‘to rebuild Japan’s libraries and promote the values of Western democracies [was] one that would be waged via the soft power of [North] American libraries and the materials therein’ (37). The civil information and education ‘information centres’ established in Japan were, effectively, American-style public libraries, staffed by North American librarians, circulating North American media throughout Japan and thus extending North American soft-power influence in an effort to democratise Japan (37). This largely resembled the western justification of public libraries as an educating force for North American virtues and democratic values (38).

It is evident that the civil information and education ‘information centres’ were models for Japan’s own library system. Soft power also extended, however, to the professionalisation of librarianship, with library education and training being informed by western ‘ethics, codes, and ideals’ (39). Harris and Thaler (2020) describe this as a negative end result of soft power, whereby the current state of library education in Japan sees an overproduction of qualified librarians, with too few jobs available. Further, the programmes see professional credentials prioritised over the quality of education. It is suggested that this could also be a result of North American moulding, with North American-style for-profit education potentially contributing to the quality of the education delivered being neglected (44).

Soft power is not reducible to the cultural hegemony described in Harris and Thaler’s (2020) case study. Indeed, Black (2016) describes the influences, whether accepted or resisted, of American librarianship on British librarianship through cultural exchange and internationalism. Contemporary studies of soft power in Library and Information Science, however, need to recognise and address the sociopolitical structures – past and present – that have shaped current library systems globally. Harris and Thaler (2020) characterise soft power as having two faces, with positive and negative outcomes. The historical discourse and rhetoric used in the mission statements of civil information and education ‘information centres’ can be read as ‘covert structural forms of racial exclusion’, where the library’s purpose is framed as

neutral but reveals unequal power under the guise of a ‘democratising mission’ (Honma, 2004: 7, 8). Harris and Thaler (2020: 40), following Yu’s (2008: 75) analysis, argue that ‘the culture that is borrowing, or is imposed upon to borrow, from another will accept only the elements that are in line with its already established values’. This highlights how soft power can be distinguished from either merely influence or the more coercive elements present in hegemony. The intangible values, culture, institutions and policy promoted through soft power are considered attractive to adopt because they are recognised or represented as having political legitimacy or moral authority (Nye, 2004: 6).

### *Globalisation and international librarianship*

Much of the historical analysis of libraries and the contemporary research on museums and cultural diplomacy is limited to a theoretical lens of either the International Relations theory of ‘institutional liberalism’ (Witt, 2014a, 2014b, 2020) or the sociological theory of ‘neo-institutionalism’ (Grincheva, 2014). Liberal institutionalism emphasises the need for international institutions to promote cooperation between states (Nuruzzaman, 2008). These are typically institutions and organisations such as the United Nations, World Bank, European Union or World Trade Organization. Where GLAM institutions are positioned as global actors, with international agency and soft power, their contribution may also be positioned within this theory. Neo-institutionalism studies organisational behaviour, with agency and goals defined by rational choice (Grincheva, 2014). It considers the norms, rules and structures that form institutional pressures and constrain behaviours. Both liberal institutionalism and neo-institutionalism can present cosmopolitan assumptions that promote ‘“universal” values of democracy, freedom, and liberal economy’ (Grincheva, 2014: 34). As previously discussed, such discourse is identified by Honma (2014) and by Harris and Thaler (2020) as a democratising mission, and for the latter this is in the context of American soft power in Japan’s libraries. It is most prevalent in literature addressing global (or international) librarianship (Black, 2016; Byrne, 2007; Rudasill, 2009; Witt, 2014a).

A liberal institutionalist perspective can be seen in Witt’s (2014a) analysis of the ‘rise of international librarianship’ through a historical case study of the Paris Library School as influenced by the American Library Association. Just as Harris and Thaler (2020) analyse the mission statements of Japanese library and information institutions, Witt (2014a) does the

same for the Paris Library School, examining themes related to soft power and cultural diplomacy, but not explicitly identifying them as such. These themes are seen in descriptions of ‘cultural internationalism’, which positions library institutions and the library profession as pursuing global exchange and understanding through institutional cooperation (506). Witt recognises, however, that, at the surface level, the power structures involved in cultural internationalism may appear as cultural imperialism with nationalistic goals (516). This resembles soft power and public diplomacy, which are now considered most effective as a ‘two-way street’ built on exchange (Nye, 2004: 111) rather than the one-way flow that Witt (2014a: 516) presupposes of nationalistic goals. Witt (2014a) suggests that when the library profession is studied in the context of globalisation theories, librarianship parts from ‘nationally orientated activities toward cultural internationalism’ (508). The American Library Association saw the Paris Library School as an ‘opportunity to promote American ideals in librarianship, which were perceived as providing superior technique’ (508). The Paris Library School is eventually conceptualised as a hybridisation of American and French needs, with French faculty credited for its increased internationalisation of knowledge production and exchange in librarianship (509, 511). Witt’s findings are significant as they contribute to characterising library organisations as global non-state actors. The methodological and theoretical lens that Witt adopts, however, is limited in addressing issues of power, especially concerning nationalistic ambitions, cultural hegemony and the limitations of international cooperation.

Librarianship is framed as ‘institutionalised international cooperation’ (505), and the American Library Association’s initial objective ‘to promote American ideals in librarianship’ (508) is treated as insignificant. In contrast to Witt’s (2014a) analysis, Maack (1986: 329) pays more attention to the ‘gradual acceptance’ of North American innovations and the role cosmopolitan attitudes played in this diffusion. Maack (1986) addresses American opinion leadership as an exercise of influence and soft power, and as a key factor in a new model of French librarianship. Elsewhere, discussing the British Council in Africa, Maack (2001: 81) focuses on the underlying national ideologies that ‘entangled altruism with self-interest and idealism with pragmatic reality’. While Witt (2014a) acknowledges the presence of these phenomena, the focus on globalisation and cultural internationalism as a source of mutual benefits and cooperation neglects power structures and inequalities in cultural understanding and diplomacy.

### *GLAM institutions and cultural diplomacy*

Both the International Relations and the GLAM literature has addressed concepts of soft power and cultural diplomacy in the role of museums, archives and galleries (Burgess et al., 2010; Cai, 2013; Davidson and Pérez-Castellanos, 2019; Flamini, 2014; Grincheva, 2019, 2020; Hoogwaerts, 2017; Kong, 2015; Lord and Blankenberg, 2016; Sylvester, 2015). Libraries, however, have largely been overlooked. This may be because GLAM institutions other than libraries are more likely thought of as sites of a nation's collective memory, which is well documented as informing foreign policy (Hoogwaerts, 2017; Langenbacher, 2010). This is despite the role that national, state and territory libraries play in working with collections and cultural exchanges that address collective (or cultural) memory and national identity (Burgess et al., 2010; Galligan, 2000; Hrančak, 2018). Indeed, Galligan's (2000: 102) history of the National Library of Australia positions it as not only formative to cultural memory and national identity, but also functioning as a national resource for international cooperation.

A range of methodologies are used to address museums and soft power, including the historiographical and case study approaches discussed earlier (Maack, 1986, 2001). The literature largely focuses on museum exchanges. The idea of 'exchanges' as two-way action has been considered a more effective approach to soft power than 'broadcasting' (Nye, 2004: 111–113). Cai (2013) presents a case study of cultural collaboration and exchange between Singapore and France. Cai's research uses mixed methods, including interviews, personal observation and textual analysis of exhibition material. Significantly, Cai found that cross-cultural museum exchanges, as a strategic platform for cultural diplomacy, often have limited soft-power effectiveness. This is because the nation's political goals are not considered, and the intention for the exchange remains largely apolitical, despite having political consequences owing to power relations. Comparatively, Grincheva (2014: 35), in a study of the Guggenheim Museum's soft power, found that even 'activities with apolitical intentions outside of governmental control project strong political messages and exert political influences'. This reinforces the importance of researching soft power in a geopolitical context in order to assess its intentions in influencing the policy, values or agenda of a global public.

Institutionalism (described earlier) is a common framework for research on museums but may prioritise operational aspects or the institutional context over the broader geopolitical context in which the museum exists (Cai, 2013: 131–132) – that is,

institutions are given 'analytical primacy' (Lecours, 2005: 3). Like Cai (2013), Grincheva (2019) uses a mixed-methods approach to analyse soft-power activities. Through an Australian digital humanities project, Grincheva (2019) contributes to theoretical understandings of soft power in cultural institutions but does not reflect on power relations vis-à-vis political goals. The project uses geographic information system (GIS) technology to map 'specific measurable indicators' (730) of soft power and produce an 'inductive "exploratory" tool' (746). Despite soft power not typically having the quantifiable characteristics that hard power does, Grincheva endeavours to measure its resources and influence by mapping such areas as museum collections, activities, audiences, partnerships and networks, community engagement and sentiments. The Soft Power 30 ranking is a current assessment of countries' soft power. Given soft power's subjectivity, measuring its 'impact on perceptions of a country' remains a challenge (McClory, 2015: 26). GIS technology becomes a method that can encompass qualitative data, including social, cultural and critical discourse, rather than purely a storage or display tool for quantitative and spatial data (Grincheva, 2019: 748; Kwan and Knigge, 2006: 1999). While Grincheva (2019) enriches GIS 'deep mapping' through multiple layers and critical readings, the challenge to incorporating qualitative data is avoiding its decontextualisation (Kwan and Knigge, 2006: 2000). This is especially so when qualitative data needs to be quantified, as its complexity may be lost. Grincheva's (2019) digital humanities project is certainly embedded in a geopolitical context and contributes to theoretical understandings of soft power in cultural institutions. It follows, however, Grincheva's (2014) earlier neo-institutional research, positioning institutional discourse and interests as independent of government diplomatic agendas. While the museum's sociocultural and political context is considered, the social reality emphasises museum soft-power behaviour as autonomous and inherently cosmopolitan.

### *Soft power and language*

Language and discourse are key themes in the analysis of power in the social sciences and humanities. Bryman (2016: 540) describes critical discourse analysis as 'emphas[ising] the role of language as a power resource that is related to ideology and socio-cultural change'. In International Relations, discourse analysis is frequently adopted to analyse soft-power discourse (Cao, 2011; Hashimoto, 2018; Jiang, 2016; Solomon, 2014). Library and Information Science research has considered



libraries' discourse (Buschman, 2020) when examining 'critical intersections of LIS [Library and Information Science] and social justice' (Buschman, 2020; Oliphant, 2015: 228) and also as it presents in mission statements and online publications (Hranchak, 2018; Pacios and Pérez-Piriz, 2019; Wadas, 2017). In studies by Hranchak (2018) and Pacios and Pérez-Piriz (2019) this discourse provides insight into libraries' identities, encompassing their functions and purpose. While soft power is not addressed in these author's research, it reflects a key focus of International Relations – namely, the 'co-constitution of language and identity' (Solomon, 2014: 731). Indeed, Solomon (2014: 725) and Mattern (2005) reinforce an understanding of soft-power attraction as being constructed through language: it is 'elicited and cultivated through narrative and aesthetic presentations of collective identity' (Solomon, 2014: 731)

In the contemporary information environment, governments' soft-power communication is complicated by a mass of other information sources and media, which also produce narratives and discourse (Nye, 2004: 113). Intangible power increases in significance as information comes to be considered a crucial power resource (Nye, 1990b: 164). As historians of 'systems of information' in Library and Information Science, Black and Schiller (2014: 651) affirm a relationship between geopolitics and information that encompasses soft power. Liu et al. (2017) also signify the importance of 'information' to soft power at the organisational level. Liu et al. (2017: 855) maintain that 'information literacy' contributes 'not only to service quality but also to the cultural soft power of [university] libraries' in China, with significance for Chinese culture and national strategy.

## Conclusion

The analysed literature presents four key gaps in the existing research on libraries and soft power. These relate to subject matter, method and perspective. First, research explicitly addressing the topic of 'libraries and soft power' is scarce. While the importance of GLAM institutions in cultural diplomacy is increasingly recognised, libraries are neglected. Second, the little Library and Information Science literature that exists on libraries and soft power is primarily historiography, without structured consideration of contemporary discourse. The GLAM and International Relations literature often focuses on causal explanations and measurable indicators of soft-power interaction, foregoing discursive practices and meaning in soft-power language (Grincheva, 2019). Third, it is primarily archives and museums that have been analysed in soft-power research. Finally, the literature

often has an implied liberal institutionalist perspective that overlooks negative or hegemonic aspects of soft power (Najafqolinejad and Hassanzadeh, 2016; Witt, 2014a, 2014b, 2020). Thus, libraries and their role as soft-power actors is an area that presents opportunities for future research, which may contribute to understanding how they operate in the wider political and international arenas.

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## Note

1. Throughout this literature review, the academic convention of capitalising International Relations in reference to the academic discipline is followed, thus the discipline of Library and Information Science is also capitalised. Conversely, international relations in lower case is used to describe specific instances of relations between states and other global actors.

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# The antecedents and consequences of organizational learning in the library: A systematic literature review

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## Abstract

The aim of this study is to determine the developments and factors that affect organizational learning in libraries. The study uses a systematic literature review method by analysing 20 research articles. The results of the study indicate that there are antecedents and consequences of organizational learning in the library. The research offers a comprehensive framework of the antecedents and consequences of organizational learning in libraries. Library managers can use these results to improve organizational learning in their libraries in accordance with the conditions and environment. The results can also be used as material for consideration in making decisions about the application of organizational learning in the library. There are few systematic literature reviews of organizational learning in libraries; hence, this article can be used as an opening for further discussion.

## Keywords

Systematic literature review, organizational learning, libraries, antecedents, consequences

## Introduction

Many experts claim that learning is the best predictor of successful organizational change (Argyris, 1982; Schein, 1992; Ulrich and Wiersema, 1989). Schein (1992) even states that organizations which can learn quickly will be able to adapt to change more rapidly. Haque's (2008) research results prove that organizational learning has a significant effect on organizational readiness to change, and is one of the key factors for organizational success (Saadat and Saadat, 2016). Organizational learning is a learning process through social interaction across individual, group and organizational levels (Bratianu, 2018). Organizations need to survive in an uncertain environment and maintain their existence in the face of competitors. Organizational learning is a vital resource for competitiveness

in strategic management (Allameh and Moghaddami, 2010).

Libraries are non-profit organizations that experience threats from both within and outside the organization. One of the external threats is the development of increasingly sophisticated technology that is causing users' characteristics to change (Soroya and Ameen, 2018). One of the impacts is that users prefer the Internet as a source of information rather than libraries (Alsarar and Goultepe, 2017) because

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information can be found easily and quickly on the Internet (Savolainen and Kari, 2004). Google and the Internet are considered to be macro-sources that display a lot of information (Zimerman, 2012), while libraries are perceived to be lacking in providing information according to users' needs (Rowlands et al., 2008). On the other hand, the Internet is unable to evaluate the quality of the information it contains (Kaushik, 2012; Keshavarz, 2014). Creating organizational learning is one solution that libraries could employ to face future and present challenges (Saadat and Saadat, 2016). Organizational learning is useful for understanding the interactions between different knowledge areas within an organization and will result in libraries that can adapt more rapidly and effectively to the requirements of the external environment (Bratianu, 2018).

Several topic studies on organizational learning enabler in libraries such as about leadership. Leadership is one of the factors that can shape organizational learning in libraries, one of which is transformational leadership (Castiglione, 2006; Somerville and Farner, 2012). Organizational culture, teamwork cooperation (Kassim and Mohd Shoid, 2013; Shoid and Kassim, 2012) and learning culture (Yu and Chen, 2015) have still not been comprehensively identified. It is important to identify previous organizational learning in libraries and what the consequences of organizational learning are, so this study offers a systematic review of the results of published empirical research to provide an overview of previous organizational learning in libraries and the consequences of organizational learning – in other words, this study aims to understand the factors that shape organizational learning and its consequences (Poon, 2001; Shang et al., 2019) in libraries.

## Research objective

The purpose of this article is to provide empirical guidance on the antecedents and consequences of organizational learning in the library context based on a systematic literature review.

## Literature review

### *Organizational learning*

Organizational learning is the skill and process of building and using knowledge in organizations (Marquardt, 1999), or the process of acquiring knowledge and using the information to successfully transform an organizational situation (Schermerhorn et al., 2003). Organizational learning consists of several elements of management and leadership, organizational culture,

knowledge, information and communication systems, and organizational structures, which are applied in dealing with change from both within and outside the organization (Masudi Nadushan and Javan Shargh, 2005).

According to McShane and Von Glinow (2000: 61), this organizational learning activity consists of three aspects: (1) knowledge acquisition; (2) knowledge sharing; and (3) knowledge use. Knowledge is obtained by acquiring information and ideas from the external environment, and through sharing information and ideas in seminars and formal or informal discussions within the organization. The competitive advantage obtained from this knowledge can be seen in its application in the organization. Hence, the organization and its stakeholders get added value from the application of that knowledge. Organizational learning is the development of new knowledge or insights that have the potential to influence behaviour (Slater and Narver, 1995). This is in accordance with Daft and Weick (1984), who express that organizational learning can be divided into three stages: (1) finding and gathering information; (2) interpreting the information; and (3) learning to use the information practically.

The success of organizational learning depends on the company's tendency to learn, such as a commitment to learning or a learning culture within the organization, open-mindedness, an organizational value that brings about learning efforts, and a shared vision. These serve as a direction for individuals to adjust their commitment and conformity to the various company goals. The views of each individual are aligned to achieve a common interpretation (Sinkula et al., 1997). Organizational learning relates to the experiences and actions of organizational members (Goh and Ryan, 2002), from gathering new knowledge to implementing it in the organization.

The results of previous research show that individuals in organizations, including managers, improve their competence through organizational learning (Karunanont and Karwowski, 2011) and self-reflection (Knipfer et al., 2013). In Chahal et al.'s (2016) research, organizational learning was a mediating variable between high-performing human resources practices and business performance. Single- and multiple-loop learning can be applied through the culture of organizations and by building corporate memory (Hu et al. 2015). The use of technology for the implementation of organizational learning for informal learning is needed in organizations (Za et al., 2014), especially for the storage of corporate memory and the knowledge possessed by employees. Organizational memory is very useful for sharing

knowledge to improve the learning culture in organizations (Shukla et al., 2020).

### Research methodology

This research applied a systematic literature review. This method is effective for studying the development of a concept by following a predetermined protocol, including the selection of the articles to be used (Boell and Cecez-Kecmanovic, 2015). The protocol for this systematic literature review was to identify, select and assess relevant literature (Tranfield et al., 2003). The first stage was to identify the theme to be studied – that is, organizational learning in libraries. Hence, the keywords ‘organizational learning’ and ‘library’ were used. The next step was to choose a database, which in this case was Scopus, which is subscribed to by our Airlangga University Library and produced 91 articles. Scopus was used because it is a stable database covering science, technology and medicine, and is recommended by many researchers (Baas et al., 2020; Seo et al., 2016). Scopus also contains 20% more data than Web of Science and other databases (Falagas et al., 2008). Google Scholar has more data but does not provide criteria for producing scholarly data (Drew University Library, n.d.). Google Scholar should not be used as a stand-alone resource in evidence-gathering exercises such as systematic reviews (Haddaway et al., 2015). Of the 91 articles that were obtained, a further selection was made using the criteria of the language used (English) and it being in the form of an journal article, as the information published in journal articles is more up to date than that in book chapters (Cronin et al., 2008). This resulted in a total of 85 articles (four articles were written in languages other than English and two were book chapters). The next step was to examine whether the title and abstract were in accordance with the proposed theme. Of the 85 articles, 25 did not match the theme, leaving 60 articles. These 60 articles were then reselected for articles were then reselected for the full text of the article to establish the content and assess the quality of the information provided (Xiao and Watson, 2019), which resulted in 32 articles. The next step was to assess the articles by skim-reading the full text to further evaluate the quality and feasibility of the studies (Xiao and Watson, 2019) according to the research objectives. Twelve articles discussed organizational learning only as an aside, not as the main focus. Based on the above stages, 20 articles were assessed for the next stage of the review process.

The next step was to synthesize the literature and reveal the depth of critical knowledge of the key

**Table 1.** Characteristics of the 20 selected studies.

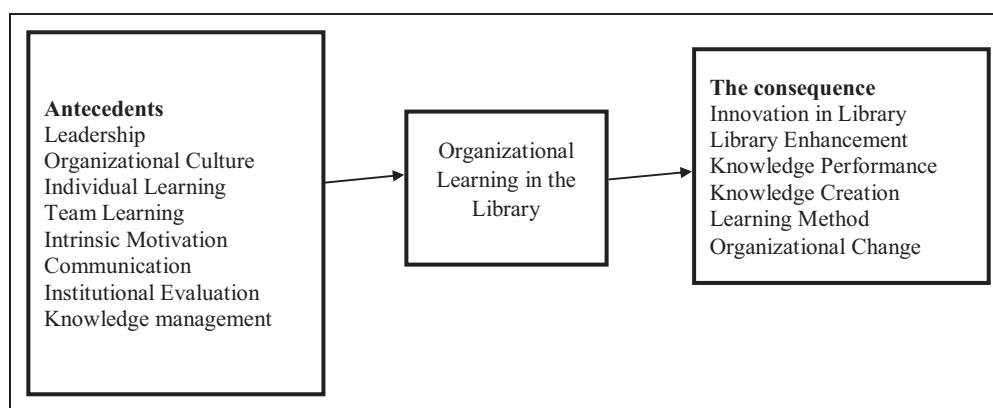
| Study characteristics<br>Year of publication | Number of studies |
|----------------------------------------------|-------------------|
| 1996–1999                                    | 1                 |
| 2000–2005                                    | 0                 |
| 2006–2010                                    | 10                |
| 2011–2015                                    | 6                 |
| 2016–2020                                    | 3                 |
| <b>Domain</b>                                |                   |
| University libraries                         | 15                |
| Not specified                                | 5                 |
| <b>Origin of study</b>                       |                   |
| Europe                                       | 2                 |
| Asia                                         | 9                 |
| Australia                                    | 0                 |
| Africa                                       | 0                 |
| USA                                          | 6                 |
| Not specified                                | 3                 |
| <b>Research methodology</b>                  |                   |
| Quantitative                                 | 7                 |
| Qualitative                                  | 6                 |
| Mixed methods                                | 2                 |
| Conceptual paper                             | 5                 |
| <b>Design method (quantitative)</b>          |                   |
| Cross-sectional                              | 3                 |
| Longitudinal                                 | 1                 |
| Not specified                                | 3                 |
| <b>Research instrument</b>                   |                   |
| Survey                                       | 7                 |
| Interviews                                   | 6                 |
| Survey + interview                           | 2                 |

concept and the relationships between concepts (Watson, 2015). This was done by reading and coding all the remaining articles. The initial coding identified the purpose of the article, the method used, and the factors that influenced organizational learning in libraries. The next steps of the assessment were processing based on the research objectives, analysing the results and drawing conclusions.

## Results

### Characteristics of the studies

An overview of the characteristics of the selected studies is presented in Table 1. The 20 articles were published in the period 1996–2020. In 1996–1999, there was only one article (5%); none of the selected articles were published in 2000–2005; 10 articles (50%) were published in 2006–2010; six articles (30%) in 2011–2015; and three articles (15%) about organizational learning in libraries were published in 2016–2020. From the bibliometric results of the 91 articles about organizational learning in libraries, it can be seen that



**Figure 1.** Antecedents and consequences of organizational learning in libraries.

the progress of organizational learning is no longer widely reviewed in libraries and has shifted to knowledge management or learning organization. The keywords that are often used are ‘organizational learning’, ‘knowledge management’ and ‘libraries’ (Srirahayu and Anugrah, 2021). Regarding the process and transformation of knowledge, there is a link between knowledge management and organizational learning (Mundakir, 2016). ‘Organizational learning’ and ‘knowledge management’ are dependent on each other, and knowledge management can be regarded as a subsystem of organizational learning; changes in knowledge management result in changes in the organization and vice versa. The strong relationship between them is clear, and the organizational learning process must include knowledge management (Aggestam, 2006).

Regarding the domain or research object used, five articles is not specified. Fifteen articles used university libraries as the research subject. The articles about organizational learning in libraries published in the Scopus-indexed journals were almost all located in academic libraries. However, it is possible for studies on organizational learning to be carried out in other types of libraries, such as public libraries, school libraries or special libraries. Most of the selected articles were based in Asia, with nine studies (45%) mostly from Taiwan; there were two articles (10%) from Europe, six (30%) from the USA, and none from Africa and Australia. Three studies (6%) did not mention the country where the research was conducted. Almost all of the research on organizational learning in the library used the same methods, with six articles (30%) using applied qualitative methods based on an interview, seven articles (35%) using quantitative methods with survey instruments, two articles (10%) using mixed methods (quantitative and qualitative) with a survey and interview, and five articles (25%) using a literature review. With regard to the quantitative method, three research articles used a

cross-sectional design and one applied a longitudinal method.

### *Organizational learning in libraries*

Several of the studies had variables that could affect organizational learning in the library, and these variables were grouped into antecedents. Other articles took organizational learning to be a variable that could affect other variables in the library, and these variables that were influenced by organizational learning were grouped into consequences. Figure 1 maps the antecedents and consequences of organizational learning in libraries.

From Figure 1, there are eight antecedents of organizational learning in libraries: leadership (Acadia, 2020; Castiglione, 2006; Chen and Lin, 2008; Evener, 2019; Somerville and Farner, 2012), organizational culture (Acadia, 2020), individual learning (Yang, 2009), team learning (Yang, 2009), intrinsic motivation (Castiglione, 2008), communication (Chen, 2006; Chen and Lin, 2008), institutional evaluation (Chen, 2007; Chen and Lin, 2008) and knowledge management (Figueroa and Bustos González, 2006). With regard to the consequences, there are six: innovation in the library (Fowler, 1998; Lee, 2020), library enhancement (Loo and Dupuis, 2015), knowledge performance (Kassim and Mohd Shoid, 2013; Shoid and Kassim, 2012; Yu and Chen, 2015), knowledge creation (Somerville and Farner, 2012), learning method (Abdullah and Kassim, 2008) and organizational change (Fabbi, 2009).

### **Discussion**

From the results of this study, many factors influence organizational learning in libraries. This study has mapped these factors into two areas – namely, antecedents and consequences.



### *Antecedents of organizational learning in libraries*

Antecedents are the influencing factors of organizational learning in libraries. This study has identified eight antecedents of organizational learning in libraries: leadership, organizational culture, individual learning, team learning, intrinsic motivation, communication, institutional evaluation and knowledge management.

**Leadership.** Leadership in a library refers to a team, where the leadership is distributed among the team members. Library leaders are encouraged to develop a strategy (knowledge management, competence and strategy). To this end, the leaders of several academic libraries have taken principles from other disciplines – organizational learning, in particular (Somerville and Farner, 2012). Simply put, organizational learning is the process of detecting and correcting errors in an organization. Therefore, library leaders contribute to the implementation of organizational learning (Acadia, 2020). In particular, transformational leadership influences the implementation of organizational learning in the library. It has been proven that transformational leadership is more effective than transactional leadership (Castiglione, 2006). It is hoped that libraries have the opportunity to choose the type of leadership that is applied in them.

**Organizational culture.** In general, organizational culture and organizational learning are the collective behaviour of the humans who are part of an organization. The culture includes the organizational values, vision, norms, work language, systems, symbols, beliefs and habits of an organization. Organizational culture is believed to be the most significant factor that influences effective organizational learning because organizational culture determines the values, beliefs and work systems that can either encourage or hinder learning (Alavi and Leidner, 2001; Gold et al., 2001). Several research studies reveal that the type of organizational culture differs from one organization to another – hence the application of organizational learning will also be different (Brian and Pattarawan, 2003). This indicates that showing the importance of a good work environment (organizational culture) is the driving force of organizational learning (Acadia, 2020).

**Individual learning and team learning.** Librarians are an important factor in library operations. A successful library is supported by excellent librarians. To create excellent librarians and enthusiasm that can develop libraries, librarians must take advantage of independent

learning opportunities and knowledge sharing. Taking advantage of independent study opportunities is the basic element of organizational learning to increase the efficiency of librarians (Yang, 2009). Team learning involves advancing the learning of librarians and developing their ability to cooperate with each other for the achievement of common goals. Teamwork is important and the best type of learning to organize members so that they can communicate effectively and help each other through knowledge sharing. Individual and team learning is a strength and key to maintaining the quality of organizational learning in libraries (Yang, 2009).

**Intrinsic motivation.** Intrinsic motivation is a major driver of creativity and an individual's drive for organizational learning, transformation and innovation (Castiglione, 2008). Librarians are directly responsible for creating and maintaining an organizational culture that facilitates the intrinsic motivation of all library staff members. Organizational democracy and librarians can increase and maintain intrinsic motivation, while coercive management behaviour tends to reduce internal motivation. Positive intrinsic motivation is necessary for an individual to acquire the knowledge and technical skills necessary to generate inspiration, productivity and creative performance. Employees with high intrinsic motivation tend to want challenging assignments to exploit their creative potential (Castiglione, 2008).

**Communication.** Communication plays an important role in organizational learning in libraries (Chen, 2006). As such, there is always the potential for different types of internal communication flows to assist the process of organizational learning. However, only a few libraries have exploited this potential. They respond to environmental stimuli in simple ways. Innovative organizational learning is displayed by good and effective communication. In some libraries, there are library leaders who are considered to have friendly personalities. This is received positively by all library staff because the ability to communicate is considered a nurturing and caring act. Meanwhile, a hierarchical communication style is considered to be a boundary between a leader and their subordinates (Chen and Lin, 2008).

**Institutional evaluation.** Evaluation is part of the learning process and organizational change, therefore institutional evaluation can influence organizational learning (Chen, 2007). Evaluation is the systematic assessment of the operation and/or results of a programme or policy – a set of explicit or implicit

standards that is used as a means to contribute to the improvement of a programme or policy. Evaluation is also considered part of solving various problems in an organization. Evaluations provide useful feedback for learning opportunities for both staff and organizational management. Evaluation functions as part of managing work-based learning and in itself is a learning process. The evaluation tools in libraries use the LibQUAL approach. In principle, LibQUAL is designed and used to inspect and investigate library services, facilities, members and collections, checking that they meet the established criteria (Chen and Lin, 2008).

*Knowledge management.* Knowledge management goes beyond information management as it implies the integration of information management in important units with new meanings. Knowledge management should be based on what is needed by users, systems or services (Figueroa and Bustos González, 2006). Therefore, knowledge management must start with the identification of information needs and their benefits. This type of management attempts to generate and utilize space for human interaction, which allows the development of intangible assets to support the organization in achieving its goals. The process of knowledge management is carried out by finding knowledge then adding, selecting, developing, differentiating and presenting knowledge in such a way that the understanding of one or more areas of interest increases. In this way, knowledge management contributes to organizational learning (Figueroa and Bustos González, 2006).

### *Consequences of organizational learning in libraries*

The consequences of organizational learning are the impact or influence organizational learning has on other aspects in the library. This research has identified six consequences of organizational learning in the library: innovation in the library, library enhancement, knowledge performance, knowledge creation, learning method and organizational change.

*Innovation in the library.* It can be said that organizational learning facilitates the emergence of innovation (Fowler, 1998; Lee, 2020). Libraries that thrive together with a dynamic environment through technology must enhance the organizational learning process. The results of research conducted by Lee (2020) reveal that the ability of libraries to transform sustainably through innovation requires good organizational learning implementation. For Increasing the value of technological innovation is also identical to

the learning process, organizational learning and organizational innovation, which are positively related to each other (Brockman and Morgan, 2003). In this context, organizational learning is defined as the process of the library developing new knowledge and insights from general experience, and it has the potential to influence librarians' behaviour to be innovative. During this organizational learning process, the acquisition, distribution and interpretation of knowledge that can produce innovations is required.

*Library enhancement.* Library enhancement is defined as internal planning that addresses the purpose of the library to improve its quality. This careful internal planning guides library operations by providing explicit work instructions or encouraging consistent standards of work practice for librarians. Library enhancement is part of the activity to establish a library's strengths, weaknesses, opportunities, threats and priorities. Hence, library enhancement is closely related to organizational learning (Loo and Dupuis, 2015). Libraries must continue to learn to produce good work instructions according to the needs of their users so that they will continue to exist, and not be left behind by their users.

*Knowledge performance.* The knowledge performance of librarians depends on the type of library where they work. For example, librarians in university libraries have knowledge in regard to matters related to the university environment (Kassim and Mohd Shoid, 2013). Knowledge and learning, as the main resources, will contribute to the improvement of knowledge performance. In this context, organizational learning is defined as the learning activities carried out by organizations and managers that allow organizations to learn while knowing the knowledge performance of each individual and group, and the organization itself. The results of Yu and Chen's (2015) research show that the elements of organizational learning are influential in deciding knowledge performance among librarians or information professionals.

*Knowledge creation.* A popular and widely cited model of knowledge creation in knowledge management is the Nonaka–Takeuchi model (Nonaka, 1994). The organizational knowledge framework is integrated into knowledge creation. A close observation of the process of knowledge creation starts with distinguishing two dimensions of knowledge (explicit and implicit) in the process of knowledge creation, and is included in organizational learning activities (related to the creation of new knowledge). A further process

is carried out by acquiring knowledge from outside the organization then disseminating it among members of the organization. Thus, the process of creating knowledge is linked to organizational learning as a key role for improving organizational performance (Somerville and Farner, 2012).

**Learning method.** There are two types of learning methods – formal and informal – and the librarian is free to choose their learning method. Formal methods involve registering for further studies and attending formal workshops or seminars, while informal methods involve self-study using Internet sources. In their learning process, librarians require long-term commitment; this is because most library staff may not have enough time to increase their knowledge and professional development. For this reason, they may prefer to use easier or faster ways to learn, such as browsing information on websites, soliciting peer feedback (knowledge sharing) and participating in short seminars. The choice of learning method is also influenced by organizational learning (Abdullah and Kassim, 2008). This is because organizational learning creates continuous learning opportunities, encourages collaboration and team learning, creates systems for capturing and sharing learning, and connects organizations with the environment (Abdullah and Kassim, 2008).

**Organizational change.** In this context, organizational learning is a metaphor for understanding organizational change (Fabbi, 2009). Successful organizations do not try to respond to a challenge by predicting the future, but rather develop their ability to continuously learn and adapt to changes in the external and internal environment. Adapting to changes requires organizational learning ability, so it is important to understand how organizational change. Kovel-Jarboe (1996) emphasizes that, in organizational learning, change is considered as one of the normal characteristics in ongoing organizations rather than as events that occur outside the routine of the organization. The key point is that libraries need to use tools – in this instance, organizational learning – to examine changing environments, explore problems, facilitate learning and increase their organizational effectiveness.

### *Theoretical implications*

The purpose of this research has been to find and understand the antecedents and consequences of organizational learning in libraries. The systematic review used in this study provides a comprehensive theoretical contribution to the factor of organizational

learning. The success of organizational learning in organizations depends on the company's tendency to learn – that is its commitment to learning or a learning culture, its open-mindedness, an organizational value that leads to learning efforts, and a shared vision. These serve as a direction for individuals to adjust their commitment and conformity to the various company goals. The views of each individual are aligned to achieve a common interpretation (Sinkula et al., 1997). From the results of this study, there are antecedents and consequences of organizational learning in libraries.

The results of this study confirm that organizational learning in libraries has two roles: as an antecedent and consequence from each librarian or the library institution itself. The leadership aspect in most of the research articles serves as the antecedent of organizational learning in the library. Meanwhile, innovation is the consequence of organizational learning in libraries. 'Intrinsic motivation' as a factor that comes from within the individual, in which it also as the antecedent of organizational learning in the library. The more positive the intrinsic motivation, the more influential it will be on the success of organizational learning in the library.

The availability of information and knowledge within an organization is a factor that supports the implementation of organizational learning in libraries. However, from the research results obtained, there is little research that discusses the influence of knowledge management on organizational learning in libraries, even though it has become a concern outside the field of library studies. Moreover, there are still some antecedents of organizational learning in libraries – such as individual learning, team learning, communication and institutional evaluation – that are rarely researched. Likewise, the consequences of organizational learning in libraries are not a common research topic. The results of this study reveal that there are only seven consequences of organizational learning in libraries.

### *Practical implications*

From the results of this study, libraries can gain comprehensive knowledge about the antecedents and consequences of organizational learning so that success can be achieved. The practical implications of the results of this study are that it can be used as material in making decisions to develop a better library – for example, in creating new policies to increase the intrinsic motivation of librarians so that they are enthusiastic about working and learning new things. Libraries are dynamic organizations that must keep

abreast of the times and changes in the characteristics of librarians so that they can provide the best service.

From the results of this study, libraries can identify not only the factors that can affect organizational learning but also the consequences or impact of its implementation. Organizational learning also affects other aspects in the library – for example, innovation. Libraries are required to provide the latest innovations, tailored to the needs of users, so that they will remain loyal to the library.

## Conclusion

The systematic literature review of this study concluded that research on organizational learning in libraries from 1996 to 2020 consisted of 20 studies, with most of the research domains being in university libraries (75%) and located in Asia (45%). The most common method used was quantitative (35%), with cross-sectional and longitudinal designs. This study used 20 articles that fit the predetermined criteria and produced a framework for the antecedents and consequences of organizational learning in libraries. The antecedents of organizational learning in libraries are leadership, organizational culture, individual learning, team learning, intrinsic motivation, communication, institutional evaluation and knowledge management. The consequences of organizational learning in libraries are innovation in the library, library enhancement, knowledge performance, knowledge creation, learning method and organizational change. A limitation of this study is only taking articles from the Scopus database – even though there are many other databases such as Web of Science, the Directory of Open Access Journals and Web of Science – which meant that there were only 20 articles that met the criteria for analysis.

## Future research

From the research characteristics data in Table 1, it can be seen that research on organizational learning in libraries has mostly been carried out in university libraries. With reference to the result that institutional evaluation affects organizational learning in libraries, it is hoped that further research will be conducted in other types of libraries, such as public libraries, school libraries or special libraries, which have their own specific characteristics. In addition, from the framework that has been described, it is necessary to test the framework to obtain empirical evidence so that further research can be carried out by testing the antecedents and consequences of organizational learning in libraries simultaneously.


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# Framework for the provision of information to the visually impaired in academic libraries in compliance with the Marrakesh Treaty

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## Abstract

This study aimed to propose a framework for the provision of information to the visually impaired in compliance with the Marrakesh Treaty. Its objectives were to examine copyright-related challenges in accessing copyrighted information; identify strategies to improve access to copyrighted information in compliance with the Marrakesh Treaty; and propose a framework for the provision of information to the visually impaired in compliance with the Marrakesh Treaty. The study targeted university librarians and library users with visual impairments. Interviews were used to collect data and were analysed thematically. The findings revealed that the challenges include the unavailability of appropriate policies and the high costs and problems involved in accessing copyright consent. Among the strategies to improve access to copyrighted information include role reallocation in libraries, training and creating awareness of the Marrakesh Treaty among all stakeholders. The study concluded with a proposed framework for implementing the Marrakesh Treaty.

## Keywords

Marrakesh Treaty, academic libraries, provision of information, visually impaired, framework

## Introduction

The World Health Organization (2019) reports that worldwide it is estimated that there are at least 2.2 billion people who have a visual impairment or are blind. There are 19 million children who are visually impaired and every minute one child becomes blind in the world, resulting in a total of 500,000 children who become blind every year worldwide (World Health Organization, 2019). Most of these people miss out on chances to effectively access information, since a lot of information is in inaccessible formats.

Copyright law, in spite of being an important element of information management, has also been criticized for obstructing free and easy information

access for persons with visual impairments or who are otherwise print-disabled (Mann, 2001). This is because copyright law requires one to have authority from the rights holder before reproducing copyrighted works, and persons with visual challenges at some point have a need to reproduce most of these works since they are produced in formats that they cannot use.

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Considering these challenges and the continued desire to provide information in accessible formats, flexibility and the provision of exceptions and limitations have been necessary within copyright law so as to permit free and easy access to information by persons with visual impairments. These considerations and the continued conversation on the matter brought about the conception of the Marrakesh Treaty to facilitate access to copyrighted information for persons who are visually challenged. The treaty has been seen as a way out of the copyright problems that have been encountered in facilitating access to information for persons with visual impairments or who are otherwise print-disabled (World Intellectual Property Organization, 2016). The purported benefits of the treaty are the reason why most countries have taken the step to ratify the treaty and make it part of their legislation – including Afghanistan, Argentina, Brazil, Canada, Chile, Ecuador and the People’s Republic of Korea, which all ratified the treaty on 30 September 2016 (World Intellectual Property Organization, 2016).

In Kenya, the Marrakesh Treaty was ratified on 2 September 2017, making it legally binding and requiring that all stakeholders implement it (World Intellectual Property Organization, 2017). This is in line with Article 2(6) of the Constitution of Kenya, which states that ‘any treaty or convention ratified by Kenya shall form part of the Law of Kenya under this Constitution’ (Republic of Kenya, 2010). The treaty has since been incorporated into Kenya’s Copyright Act (Parliament of Kenya, 2019). The Marrakesh Treaty has come at a time when there are an estimated 224,000 persons who are blind and another 750,000 who are visually impaired (Merab, 2016). Kenya’s 2019 census report shows that the prevalence rate of people with visual challenges is at approximately 1.7%, which translates into about 800,000 people (Muma and Obonyo, 2020).

Following the ratification of the Marrakesh Treaty in Kenya, there is a need for systemic adjustments at all levels so as to have in place the requirements of the Marrakesh Treaty and allow users to benefit from it (Mann, 2001). These adjustments need to follow on from in-depth fact-finding work to establish what needs to be adjusted, why the adjustments need to take place, where the adjustments need to take place, who needs to do the necessary work involved, how the adjustments should be undertaken, and when the adjustments need to take place, among other issues. This will pave the way for the effective execution of the legislation, allowing the attainment of the desired outcomes of the Marrakesh Treaty (Whitehouse, 2011).

It is in this light that this study was carried out on issues arising from the enactment of the Marrakesh Treaty, with a view to proposing a framework that will enable comprehensive utilization of the treaty so as to allow the visually impaired or otherwise print-disabled to benefit as much as possible from the provisions of the treaty in academic libraries.

The main objective of this study was to propose strategies to improve access to copyrighted information in compliance with the treaty. The specific objectives were to:

- Investigate the copyright-related challenges experienced by the visually impaired in accessing and using copyrighted material;
- Identify appropriate strategies to improve access to copyrighted information in compliance with the Marrakesh Treaty; and
- Propose a framework for the provision of information resources for persons who are visually impaired in compliance with the Marrakesh Treaty.

## Literature review

This section provides a review of the literature in relation to the first two objectives of the study.

### *Copyright-related challenges experienced by the visually impaired in accessing information*

The National Centre for Promotion of Employment for Disabled People carries out an annual survey to analyse the situation of students with disabilities; the 2015 study established that most disabled students, including the visually challenged, did not have access to academic resources in accessible formats (Kolhe, 2015). According to Mann (2001), difficulties in access and the absence of accessible formats are caused mostly by copyright issues. Copyright-access restriction issues present a number of challenges.

*New electronic books are not released in accessible formats.* Conventionally, publishers are more inclined to produce information resources in formats that cannot be accessed by the visually challenged. Harpur and Suzor (2013) note that the challenges faced by persons with visual impairments in accessing information are twofold: (1) it is expensive to digitize existing books that are in print form perhaps due to legal or procedural requirements and (2) new electronic books are often mostly released in a form that does not favour persons with visual disabilities or who are otherwise print-disabled.



This is because of the speed of technological obsolescence where, even with the purchase of digitizing materials, they become quickly outdated, and there is still the need to have a copyright license to reproduce works. The result is that there are very few works in accessible formats. This is evidenced by the many times that some publishers have opposed the creation of laws that will allow the reproduction of their works in accessible formats without seeking their consent (Mann, 2001).

*Laxity of publishers in releasing already existing accessible copies of works.* It would be easy for persons with visual impairments to access information if all publishers made sure that, for every item of information produced in a conventional format, a copy were made in an accessible format. However, there are only a few circumstances where accessible copies are available from publishers. This is blamed on the fear of misuse of the materials by information service providers, which makes publishers reluctant to release them (WIPO, 2006). In this regard, a study was carried out in the Lithuanian Library for the Blind by WIPO (2006), which established that publishers felt insecure in providing e-texts for fear that they would be misused and that their commercial interests would be jeopardized. This situation resulted in publishers, in some cases, declining to provide e-texts or requiring the Lithuanian Library for the Blind to contact the owners of the works regarding reproduction. In other circumstances, publishers have failed to archive published works as e-texts, leaving them with no obligation to hand anything over, and, if they do, they supply works in formats that are inappropriate for conversion into Braille, for example. From the user's point of view, this could be viewed as a way for some authors and publishers to create a 'business' opportunity, selling the rights of reproduction to persons who may want to have accessible copies, rather than merely the fear of misuse.

*High costs and problems in contacting rights owners to obtain permission to reproduce works.* In most cases, obtaining a copyright license is a fairly expensive process. The costs involve seeking access to the rights holder and purchasing the license. It is perhaps for this reason that copyright laws have the requirement that before reproducing any literary or artistic work, one should obtain permission from the rights holder, without which any reproduction is a copyright infringement (Wahid, 2011); some rights holders have taken advantage of this and placed too high a price on reproduction.

Article 9 of the Berne Convention, for instance, gives exclusive rights to authors to authorize the reproduction of their work: 'Authors of literary and artistic works protected by this Convention shall have the exclusive right of authorizing the reproduction of these works, in any manner or form' (World Intellectual Property Organization, 1979). The procedure for obtaining permission may involve reaching out to the rights holder, negotiating a license and then paying for it. This is costly for information service providers (Nicholson, 2017). Bezbozhna (2014) poses the question: 'what if the author is unknown and it is impossible to establish the identity of the rights holder?' This scenario is even more difficult for 'orphaned works', whose authors are not known (Bezbozhna, 2014) and which mostly end up never being reproduced in accessible formats for the reason that it is impossible to obtain permission from the rights holder, even after much expenditure in the search.

*Inadequate legislation to protect visually challenged or otherwise print-disabled persons in accessing information.* Being a special case, access to information by the visually challenged ought to have specific legislation in support of it. However, Harpur and Suzor (2013) comment that digitization has been happening for a long time, but on a restricted, ad hoc basis. The legislation and permissions available do not adequately permit persons with visual challenges or who are otherwise print-disabled to access all available knowledge and cultural works. WIPO (2006) reports that, in the Philippines, the absence of legislation on copyright laws to cater for the visually challenged has posed a great challenge to making accessible copies available in agreement with publishers. Even though the Education Department has permission to reproduce the works it purchases in Braille, it did not get blanket permission to reproduce copyrighted material in Braille, and the scope is hence limited.

Nicholson (2013), on the other hand, states that in research carried out in 2012 in 125 developed and developing countries, only 70 countries had included welfare for persons with disabilities in their copyright laws. Only five African countries had exceptions for the sensory disabled in their copyright laws, with Cameroon, Nigeria and Rwanda including exceptions only for blind persons. South African copyright legislation provides exceptions for the reproduction of works for libraries and educational purposes, but these exceptions do not cover conversions for persons in need of alternative print formats, or conversions from audiotape to text or from text to enhanced visual formats (Nicholson, 2017).

*Lack of cross-border harmonization and conventional translations.* There are occasions when information may not be available locally, but could be available across the border in another country. In some cases, countries have laws that prohibit the export or cross-border exchange of commodities, which automatically includes information materials in accessible formats. The absence of the cross-border harmonization of accessible copies means that each country has to depend on copies that are produced locally in their language (Bezbozhna, 2014). Uruguay, for instance, only has approximately 3000 copies of audiobooks, while Argentina has hundreds of thousands, but due to the prohibition of any cross-border exchanges, Uruguay cannot benefit from them. Whitehouse (2009) asserts that the problem is acute in poor countries where visually challenged persons speak a minority language and cannot access information from neighbouring countries in dialects known to them.

*Time-consuming nature of information access and use.* Nicholson (2017) states that it is evident that the process of obtaining copyright permissions is time-consuming, and students with visual impairments or who are otherwise print-disabled are prejudiced by this. By the time a visually challenged student legally accesses protected works to carry out an assignment, much time has elapsed and their fellow sighted students have already progressed with their work. The WIPO et al., (2017) reports that, during a conference on the opportunities and challenges of the Marrakesh Treaty, one of the promoters, who was blind, lamented the fact that in their college days books were in inaccessible formats and, for those in rural areas, it could take up to 15 months for reading materials to reach them.

Harpur and Loudoun (2011) further explain that, in most cases, Australian universities provide print-disabled students with prescribed reading material late and offer even less support for them to access other recommended material or research items. Those seeking to access copyright-protected works for leisure, work, or political or general knowledge face even more challenges and have to wait longer, since this is not deemed vital. WIPO (2006) reports that, in Malawi, where there is no specified copyright-exception legislation, the Ministry of Education, which is responsible for special needs learning, comes in to negotiate for copyright permissions, which is time-consuming. In the process of negotiating agreements, students with visual impairments are kept waiting while their deadlines approach, sometimes resulting in late submissions. Often, the process is delayed at one point or another and, when this keeps

happening, the whole education system becomes compromised, at the expense of persons with visual impairments.

#### *Strategies to improve access to copyrighted information in compliance with the Marrakesh Treaty*

The implementation of the Marrakesh Treaty in libraries largely depends on the library management. The process comes with several management issues that librarians need to address for effective and efficient implementation.

*Resource mobilization and budgetary adjustments.* Any profitable process or project requires an input of resources that, when put to work, will yield the expected results. Like any other system, the Marrakesh Treaty requires that both human and material resources are combined so that it can be successful. The costs include those of training, sensitization, the purchase of equipment, hiring additional staff to take care of the welfare of persons with visual impairments, and the establishment of databases of materials in accessible formats (Electronic Information for Libraries, 2016). These matters are important since, even when a library is a member of a consortium, it has a responsibility to contribute in the process of reproducing materials in accessible formats. The equipment required includes an optical character recognition system and large-print word processors and conversion software.

The optical character recognition system was invented by Milton Stoller and patented in 1973. Stoller (1971) explains that the optical character recognition system relates to recognition of printed characters for the purpose of converting them into a format that is suitable for electronic data processing. The printed information is scanned and stored in analogue signals. These signals are changed into digital data signals that are representative of the scanned storage media, and then accumulated in an 'image enhancement network'. This process continues until a suitable electronic format is attained.

The American Foundation for the Blind (2017) explains that optical character recognition technology allows one to scan text that is in print; the system's synthesizer then speaks the recognized text back or saves the content on a computer. The system has the ability to detect typos and autocorrect those that are closely related to words that are familiar to it. In some cases, the optical character recognition technology converts files into retrievable formats that are accessible through commonly used software like word processing software and spreadsheets.

Turning to large-print word processors and conversion software, most students have a preference for electronic material and so use screen readers such as Job Access With Speech (JAWS). The large print helps to avoid fatigue or eye strain, which may result in headaches. If not addressed in time, the challenges posed by small print may lead to reduced study time for the affected students. The same students find it difficult to attend to their examinations (Newcastle University, 2017).

Large-print word processors enlarge the words displayed on the screen to make them clearer for persons who cannot read small print. This technology mostly comes together with talking word processor software (Davis, 2012). There are also other computer resources and software that can aid in making words more visible (Hawking, 2004).

*Adhering to the boundaries provided for by the Marrakesh Treaty regarding beneficiaries.* There may be a risk of ‘authorized entities’ making accessible copies available to persons who cannot be justified as being in the category of beneficiary persons as provided for by the treaty, or reproducing copies and making them available on the open market. This authority is granted only to the rights holder (African Regional Intellectual Property Organization, 2016; Electronic Information for Libraries, 2016). There are, however, certain disabilities that it may be difficult to separate from this group – for instance, people with dyslexia (New, 2015) or those who do not have the ability to hold print material to read. Providing accessible formats to persons who cannot be justified as beneficiary persons may lead to legal consequences for the librarian or officer acting on behalf of the ‘authorized entity’, if there is one.

*Creating awareness of the Marrakesh Treaty among all stakeholders.* Ranganathan’s (1931) law that ‘books are for use’ is vital for the survival of any library. It is inconsequential to have information resources in accessible formats when the intended beneficiaries are not using them for the reason of a lack of awareness. Librarians have a responsibility to offer awareness programmes to ensure that beneficiary persons are aware of the opportunities created by the Marrakesh Treaty (WIPO et al., 2017). This should not only be done for persons with visual impairments or who are otherwise print-disabled, but also for anyone who is involved in any way in the creation and use of accessible copies of resources.

*Establishing local and cross-border networks to access accessible copies.* The creation of cross-border

networks may be a very difficult task, but it could be a turning point for librarians in terms of their ability to provide better information services for their clients. The Accessible Books Consortium (World Intellectual Property Organization, 2014), for instance, is a public–private partnership under the leadership of the World Intellectual Property Organization. It encompasses organizations that are representative of persons with print disabilities such as the World Blind Union, standards bodies, libraries for the blind, and organizations that represent authors, publishers and other stakeholders. The reason for this is that, through networks and consortia, librarians are able to expand their collections. Further, as mentioned earlier, such networks reduce the costs of reproducing information resources in the long run since there is no need to reproduce what already exists within the consortium.

*Creating databases and digital repositories for collections for different categories of visually impaired or otherwise print-disabled.* Every information provider has a responsibility to ensure that their users access the information they desire. In the process, there is the need to create databases of information material in converted and accessible formats. These databases of accessible copies (Sullivan, 2006) will go a long way in building a collection that will help future generations. Further, individual librarians should find a way to play a role in building an international collection of accessible material, whether by joining the Accessible Books Consortium or by creating a local consortium of libraries offering similar services.

## Methodology

The study adopted a qualitative approach to collect data from a total of 21 university librarians and their deputies, and library users with visual impairments, from five public and two private universities in Kenya. A qualitative approach was found to be appropriate for this study for the reason that it aimed to understand the experiences of the participants (in this case, library staff and visually challenged library users) in a specific context (here, copyright limitations and exemptions) – which is the nature of a qualitative process. Creswell (2009) states that qualitative research is a means for exploring and gaining an understanding of the meaning persons or groups assign to a social or human problem.

The study was carried out in selected public and private universities in Kenya. The universities were selected purposively, considering those that had library users who were visually challenged. From a

pre-study, it was found that 11 universities had users with visual impairments. Among these, a few had only one user with a visual impairment, therefore the study sampled seven university libraries that had more than two users with visual impairments. The public universities were Kenyatta University, the University of Nairobi, Jomo Kenyatta University of Agriculture and Technology, Maseno University and the Technical University of Kenya, while the private universities were St Paul's University and Mount Kenya University. The sample used in the study comprised 21 librarians and deputy librarians from the seven university libraries. With regard to library users with visual impairments, a pre-study showed that there were around 62 persons with visual impairments at the selected universities. The study targeted up to 50 users with visual impairments who would yield saturation, as supported by Glaser and Strauss (1967) and Saunders (2017).

The study also embraced a participatory action research design alongside the qualitative research design. A census technique was used for the librarians and deputy librarians, and snowballing was used for the library users with visual impairments. For the first respondents with visual challenges in all the universities, the librarians linked the researcher with at least one visually impaired user, who then went on to lead the researcher to access the next respondent, and so on. The data was collected through the use of interviews with all the respondents, and was analysed thematically. Themes were identified through selecting key points raised by the respondents. Each unique response formed a theme for a specific level of interrogation.

## Research findings and discussion

This section presents empirical findings from the data collected from the interviews carried out with the university library managers (university librarians and library directors, and their deputies) and the library users with visual impairments. These findings are presented in the order of the study objectives that yielded the research questions by use of thematic discussions and the presentation of sample direct quotes that informed the specific themes. To recap, the objectives of this study were to investigate the copyright-related challenges experienced by the visually impaired in accessing and using copyrighted material; identify appropriate strategies to improve access to copyrighted information in compliance with the Marrakesh Treaty; and propose a framework for the provision of

information resources to persons who are visually impaired in compliance with the Marrakesh Treaty.

To differentiate between the responses from the library managers and library users, the researcher labelled the library management respondents LMR and allocated them the numbers 1 through 17. The library user respondents were labelled LUR and allocated the numbers 1 through 37.

### *Categories and concepts of the study*

Bryman (2004) recommends that having to identify categories and concepts necessitates important reflections on accurate data organization. It strengthens the thoughts and facts encountered by the researcher in the course of the data analysis. The categories in this study were explained as the key issues concerning the provision and access to information for persons with visual impairments or who were otherwise print-disabled with regard to the Marrakesh Treaty. The main research issues were divided into categories (open coding) and subtopics (axial coding) (Abonyo 2014; see Table 2).

### *Information on respondents*

This category provides data with regard to the characteristics of the respondents. The data covers the response rate of the interviews with the library managers and users with visual impairments, and the demographic characteristics of the respondents. The demographic characteristics include gender, age, academic qualifications, period of service for the library managers and period of use for the library users. Additionally, for the library managers, the study inquired into their professional training. This data is presented in respective thematic areas.

*Response rate.* The study targeted a total of 21 library managers, comprising 7 university librarians and 14 deputy librarians, and up to 50 library users with visual impairments or who were otherwise print-disabled. The respondents who took part in the study numbered 6 university librarians, 11 deputy university librarians/library directors and 37 library users with visual impairments or who were otherwise print-disabled. The users with visual impairments came from different groups – some were staff, some students and some from neighbouring locations who had subscribed to use the libraries for their personal reading and research. The response rate is presented in Table 3.

These respondents were found to be sufficient to inform the study since their responses were able to

**Table 1.** Distribution of the target population.

| University                                             | University librarian or library director | Deputy librarians or deputy library directors | Users with visual impairments |
|--------------------------------------------------------|------------------------------------------|-----------------------------------------------|-------------------------------|
| University of Nairobi                                  | 1                                        | 2                                             | 8                             |
| Kenyatta University                                    | 1                                        | 2                                             | 8                             |
| Jomo Kenyatta University of Agriculture and Technology | 1                                        | 2                                             | 8                             |
| Maseno University                                      | 1                                        | 2                                             | 8                             |
| Technical University of Kenya                          | 1                                        | 2                                             | 8                             |
| Mount Kenya University                                 | 1                                        | 2                                             | 8                             |
| St Paul's University                                   | 1                                        | 2                                             | 8                             |
| <b>Total</b>                                           |                                          | <b>21</b>                                     | <b>56</b>                     |

**Table 2.** Categories and concepts of the study.

| Categories (open coding)                                                                     | Concepts (axial coding)                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Information on respondents                                                                   | <ul style="list-style-type: none"> <li>– Response rate</li> <li>– Gender</li> <li>– Age</li> <li>– Level of education</li> <li>– Period of service in the library (library managers)/ period of usage of the university library (users with visual impairments)</li> <li>– Professional training</li> </ul> |
| Challenges in provision and access to information                                            | <ul style="list-style-type: none"> <li>– Copyright challenges in accessing information for persons with visual impairments</li> </ul>                                                                                                                                                                       |
| Strategies to improve access to copyrighted material in compliance with the Marrakesh Treaty | <ul style="list-style-type: none"> <li>– What should be done to improve access to copyrighted information in compliance with the Marrakesh Treaty</li> </ul>                                                                                                                                                |

**Table 3.** Response rate.

| Category                                                                   | Targeted  | Responded |
|----------------------------------------------------------------------------|-----------|-----------|
| University librarians                                                      | 7         | 6         |
| Deputy university librarians                                               | 14        | 11        |
| Library users with visual impairments or who were otherwise print-disabled | 50        | 37        |
| <b>Total</b>                                                               | <b>71</b> | <b>54</b> |

yield saturation. For the library managers, saturation was arrived at with the 13th interviewee; for the library users, it was arrived at with the 31st interviewee. For the users with visual impairments, saturation was arrived at much later since some users had little knowledge about some of the concerns in the study, and so there was the creation of clusters of respondents who knew about one issue and not another, or who knew things that the others did not. This is in line with what was highlighted earlier in that there is a need for the researcher to monitor response patterns, and the themes generated on the phenomenon being investigated, so as to note when the data reaches saturation (Bosire, 2011). Straus (1991) and Slater (1994) explain that, although on average saturation happens

at the 10th interview, it is imperative to test the saturation level by carrying out more interviews.

*Demographic characteristics of the respondents.* Demographic data was sought for both the users and the library managers. Although this demographic data did not majorly inform the objectives of the study, it was vital for understanding the capacity of the respondents in terms of their ability to respond to the questions raised in the study. Moreover, Salkind (2010) notes that demographic data is important and necessary for determining whether the participants in a particular study are a proper representation of the overall target population for purposes of generalization.

*Demographic characteristics of the library managers.* The study sought to establish the demographic characteristics of the managers in five categories: age, gender, level of education, years of experience and professional training. On gender, there was a relative balance, with 53% male and 47% female. All of the library managers were aged over 30. With regard to their academic qualifications, the lowest level was a Master's degree and the rest had doctoral degrees.

Further, the findings reveal that the library managers had worked for a relatively long time in their libraries, with the shortest amount of time being 6

**Table 4.** Demographic data for the library managers.

| Gender                             |                               |  |               |              |
|------------------------------------|-------------------------------|--|---------------|--------------|
| <b>Male</b>                        |                               |  | <b>Female</b> |              |
| 8                                  |                               |  | 9             |              |
| <b>Age</b>                         |                               |  |               |              |
| <b>&lt; 20</b>                     | <b>21–29</b>                  |  | <b>30–39</b>  | <b>40–49</b> |
|                                    |                               |  | 2             | 11           |
|                                    |                               |  |               | <b>49+</b>   |
|                                    |                               |  |               | 4            |
| <b>Level of education</b>          |                               |  |               |              |
| <b>Undergraduate degree</b>        | <b>Master's degree</b>        |  | <b>PhD</b>    | <b>Other</b> |
|                                    | 13                            |  | 4             |              |
| <b>Years worked as a librarian</b> |                               |  |               |              |
| <b>0–5</b>                         | <b>6–10</b>                   |  | <b>11–15</b>  | <b>15+</b>   |
|                                    | 2                             |  | 4             | 11           |
| <b>Professional training</b>       |                               |  |               |              |
| <b>Librarianship</b>               | <b>Information technology</b> |  | <b>Other</b>  |              |
| 15                                 | 2                             |  | 0             |              |

**Table 5.** Demographic data for library users with visual impairments or who were otherwise print-disabled.

| Gender                                      |                    |                |               |                     |
|---------------------------------------------|--------------------|----------------|---------------|---------------------|
| <b>Male</b>                                 | <b>Female</b>      |                |               |                     |
| 21                                          | 16                 |                |               |                     |
| <b>Age</b>                                  |                    |                |               |                     |
| <b>&lt; 20</b>                              | <b>20–29</b>       | <b>30–39</b>   | <b>40–49</b>  | <b>49+</b>          |
| 14                                          | 16                 | 5              | 2             | N/A                 |
| <b>Academic qualifications</b>              |                    |                |               |                     |
| <b>Form 4 (secondary school)</b>            | <b>Certificate</b> | <b>Diploma</b> | <b>Degree</b> | <b>Postgraduate</b> |
| 27                                          | 4                  | 3              | 2             | 1                   |
| <b>Years of usage of university library</b> |                    |                |               |                     |
| <b>&lt; 1</b>                               | <b>1–5</b>         | <b>6–10</b>    | <b>10+</b>    |                     |
| 2                                           | 30                 | 3              | 2             |                     |

years and most of the librarians having worked for more than 15 years in the library sector. On professional training, all the library managers had had training in the fields of librarianship and information technology. None of the respondents indicated that they had received training in any other fields. Table 4 gives a summary of the demographic information of the library managers.

*Characteristics of the library users with visual impairments or who were otherwise print-disabled.* The data revealed an almost even distribution with regard to gender, with 21 respondents being male and 16 female. Most of the respondents were in the 'below 20' age category, and the oldest age category was 40–49. The respondents in the lower age category were probably mostly students and those in the highest staff or

people from outside the university who had subscribed to use the library.

The academic qualifications of the users ranged from Form 4 (secondary school) to postgraduate. Those with Form 4 certificates were mostly students undertaking post-secondary education. Those with certificates, diplomas, degrees and postgraduate qualifications were a mix of students who were advancing their studies and staff who were working within the universities or in other neighbouring organizations. With regard to the period of usage of the library, all categories were covered, from those who had been using the library for less than a year to those who had used it for more than 10 years. Table 5 provides a summary of the demographic data findings for library users with visual impairments or who were otherwise print-disabled.

*Copyright-related challenges experienced by the visually impaired or otherwise print-disabled persons in accessing and use of copyrighted material*

This category sought to bring to light the copyright-related challenges that were encountered by librarians and persons with visual impairments or who were otherwise print-disabled during the provision of and access to information services. The respondents explained many challenges that they faced with regard to accessing copyrighted works.

*Time constraints.* One respondent explained that searches could last for months, despite the fact that users had an urgent need for the information material. This resulted in frustration for both the users and the information provider. Respondent LMR1 stated:

On the few occasions where we decided to pursue permission to reproduce an information material, it took us a lot of . . . because the rights holder was out of Kenya. Such processes take a long time. I mean, even up to six or eight months . . . and by this time the user gets late for the task they wanted the material for.

The library user respondents also had their views on what copyright challenges they faced with regard to accessing copyrighted information resources. LUR13 indicated:

There are moments we have requested information materials from our librarians and they take too long to respond to us. When we follow up, we are told that the rights owner has not responded or has not been found. Such a situation, in most cases, makes us feel betrayed and left out because we come with expectations which are not met – yet it is not our fault.

The respondents expressed that it was time-consuming to seek permission to reproduce a work in an accessible format for both electronic and print information materials. This was particularly the case for materials whose authors were not in Kenya.

*Difficulty in accessing rights owners.* The respondents were concerned about the difficulty in finding rights holders, especially for those materials whose rights owners were individuals rather than publishing houses. This was because some may have died and they did not know about it. LMR4 commented:

At times, getting these people became very hard . . . at least if it is a company or a publishing house, we have had not many problems, but for individuals, it can be hard, my friend, because some may not even be alive.

*Dilemma of who should initiate the process of seeking consent to reproduce the required works.* This concern was raised in the sense of, considering the process involved in seeking copyright permission, who should initiate the process? Who will incur the costs if there are any? Who will be responsible for the search processes? The process of seeking copyright consent becomes especially difficult for books and other materials in print that do not have proper addresses. With this in mind, one of the respondents admitted that librarians had a responsibility to seek information for their clients but that it was daunting to start a search. The loophole here is that, on most occasions, such activities have not been budgeted for because of their rare occurrence, and library procedures do not factor this in. LUR26 remarked:

When we are told that we have to get copyright permission to make copies of a book into a format that is usable for us, we wonder who is supposed to seek the permission. This part gets us stuck and I would say it is frustrating.

*High costs for acquiring copyright licenses.* The respondents indicated that it was expensive to find copyright owners and even to buy permits, since some copyright holders demanded large sums of money. There were costs involved not only in purchasing a license, but also in finding the location of the rights holder, making calls, negotiations and other expenses. LMR13 indicated:

I personally have engaged in getting such a permit, and I can confirm it is not easy in terms of cost and time. It is costly to make direct international calls for some authors who don't provide email addresses. Even after reaching them, some of them quote huge sums of money, which even the library cannot afford. I mean, it can be expensive.

This concurs with a report from a study by the World Intellectual Property Organization (2014), which shows the high cost of seeking a copyright license. The report gives the example of Germany, where the law requires a payment of €12 for each title that is to be reproduced, regardless of the type of accessible copy, including Braille or any other format.

*Absence of policy on the reproduction of copyrighted materials.* There was a concern that there was no policy guiding the process of reproducing materials in accessible formats. Most libraries, and universities in general, are known to have disability policies. However, these policies are too general and do not

cover issues regarding access to copyrighted information materials by the visually impaired, leaving librarians not knowing what to do. LMR8 commented:

We have not been keen to formulate any policies to guide the library on issues of reproducing copyrighted material . . . maybe we need it now. We have a general disability policy but it does not give direction on what should be done in such instances.

*Disconnect between users and the library.* The respondents indicated that it was rare to see persons with visual impairments or who were otherwise print-disabled seeking help from the library. This was perhaps because, in the instances when they came to the library, they did not get the information they needed in the appropriate format, and so they no longer saw the need to return, for fear that they would still not find help. LMR7 pointed out that:

We know persons with visual impairments exist within our institution and we see them. However, they rarely come to the library to seek such help, so we have not connected with them so much . . . some of them, when we meet outside the library, we ask them why they no longer visit the library and they say that they came but got disappointed because all of the books in our library are written in ways they cannot use, so they see no need of coming here . . . but we have a plan of reaching out to them where they are, so that we can find a way out.

*Unavailability of material in accessible formats.* The respondents commented that there were few materials in accessible formats, and that this could therefore exclude persons with disabilities who were not able to use print materials. LUR37 remarked: 'It is very rare for us to find a book in large print for people like me, and I believe it is even harder for our brothers and sisters who cannot see to find materials in Braille'. This is in accordance with the sentiments of Hashemi et al. (2017), who assert that a high percentage of people with visual impairments have no access to information because there are not many books in formats that are useful to them, thus creating a book famine. This situation has been majorly contributed to by many factors, including the absence of relevant policies, a lack of goodwill among publishers and the unavailability of appropriate support systems from information service providers with regard to serving the visually challenged.

### *Strategies to improve access to copyrighted information in compliance with the Marrakesh Treaty*

This category sought to get the views of the respondents on what they thought should be done to enhance access to copyrighted information in compliance with the Marrakesh Treaty. The issues are discussed in detail below.

*Staff training and role reassignment within and outside the library.* The respondents who expressed this view thought that it was imperative to train staff and carry out sensitization on the requirements of the Marrakesh Treaty in the library context. This would enable staff to recognize what was expected of them in accordance with the requirements of the treaty, and also to remain within the legal confines of the treaty. Further, they opined on the need to reassign different or additional tasks to staff to make sure that persons with visual impairments or who were otherwise print-disabled were well catered for. In this respect, LMR13 remarked:

The first thing we should make sure of is to sensitize and train our staff and also ourselves on how to handle users with visual impairments and manage information needs. We need to then reassign ourselves roles to make sure that there is no gap in terms of providing information services to them . . . the sensitization is important in that it will also help us in case of legal issues . . . you know, issues relating to law can be sensitive. We do not want to get into trouble because someone infringed the copyright laws somewhere out of ignorance of what is supposed to be done.

Such a coordinated process would ensure that there is no delay between the time when a client with visual impairments comes into the library inquiring for information material and the point when they are provided with that information resource in the correct and preferred format.

*Petitioning publishers to publish works in accessible formats.* Some of the respondents placed the blame on publishers' unwillingness to produce information materials in accessible formats. They expressed that, for the Marrakesh Treaty to be a success, there was a need for strong advocacy towards encouraging publishers to produce information materials in both print and other accessible formats. LUR1 observed:

You know, this problem is mostly on publishers because they are not willing to produce information materials in formats that can help people who cannot read print material. So, the first thing from now is to push them to do as the law requires; they need to start having all



books written in print and also in the formats that visually impaired people can use.

*Acquisition of equipment to aid in reproducing works in accessible formats.* The respondents admitted that there was a shortage of equipment for reproducing information material in accessible formats and any other formats that may be required for use by visually impaired persons to access information. LMR4 stated: 'Also, we may need to have machines for reproducing information resources into formats usable by persons with visual impairments because I don't think we have enough of them'.

*User education and awareness.* The respondents agreed that most users may not be aware of the developments of the Marrakesh Treaty. They therefore proposed that users needed to be trained on it so that they could pursue it as their right. Perhaps this was due to the newness of the treaty, meaning that most people lacked awareness of it. However, as noted earlier, the researcher took time to explain to the respondents what the treaty is about in general. There is, though, the need for a deeper understanding of the treaty among all stakeholders with regard to what it actually entails. Respondent LMR5 noted:

We need to embark on making our users with visual impairments aware of the Marrakesh Treaty so that when they come to any of us, they will know that it is their right to be served with information in the format suitable for them . . . and also they need to know the law so that they can abide by it.

From the responses, it was evident that there is a need for librarians to create awareness among users with visual impairments about the Marrakesh Treaty as the basis for their right to access information. If users are aware of the treaty, it will be easier for them to make the necessary demands with regard to it.

*Review of curricula in universities and colleges to incorporate concepts of the Marrakesh Treaty and create awareness.* In this regard, LMR1 observed:

This is an important development in the field of information and should be taught to all upcoming professionals, not only in information studies, but all of them. This is because, at some point, they may be found in a place where they need to provide information or assist a visually impaired person to access information, and so this knowledge will be important.

The respondents were of the opinion that it was vital for everyone to be aware of the existence of the provisions of the Marrakesh Treaty. This would ensure that those involved in all aspects of information provision were aware of the treaty and would thereby avoid any issues that may arise from ignorance of it.

*Kenya Libraries and Information Services Consortium to assist in sourcing more information materials in accessible formats.* LMR2 pointed out that the Kenya Libraries and Information Services Consortium (KLISC) had a role to play in assisting libraries in the provision of access to materials in accessible formats:

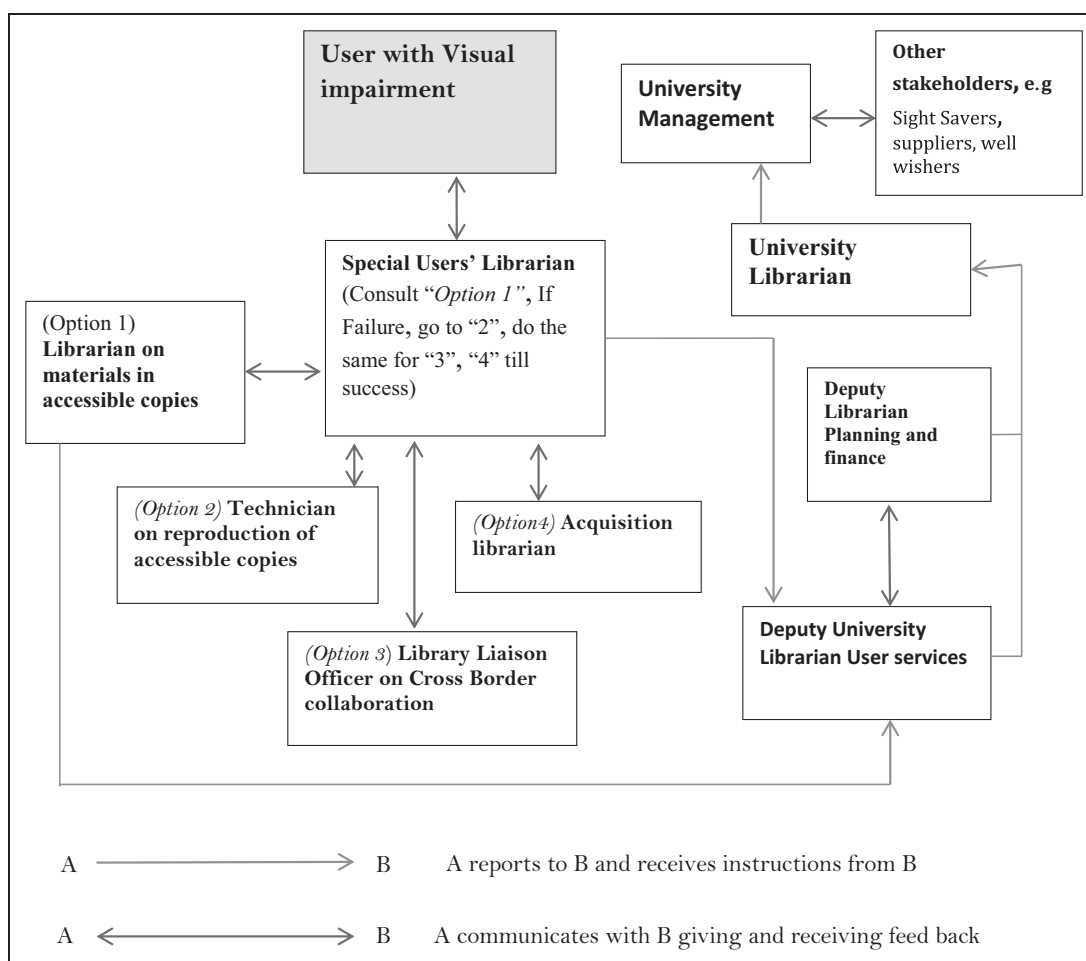
I think KLISC can help libraries a lot when it comes to building a collection of information materials in accessible formats. You know, even most of the collections we have, they are the ones who have helped us. I hope our leaders in KLISC are aware of this development so that they can start working on it as soon as possible.

LMR2 articulated that most of the information materials they had were the result of working with the KLISC, and therefore the consortium would be especially helpful in sourcing information materials in accessible formats.

*Policy review and formulation.* The respondents said that they needed to review their policies to make sure that the requirements of the Marrakesh Treaty had been incorporated. The disability policies found in the institutions were not sufficient to meet the needs of these users. It was therefore necessary for them to be amended and made clearer; moreover, libraries had a responsibility to create policies that would promote and guard the right to access information for persons with visual impairments. LMR15 remarked:

Policy review is on our priority list so as to have the Marrakesh Treaty reflected in them, especially in policies on access and use of information materials, and our disability policies, which are quite general and need to be narrowed down to issues raised in the Marrakesh Treaty.

*Building a collection of information materials in accessible formats.* The respondents admitted that there was the need to have the resources that were already in accessible formats stored in secure databases. This would make sure that they were always readily available for users with visual impairments, just like the other print copies. LMR1 commented:



**Figure 1.** A framework of strategies to improve access to copyrighted information in compliance with the Marrakesh Treaty.

Libraries across the world have now to embark on keeping databases of as many copies as they get of information resources in accessible formats until we get to a point that a user cannot miss a copy they want. This is because the people who are visually impaired have a right to walk in and access the information they want, just like any other person.

The responses given in this category indicate a wide range of ideas that can be used to ensure that the Marrakesh Treaty is properly implemented for those who will benefit from its provisions.

#### *Proposed framework of strategies to improve access to copyrighted information in compliance with the Marrakesh Treaty*

The model of strategies to improve access to copyrighted information in compliance with the Marrakesh Treaty (Figure 1) shows the person at the centre of the model as the user with visual impairments or who is otherwise print-disabled.

*Users with visual impairments.* ‘Users’ in this case refer to persons with visual impairments or who are otherwise print-disabled as explained in the Marrakesh Treaty, including (a) blind persons, (b) persons with a visual impairment or (c) persons who are otherwise unable to read normal print (World Intellectual Property Organization, 2013). When the user arrives at the library, they are directed to the special user librarian, who takes note of their requests and directs them appropriately.

*Special user librarian.* The special user librarian is the main representative or contact person of the authorized persons (in this case, the library) under Part 2(a) of the Marrakesh Treaty (World Intellectual Property Organization, 2016). This role is also informed by the issues raised by the respondents with regard to the dilemma of who should initiate the process of seeking consent to reproduce the required works – the library or the user. The model recommends that the special user librarian should initiate the

process. They should be trained on how to communicate with persons with visual impairments and understand the procedures for providing information in accessible formats. In other words, the special user librarians' role is to push the agenda of the Marrakesh Treaty in collaboration with other library departments.

When approached for services by persons with visual impairments, the special user librarian must follow a decision-making process, whereby they will first consult Option 1 for information. If Option 1 is not successful, they will take Option 2; then Option 3, if Option 2 is not successful; and, finally, Option 4, which is similarly the final stage for any information search process. The four options are outlined below.

*Option 1. Consult the librarian in charge of materials in accessible formats.* The Marrakesh Treaty recommends maintaining copies of materials in accessible formats and keeping records of those copies with an authorized entity (Section 2(iv), World Intellectual Property Organization, 2016). This role should be handled by the librarian who is in charge of materials in accessible formats. When consulted by the special user librarian, the librarian in charge of materials in accessible formats will check in the collection whether the material requested is available. If not available, they will give feedback to the special user librarian, who will proceed to Option 2.

*Option 2. Consult a technician on the reproduction of accessible copies.* When Option 1 is unsuccessful, the special user librarian should request the technician who is in charge of reproducing information materials in accessible formats to check whether there is any information material in inaccessible formats and reproduce it in an accessible format. If the requested material is available in the collection, the technician can make the reproduction and give it to the special user librarian to deliver to the user; if unavailable, the technician gives negative feedback to prompt the special user librarian to move to Option 3.

*Option 3. Consult the library liaison officer on cross-border collaboration.* The Marrakesh Treaty recommends 'cross-border exchange' where authorized entities share copies in accessible formats with each other (Article 5(1), World Intellectual Property Organization, 2016). The library liaison officer will be in charge of communicating with other parties. In this case, the library liaison officer would contact other partners to inquire whether they have the material the user requires in an accessible format. If available, the liaison officer will facilitate access to the copy and deliver it to the special user librarian, who in turn will deliver it to the user. If unavailable, the liaison officer

will indicate this to the special user librarian, who will then consult Option 4. The liaison officer will be the link to the Accessible Books Consortium (World Intellectual Property Organization, 2014) should the library chose to be a member of the consortium.

*Option 4. Consult the acquisitions librarian.* At this stage, the special user librarian requests the acquisitions librarian to plan for the acquisition of the information material in an accessible format and, if not available, in an inaccessible format. The special user librarian will then give the accessible copy to the user. If it is in an inaccessible format, they will take it to the technician who is in charge of reproduction in accessible formats, who will make the relevant copy, give it to the special user librarian, who in turn will give it to the user. If a copy is not available at this stage, the process will end, just as it would for other categories of users, and hence equity is attained.

All of the above categories of librarians connect to the library management through their respective management representatives – namely, the deputy university librarians in charge of planning and finance, and the deputy university librarians in charge of user services.

*Deputy librarian in charge of user services.* The deputy librarian in charge of user services has the role of overseeing activities relating to the services given to persons with visual impairments or who are otherwise print-disabled. They receive feedback for departments on issues relating to special user services; lead policy formulation activities for users with visual impairments; and communicate policies to all departments on issues relating to special user services. They also consult with the deputy university librarian on issues affecting departments that need finance and planning.

*Deputy librarian in charge of finance and planning.* The deputy librarian in charge of finance and planning is responsible for planning and budgeting for all activities and functions that require funding in consultation with the deputy librarian in charge of user services and departmental heads. They are also responsible for policy formulation in relation to planning and finance.

## Conclusion

It is important to acknowledge that users with visual impairments have been facing challenges with regard to access and use of copyrighted material. However, it should be noted that the Marrakesh Treaty outlines the expected solutions to enable librarians to meet the identified challenges. The framework presented in Figure 1 is a suggestion to enable librarians to

properly utilize the Marrakesh Treaty and make it easier for users with visual impairments to access information without any copyright-related issues.

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## Abstracts

### Advocacy of Sustainable Development Goals in Jordanian Academic Libraries

دعم أهداف التنمية المستدامة في المكتبات الأكاديمية الأردنية  
فائق حمد، ومها الفاضل  
مجلة الإفلا، 4-48

المخلص:

نظراً للأهمية المتزايدة التي تكتسبها أهداف التنمية المستدامة، وقلّة عدد المكتبات العامة في الأردن فإنه ينبغي بحث دور المكتبات الأكاديمية وممارستها في تعزيز المعرفة والمهارات لدعم أهداف التنمية المستدامة في الأردن. كما ينبغي تقصي التحديات التي قد تشكل عائقاً أمام تحقيق أهداف التنمية المستدامة. وتدعم نتائج هذه الدراسة حقيقة مفادها أن المكتبات الأكاديمية يمكنها أن تسهم إسهاماً كبيراً في أهداف التنمية المستدامة (M = 3.53) من خلال توفير سبل الوصول إلى المعلومات ذات الصلة والمحدّثة، وتقديم التدريب على المعرفة المعلوماتية (M = 4.03). ومن شأن الوصول إلى المعلومات أن يُحسن جودة حياة المجتمع (M = 4.41). ويقدم هذا المقال نظرة متعمقة لأنماء المكتبات الأكاديمية، وصنّاع القرار بشأن تعميم تدابير ترمي إلى تعزيز المعرفة والمهارات المتعلقة بأهداف التنمية المستدامة بين الطلاب والمجتمع العام في الأردن. وتوصي الدراسة ببعض الاستراتيجيات المناسبة، مثل تعاون المكتبات الأكاديمية مع المؤسسات الحكومية والصحية لدعم تحقيق أهداف التنمية المستدامة في الأردن.

الكلمات الرئيسية:

أهداف التنمية المستدامة، المكتبة الأكاديمية، الدعم، جدول أعمال الأمم المتحدة، الوصول إلى المعلومات، الأردن

### An initial evaluation of UNSW Research Data Management online Training

تقييم أولي لتدريب إدارة بيانات الأبحاث بجامعة نيو ساوث ويلز عبر الإنترنت

أديان تشيو، وشيري زين أو، وأديلين وونغ، وجوان جلادينج  
مجلة الإفلا، 4-48

المخلص:

في إطار التصدي لضعف معدلات مشاركة إدارة بيانات الأبحاث في جامعة نيو ساوث ويلز بأستراليا، أعد برنامج تدريب تمهيدي لإدارة

بيانات البحث عبر الإنترنت شمل جميع المرشحين الجدد المسجلين حديثاً في مجال البحث العلمي.

و توضح هذه المقالة مراحل تطوير التدريب على إدارة بيانات البحث عبر الإنترنت، وتقدم تقييماً أولياً للتدريب من وجهة نظر كل من المرشحين والجامعة. وعلى هذا النحو، تتضمن هذه المقالة إلى الأدبيات المنشورة حول التدريب على إدارة بيانات البحث لمساعدة المؤسسات وأصحاب المصلحة في تطوير التدريب في مجال إدارة بيانات البحث؛ ومساعدة الباحثين والطلبة الباحثين على استخلاص أفضل الممارسات لإدارة بيانات البحث. وبوجه عام، أعرب معظم المرشحين (643 مرشحاً) عن رضاهم عن جودة التدريب، وعن استفادتهم منه. وتحدد بالتفصيل فوائد التدريب المقدم إلى الجامعة من خلال الربط بين كل من مشكلات إدارة بيانات البحث المؤسسي، وتصميم التدريب على إدارة بيانات البحث عبر الإنترنت، والنتائج التي أسفر عنها في خطة متماسكة.

الكلمات الرئيسية:

التدريب على إدارة البيانات، التقييم، نهج التصميم التشاركي، طلاب البحث، التطوير الأكاديمي

### Exploring Academic staff Engagement in Depositing Research Contents in OAIRs

استكشاف مشاركة أعضاء هيئة التدريس في إيداع محتويات البحث  
بنسق OAIRs

آنا شانغوي موبوغوني، وولستان بيوس متيجا، وأنرو واتسون ماليكاني  
مجلة الإفلا، 4-48

المخلص: تستطلع هذه الدراسة مدى إسهام أعضاء هيئة التدريس في إيداع المحتوى المنتج محلياً في مستودعات مؤسسية متاحة للجميع في الجامعات الحكومية في تنزانيا. ويتمثل الهدف العام منها في تحديد معدل مشاركة أعضاء هيئة التدريس في إيداع المحتوى المنتج محلياً في هذه المستودعات المؤسسية المتاحة للجميع. واستخدمت الدراسة تصميم بحثي شمل عدة قطاعات. وجمعت البيانات باستخدام استبيان منظم، شمل 292 عضواً من أعضاء هيئة التدريس جرى اختيارهم من عينات عشوائية منهجية. واستخدمت العينات الهادفة لاختبار 14 مخرّباً رئيسياً. وأشارت النتائج إلى أن 92.5% من المستجيبين كانوا على دراية بوجود مستودعات مؤسسية متاحة للجميع، وأن 46.2% منهم قام بأرشفة أعماله الأكاديمية في هذه المستودعات. وكان ضعف الاتصال بالإنترنت، وانخفاض النطاق الترددي، وإمدادات الطاقة غير المستقرة المستهلكة للوقت أبرز التحديات التي واجهت أعضاء هيئة التدريس في

أثناء عملية رفع أعمالهم على المستودعات. وقد وُضعت العديد من التوصيات لتسريع وتيرة هذه العملية.

الكلمات الرئيسية:

الإيداع، المحتوى المنتج محلياً، مستودع مؤسسي متاح للجميع، أرشفة ذاتية، مخرجات بحثية، تنزانيا

مع تصميم الخدمة، وإنشاء نموذج لتطوير الابتكار في الخدمات المكتبية.

الكلمات الرئيسية:

الخدمات المرجعية، تجارب المستخدم، المزيج التسويقي، المكتبات الأكاديمية، تايلاند

## Technological scenarios for the new normality in Latin American academic libraries

السيناريوهات التكنولوجية للحالة الطبيعية الجديدة في المكتبات الأكاديمية بأمريكا اللاتينية

لورد فيريا باسورتو، وأومبرتو مارتينيز كاماتشو، وأليخاندرا كالديرون سوين

مجلة الإفلا، 4-48

الملخص: طرأت في الأشهر الأخيرة تغييرات جوهرية على السيناريوهات التكنولوجية التي نشأت في جامعات أمريكا اللاتينية نتيجة حالة الطوارئ الصحية الدولية الناجمة عن فيروس كوفيد-19. وأبرزت سياسة العزل الحاجة إلى تطوير المهارات الرقمية والمعلوماتية للتكيف مع بيئة التعلم عن بعد، والمتطلبات اللازمة لتقديم تعليم متكامل عبر الإنترنت. ومن أجل رصد تحول البيئة التكنولوجية في المكتبات الأكاديمية ومنهجيتها خلال هذه الأشهر، تحددت الحالة السائدة في الآونة الأخيرة في ضوء تحليلات البيانات المستقاة من استبيان أجري في بلدان أمريكا اللاتينية. وأشارت النتائج إلى تغيير ملحوظ في استخدام التطبيقات والخدمات الرقمية، وفي مساعدة المستخدمين، وتدريب المكتبيين في أثناء الجائحة، إضافة إلى التغيير الذي طرأ على التزامات المكتبات على المدى المتوسط.

الكلمات الرئيسية:

المعلومات والاتصالات، الوضع الطبيعي الجديد، المكتبات الأكاديمية، أمريكا اللاتينية، البحث الكمي، بيئة التعلم الافتراضية

## Users' Experience of Reference Services in Thai Academic Libraries

تجربة المستخدمين للخدمات المرجعية في المكتبات الأكاديمية التايلاندية

كيتيا سوثيرابا، و كيولثيدا، وتومسوك

مجلة الإفلا، 4-48

الملخص: يهدف هذا البحث إلى تحليل تجارب المستخدمين المتعلقة بالخدمات المرجعية في المكتبات الأكاديمية باستخدام مفهوم المزيج التسويقي 7Ps. شملت العينة المعلمين والطلاب في ثماني جامعات بحثية وطنية في تايلاند. أجاب الاستبيانات 337 معلماً (86.41%)، و399 طالباً (100%). وأظهرت النتائج أن مكونات المزيج التسويقي 7Ps التي تكتسي أهمية أكبر للخدمات المرجعية وفقاً للمستخدمين هي: الأشخاص ( $\beta = 0.881$ )، ثم المكان ( $\beta = 0.868$ )، ثم الترويج ( $\beta = 863$ )، والمنتج ( $\beta = 856$ )، والسعر ( $\beta = 854$ )، والعملية ( $\beta = 805$ )، والبيئة المادية ( $\beta = 789$ ). كما تبين النتائج أن الخدمات الرئيسية كانت، على التوالي الاستشارة، والبحث عن المعلومات، والتعليمات، والاستجابة. وتكشف نتائج هذه الدراسة للمزيج التسويقي 7P عن مواقف المستخدمين تجاه الجوانب المختلفة التي يمكن دمجها

## Inviting and/or inclusive: A study of the Flemish public library sector

جاذبة و/ أو شاملة: دراسة قطاع المكتبات العامة الفلمنكية

دينيس ماتيسن وإيجناس جلوريوكس

مجلة الإفلا، 4-48

الملخص: يتبين من مقارنة نتائج استقصاءين واسعي النطاق أجريا لاستطلاع آراء المستخدمين في فلاندرز عامي 2004 و2018 أن قطاع المكتبات العامة الفلمنكية قد نجح في التكيف مع الظروف الصعبة، مثل زيادة التقشف في الميزانية، وانتشار الرقمنة في المجتمع. كما تشير النتائج أيضاً إلى الانخفاض الواضح في عدد رواد المكتبات العامة الفلمنكية في العقدين الماضيين، لاسيما الفئات ذات المستويات التعليمية المنخفضة، وهو أمر يدعو إلى القلق. في هذه المقالة، يقدم المؤلفون لمحة عامة عن التحليلات الاستكشافية التي تحاول أن تقف بصورة محددة على عدد المكتبات العامة التي شملتها الدراسات وتتسم بأنها أكثر (أو أقل) جاذبية بصورة ملحوظة لفئات فرعية محددة من الجمهور (العمر والجنس ومستوى التعليم، وغير ذلك). علاوة على تقديم تحليلات الانحدار، التي توضح أي الخصائص المكتبية ذات تأثير إيجابي على المستخدمين من فئتين ممثلتين تمثيلاً ناقصاً بين مستخدمي المكتبة الفلمنكية، وهما الرجال والأشخاص الأقل تعليماً.

الكلمات الرئيسية:

استقصاء آراء المستخدمين، الشمول، الجاذبية، مستوى التعليم، الفعالية

## Management of e-resources in academic libraries in Ghana: Copyright implications

إدارة الموارد الإلكترونية في المكتبات الأكاديمية في غانا:

الأثار المترتبة على حق المؤلف

تيريزا لارتيلي أدو، وتوماس بي فان دير والت

مجلة الإفلا، 4-48

الملخص: تبحث هذه الدراسة قضايا حق المؤلف المتعلقة بإدارة الموارد الإلكترونية في المكتبات الأكاديمية في غانا. شارك في الدراسة سبعة وأربعون من موظفي وأمناء المكتبات من أربع مكتبات أكاديمية في الاستبيانات والمقابلات النوعية في إطار نهج مختلط متتابع لتوليد بيانات الدراسة. وتشير النتائج إلى أن القضايا المتعلقة بحق المؤلف نشأت في المؤسسات الأربع جميعاً مع تقديم خدمات التعلم عن بعد، والدورات عبر الإنترنت، والإيداع الإلكتروني. كما أشار جميع المستجيبين إلى طرحهم هم أو زملائهم أسئلة على أعضاء هيئة التدريس بشأن مسائل تتعلق بحق المؤلف. ومع ذلك، أشار موظفو المكتبات إلى تجاهل المكتبات وعدم استشارتها، وإلى عدم تعاون مدرسي الدورات عبر الإنترنت أو برامج التعليم عن بعد مع أمناء المكتبات؛ عوضاً عن ذلك، اتخذ القسم المعني بنشر المواد القرارات المتعلقة بحقوق المؤلف في استخدام الموارد الرقمية للتعلم عن بعد، أو الدورات التدريبية عبر الإنترنت أو الإيداع الإلكتروني. وهذا لا يبشر

بالخير فيما يتعلق بإدارة حق المؤلف في المصادر الإلكترونية في المكتبات الأكاديمية في غانا.  
الكلمات الرئيسية:  
المكتبات الأكاديمية، قضايا حق المؤلف، برامج التعليم عن بعد، إدارة الموارد الإلكترونية، غانا، دورات عبر الإنترنت

## Knowledge Mapping and Visualization of Personal Information Management Literature, 1988-2020

رسم الخرائط المعرفية والتصور الذهني للأدبيات التي تتناول إدارة المعلومات الشخصية، 1988-2020

وليامز نواجو

مجلة الإفلا، 4-48

الملخص: صُممت هذه الدراسة لبحث هيكل الأدبيات التي تتناول إدارة المعلومات الشخصية خلال الفترة من 1988-2020 من خلال تعيين الكلمات المفتاحية للمؤلف والمفهرس. وتتناول المقالة أيضًا حجم الأدبيات التي تتناول إدارة المعلومات الشخصية، وكمتبتها، ومعدل نموها خلال هذه الفترة. تم البحث في قاعدة بيانات سكوبس Scopus بعبارة 'إدارة المعلومات الشخصية' في حقول العنوان والملخص والكلمات الرئيسية في 18 فبراير 2021. ويمكن الاستدلال على معدل النمو السنوي في المنشورات من خلال صورة عدد الوثائق المسترجعة كل عام، ويجري تحليل معدل النمو السنوي للمنشورات حول هذا الموضوع. كُتب ما مجموعه 887 وثيقة حول هذا الموضوع منذ عام 1988. وتصب معالجة مشكلة إدارة المعلومات الشخصية على ما يبدو على تطبيقات التكنولوجيا، غير أن البحوث التي أجريت منذ عام 2015 فصاعدًا شرعت في معالجة العوامل الفردية من حيث صلتها بإدارة المعلومات الشخصية.

الكلمات الرئيسية:

إدارة المعلومات الشخصية، تكنولوجيا المعلومات، التصور الذهني، محور الأهمية المعلوماتية

## A Review of LIS Profession in the Maldives: Development, Challenges, and Opportunities

استعراض مهنة نظم المكتبات والمعلومات في جزر المالديف: التنمية والتحديات والفرص

جينا دي الويس جاياسوريا، وأميناث رياز، وشاهين ماجد

مجلة الإفلا، 4-48

الملخص: جمهورية المالديف هي دولة جزرية صغيرة نامية في المحيط الهندي، حققت أعلى متوسط دخل، كما حققت مركزا متقدما في التنمية البشرية، وتمتلك واحدة من أقوى البنى التحتية لتكنولوجيا المعلومات والاتصالات في جنوب آسيا. وعلى الرغم من أن قطاع المكتبات وعلوم المعلومات نشأ في هذا البلد منذ أكثر من سبعة عقود فإنه لم يواكب هذا التقدم، وما زال في مرحلة التطوير الأولى. ويتبع هذا المقال ظهور قطاع المكتبات والمعلومات في البلد، ويلقي الضوء على التحديات العديدة التي يواجهها. كما يعد المقال محاولة للفت انتباه متخذي القرار الحكوميين وتحفيزهم لفهم الصعوبات التي يواجهها القطاع، وحلها من خلال إشراك العاملين في القطاع وفي المؤسسات التعليمية والمهنيين المتخصصين في التدريب، وفي علوم المكتبات والمعلومات. وأشار المقال إلى بعض الشواغل في هذا الصدد، واقترح خمسة مجالات عمل رئيسية، وخطوات

العمل المرتبطة بها. والتي قد يكون لها صدى في البلدان النامية الصغيرة الأخرى التي تواجه سيناريوهات مماثلة.

الكلمات الرئيسية:

علم المكتبات والمعلومات، مهنة المكتبات والمعلومات، تعليم المكتبات والمعلومات، التطوير المهني المستمر، جمعيات المكتبات، جمهورية المالديف

## A Model of Access to Information among Nigeria Rice Farmers

نموذج وصول مزارعي الأرز في نيجيريا إلى المعلومات

أوغونا بينيديت، وفيدلوجو و، وفيدلوجو و

مجلة الإفلا، 4-48

الملخص: كان تيسير الوصول إلى المعلومات وسيظل عملية ديناميكية في ضوء الأهمية المتزايدة التي تكتسبها المعلومات. وقد تطرقت العديد من الدراسات إلى الخصائص الاجتماعية والاقتصادية، أو الصفات المميزة للمزارعين، لاسيما تلك التي تؤثر على وصولهم إلى المعلومات. غير أن الدراسات التي تتناول نماذج التنبؤ بهذه الخصائص تنسم في الغالب بالقصور، لاسيما في البلدان النامية. وفي هذه المقالة، جُمعت البيانات بشأن إمكانية الوصول إلى المعلومات، وبشأن الصفات الأخرى المميزة منذ عام 1920 من مزارعي أرز جرى اختيارهم عشوائيًا في نيجيريا من خلال مقابلات منظمة. وتبين أن نصف المزارعين (49.0%) يمكنهم الوصول إلى المعلومات المتعلقة بزراعة الأرز، وأن أكثر من نصفهم (64.9%) ينتمي إلى مجموعة المزارعين. كما أن غالبية مزارعي الأرز كانوا متزوجين (90.7%)، ومتعلمين (73.1%). وقد أظهر نموذج الانحدار اللوجستي مع معدل تنبؤ صحيح 54.4% أن عوامل العمر والتعليم والعضوية في مجموعة المزارعين تصلح للتنبؤ بالوصول إلى المعلومات. يجب على أمناء المكتبات التحقق من الصفات المميزة لمزارعي الأرز لتمكينهم من إعادة تجميع المعلومات وتيسير وصولهم إليها.

الكلمات الرئيسية:

الوصول إلى المعلومات، مزارع الأرز، نموذج التنبؤ، الصفات المميزة للمزارعين، نموذج الانحدار اللوجستي

## An assessment of health information literacy among women in rural Lake Zone, Tanzania

تقييم محور أهمية المعلومات الصحية لدى النساء في منطقة البحيرات الريفية، تنزانيا

محمد قاسم، وفراجا ندومبارو

مجلة الإفلا، 4-48

الملخص: تعرض هذه المقالة نتائج مسح مقطعي وصفي أُجري لتقييم مهارات محور الأهمية الصحية لدى النساء في سن الإنجاب في منطقة البحيرة الريفية، تنزانيا. شارك في الدراسة ما مجموعه 349 امرأة. وتوصلت الدراسة إلى أن مستوى معرفة معظم النساء الريفيات في منطقة الدراسة بالمعلومات الصحية متدني. وتشير الدرجات الإجمالية لمحو أهمية المعلومات الصحية إلى متوسط قدره 42.86% مع منحني توزيع طبيعي، ومقاييس اللاتمتائل (0.172)، وكورتوزيس (التفرطح) (0.297) مقارنة للصفر. تشير العلاقات السببية بين محور أهمية المعلومات الصحية والعوامل الاجتماعية والديموغرافية للمرأة إلى تأثير إيجابي ذي دلالة إحصائية ( $p < 0.01$ ) لمستوى تعليم المرأة ودخلها،



وملكيتها لوسائل الاتصال، وإمكانية وصولها إلى المرافق الصحية على مستوى محو الأمية الصحية لديهم. وقد تبين أن ضعف قدرة المرأة على الوصول إلى المعلومات الصحية وقراءتها وفهمها وتقييمها واستخدامها يمثل عائقاً أمام حصولها على المعلومات الصحية ذات الصلة. ومن المرجح أن يؤدي تعزيز مهارات هؤلاء النساء في قراءة وكتابة المعلومات الصحية إلى تحسين نتائجهن الصحية.

الكلمات الرئيسية:

معلومات صحية، محو الأمية المعلوماتية، النساء في سن الإنجاب، منطقة البحيرات الريفية، تنزانيا

### Information Needs and Delivery Channels: Experimental Evidence from Cambodian Smallholders

متطلبات المعلومات وقنوات توصيلها: دليل قائم على التجربة من

صغار الملاك الزراعيين الكمبوديين

سيلينا برونز، وأوليفر موشوف، وباسكال ستروهلين

مجلة الإفلا، 4-48

الملخص: على الرغم من التدخلات السياسية العديدة ما يزال الفقر قائماً. وأشد الأشخاص تضرراً هم الذين يعيشون في المناطق الريفية في البلدان المنخفضة الدخل، وهي مناطق تتميز غالباً بعدم اتساق المعلومات مما يؤدي إلى إخفاق الأسواق. وينطوي النمو واسع النطاق الذي تشهده

تكنولوجيا المعلومات والاتصالات في المناطق النائية في جميع أنحاء العالم على إمكانات هائلة لإزالة العقبات أمام وصول فقراء الريف إلى المعلومات. غير أنه لا توجد أدلة كثيرة على فعالية قنوات التوصيل، وربما يكون هذا أحد أسباب تباين تأثير المشورة الرقمية. وسعيًا إلى التحقق من أفضل طريقة يمكن أن تساعد بها تكنولوجيا المعلومات والاتصالات صغار الملاك الزراعيين، قام المؤلفون بتقصي احتياجات المعلومات والقنوات الفعالة لتوصيل هذه التكنولوجيا. وجمعت البيانات الاجتماعية

والديموغرافية والمتعلقة بتكنولوجيا المعلومات والاتصالات، وأجريت تجربة ميدانية هيكلية مع صغار الملاك الزراعيين في كمبوديا؛ طلب منهم بناء كائن واستخدام قنوات مختلفة لتوصيل التعليمات. وباستخدام تقنيات اندحار مختلفة وخوارزميات المطابقة، توصلت التجربة إلى أن التعليمات متعددة الحواس تتفوق في الوصول على جميع التعليمات الأخرى.

الكلمات الرئيسية:

الخدمات الإرشادية، التعليمية، الصور، المواد السمعية، التعلم متعدد الحواس، الفقر

### Factors Influencing the Use of Agricultural Information by Vietnamese Farmers

العوامل المؤثرة في استخدام المزارعين الفيتناميين المعلومات الزراعية

هونغ جيا هوانغ، ودوك فان نجوين، ودوغلاس دريسيدل

مجلة الإفلا، 4-48

الملخص: تتناول هذه الدراسة العوامل التي تؤثر على استخدام مزارعي الحبوب الفيتناميين المعلومات الزراعية. وجرى اختبار ومسح عينة تتألف من 245 مزارع حبوب. كما صنف المشاركون إلى مزارعين حبوب صغيرة ومتوسطة وكبيرة. واستخدمت أدوات الإحصاء الوصفي، والإحصاء الاستدلالي في تحليل البيانات. وتشير النتائج إلى أن مصدر المعلومات لكبار المزارعين هم التجار المفضلون لديهم،

والعاملون في مجال الإرشاد، وموردو المدخلات والهواتف المحمولة والإنترنت؛ أما مصدر معلومات صغار المزارعين فهو التعاونيات واتحاد المزارعين والتلفزيون. كما تشير النتائج إلى أن فرصة كبار المزارعين في الوصول إلى المعلومات المتعلقة بإعداد التربة، ومكافحة الآفات/الحشائش، والحصاد، وأسعار السوق والمدخلات كانت أكبر بالمقارنة مع صغار المزارعين الذين أتاحت لهم فقط فرصة الوصول إلى معلومات عن الأسمدة غير العضوية. ويوضح تحليل الانحدار أن استخدام المزارعين للمعلومات الزراعية يتأثر تأثيراً كبيراً بخصائص من قبيل النوع الاجتماعي، والخبرة الزراعية، والمشاركة في برامج التدريب والمنظمات المجتمعية، والوصول إلى الإنترنت والتلفزيون، والمعلومات المستقاة من التجار المفضلين، واللجنة الشعبية المحلية، والعاملين في مجال الإرشاد، والتعاونيات، ونقابات المزارعين وموردي المدخلات ( $\chi^2 = 140.784$ ,  $p < .000$ ).

الكلمات الرئيسية:

مزارعو الحبوب، العوامل، المعلومات الزراعية، تحليل الانحدار، فيتنام

### Library Makerspace in Turkey: Public And University Libraries

مساحة الصانع في مكتبات تركيا: المكتبات العامة والجامعية

أيسينور غونس جون، ومحمد كنانار

مجلة الإفلا، 4-48

الملخص: تهدف هذه الدراسة إلى تحديد التطورات في مكتبات تركيا، وبيان مدى جودة المكتبات التي تقدم خدمة مساحة الصانع 'Makerspace'. وفي ضوء البيانات التي تم الحصول عليها من وزارة الثقافة والسياحة في أثناء الدراسة، شملت الدراسة مكتبة جامعية واحدة، وثلاث مكتبات عامة تقدم هذه الخدمة في تركيا، كما شملت مكتبة عامة واحدة بالتفصيل. وطبقت طرق البحث النوعي، وجرى تقييم البيانات التي جمعت من خلال مقابلات شبه منظمة باستخدام طريقة التحليل الوصفي. ووفقاً للنتائج، لم يحرز تقدم كبير في مكتبات تركيا فيما يتعلق بالخدمات التي تقدمها مساحة صانع المكتبة، لكن لأن المكتبات العامة التي قيمتها هذه الدراسة تقدم خدمة واحدة فقط، فإنه يتعذر عليها إدراك فلسفة الصانع على نحو كامل.

الكلمات الرئيسية:

مساحة صانع المكتبة، مساحة الصانع، المكتبة العامة، مكتبة الجامعة

### The library as soft power actor: A review

المكتبة بوصفها قوة ناعمة فاعلة: استعراض

إميليا كارا بيل، وماري آن كينان

مجلة الإفلا، 4-48

الملخص: يسعى هذا الاستعراض السردي إلى فهم علاقة المكتبات بمفاهيم القوة الناعمة والدبلوماسية العامة والثقافية. وتتطلب طبيعة الدراسة المتعددة التخصصات أن يشمل نهج البحث الأدبيات المتعلقة بكل من العلاقات الدولية وتخصصات المكتبات وعلوم المعلومات. وتكشف الأدبيات التي تم تحليلها عن ثغرات ثلاث رئيسية. أولاً، نادراً ما تتناول الأبحاث موضوع 'المكتبات والقوة الناعمة' صراحةً. ثانياً، نادراً ما تأخذ الأدبيات القليلة التي تتناول المكتبات والقوة الناعمة في حسابها الخطاب المعاصر. ثالثاً، غالباً ما تفتقر هذه الأدبيات إلى منظور مؤسسي ليرالي ضمني، كما أنها تتجاهل الجوانب السلبية أو المهيمنة للقوة الناعمة. وفي ضوء الأهمية المتزايدة التي



言,大多数学生(n=643)对培训质量感到满意,并认为培训很有帮助。我们将机构在研究数据管理方面存在的问题、研究数据管理线上培训的设计和研究成果结合起来,形成一个完整的叙事,呈现此类培训带给高校的益处。

关键词

数据管理培训,评估,参与式设计方法,研究生,学术发展

### Exploring Academic staff Engagement in Depositing Research Contents in OAIRs

教学人员将研究内容存入开放获取机构知识库的实践

安娜 姆布古尼 (Anna Shangwe Mbughuni Mbughuni), 乌利斯坦 姆特加 (Wulystan Pius Mtega), 安德鲁 马莱卡尼 (Andrew Watson Malekani)

*IFLA Journal*, 48-4, 523-537

摘要

本文探讨了教学人员将本地制作的内容存放在坦桑尼亚公立大学的开放获取机构知识库中的实践情况。本研究的总体目标是确定教学人员将本地制作的内容存放在开放获取机构知识库中的具体参与程度。本研究采用了横断面研究设计,使用结构化问卷收集数据,对通过系统随机抽样选出的292名教学人员进行调查,并采用立意抽样法选择14名关键信息提供者。结果显示,92.5%的受访者知道开放获取机构知识库的存在,46.2%的受访者曾在开放获取机构信息库中自行存档其学术成果。网络连接不良、网络带宽有限、耗时、以及不稳定的电源是教学人员在上传成果的过程中遇到的挑战。为加快这一进程,本文提出了相关的建议。

关键词

存储,本地制作内容,开放获取机构知识库,自行存档,研究成果,坦桑尼亚

### Technological scenarios for the new normality in Latin American academic libraries

新常态下拉丁美洲高校图书馆的技术场景

卢德斯 巴苏托 (Lourdes Feria Basurto), 亨贝托 马丁内斯—卡马乔 (Humberto Martínez-Camacho), 亚历山德拉 卡尔德隆—斯温 (Alejandra Calder n-Swain)

*IFLA Journal*, 48-4, 538-547

摘要

最近几个月,由于新冠肺炎疫情引起的全球紧急卫生状况,拉丁美洲大学中出现的技术场景发生了实质性变化。隔离政策的实施表明人们有必

要培养数字和信息技能,以适应环境以及整合在线教育所提出的远程学习需求。为了观察和系统性地总结这几个月来高校图书馆技术环境的变化,本文对面向拉丁美洲国家的调查问卷反馈的数据进行分析,了解了该地区的最新情况。结果显示,在疫情期间,数字应用程序和服务的使用、用户协助和馆员培训,以及图书馆的中期目标均发生了重大变化。

关键词

信息与传播技术,新常态,高校图书馆,拉丁美洲,定量分析,虚拟学习环境

### Users' Experience of Reference Services in Thai Academic Libraries

泰国高校图书馆用户的参考咨询服务体验

基蒂娅 苏蒂普拉帕 (Kittiya Suthiprapa), 库尔希达 图阿姆苏克 (Kulthida Tuamsuk Tuamsuk)

*IFLA Journal*, 48-4, 548-566

摘要

本研究旨在利用7Ps营销组合,分析高校图书馆用户对于参考咨询服务的体验。样本包括来自泰国八所国立研究型大学的教师和学生。共有337名教师(86.41%)和399名学生(100%)返回了问卷。结果显示,对用户来说,7Ps营销组合中关于参考咨询服务的最重要的要素是人员( $\beta = .881$ ),排在后面的分别是地点( $\beta = .868$ )、宣传( $\beta = .863$ )、产品( $\beta = .856$ )、价格( $\beta = .854$ )、流程( $\beta = .805$ )和实体环境( $\beta = .789$ )。产品方面最重要的服务分别是咨询、研究信息查询、指导和解答。这项7Ps营销组合研究的结果展示了用户对于服务各方面的态度(可用于服务设计),并创建了一个图书馆服务创新发展模型。

关键词

参考咨询服务,用户体验,营销组合,高校图书馆,泰国

### Inviting and/or inclusive: A study of the Flemish public library sector

吸引力与(或)包容度 面向佛兰芒公共图书馆领域的研究

丹尼斯 马蒂斯森 (Dennis Mathysen), 伊格纳斯 格洛里厄斯 (Ignace Glorieux)

*IFLA Journal*, 48-4, 567-579

摘要

通过对比2004年和2018年在佛兰芒进行的两次大规模用户调查的结果,我们发现佛兰芒公共图书馆领域已经成功适应了充满挑战的环境,包括日益紧缩的预算和普遍的数字化服务。另外,我们还明确地看到,在过去二十年中,佛兰芒公共图书馆的访

问人数有所下降,尤其是教育水平较低的读者,这一点令人担忧。本文作者通过一项探索性分析,试图确定参与研究的公共图书馆中有多少在特定类型(年龄、性别、教育水平等)的读者看来更具有(或不具有)吸引力。此外,本文还通过回归分析揭示了图书馆的哪些特征对佛兰芒图书馆用户中两个代表性不足的群体到馆访问产生了积极影响,包括男性和受教育程度较低的群体。

关键词

用户调查,包容度,吸引力,教育水平,效果

### Management of e-resources in academic libraries in Ghana: Copyright implications

加纳高校图书馆电子资源管理 版权影响  
特里萨·阿杜(Theresa Larteley Adu), 托马斯·凡德沃尔特(Thomas B Van der Walt)

*IFLA Journal*, 48-4, 580-597

摘要

本文研究了加纳高校图书馆电子资源管理中的版权问题。作者采用序列混合方法,通过问卷调查和定性访谈,以来自四所高校图书馆的47名馆员和馆长为研究对象,获得了研究数据。调查结果表明,四家机构在提供远程学习、在线课程和电子资源服务的过程中遇到了版权问题。所有受访者都表示,教职人员曾向他们本人或同事提出过有关版权的问题。然而,专业图书馆员表示,没有人向图书馆咨询,在线课程或远程教育课程的教师也没有与图书馆员合作。相反,发布材料的部门在以远程学习、在线课程或电子资源服务为目的使用数字资源的过程中自行作出有关版权的决定。这对加纳高校图书馆电子资源的版权管理来说并非好事。

关键词

高校图书馆,版权问题,远程教育课程,电子资源管理,加纳,在线课程

### Knowledge Mapping and Visualization of Personal Information Management Literature, 1988-2020

个人信息管理领域相关文献的知识映射与可视化(1988—2020)

威廉姆斯·恩瓦格武(Williams Nwagwu)

*IFLA Journal*, 48-4, 598-621

摘要

本文旨在通过作者和索引关键词的映射,研究1988—2020年间个人信息管理文献的结构。本文还研究了这一时期个人信息管理文献的规模、数量和增长情况。2021年2月18日,作者以“个人信息管理”(personal information management)为

关键词,在Scopus数据库的标题、摘要和关键字中进行检索。另外,作者以每年检索的文档数表示出版物的年度增长,并分析了该主题出版物的年增长率。自1988年以来,关于该主题共有887份文档发布。解决个人信息管理问题的焦点似乎在于技术应用,但2015年以来的研究开始解决与个人信息管理相关的个人因素。

关键词

个人信息管理,信息技术,可视化,信息素养

### A Review of LIS Profession in the Maldives: Development, Challenges, and Opportunities

马尔代夫图书馆情报专业回顾 发展、挑战和机遇

吉娜·贾亚苏里亚(Gina de Alwis Jayasuriya), 阿米纳斯·里亚兹(Aminath Riyaz), 沙欣·马吉德(Shaheen Majid)

*IFLA Journal*, 48-4, 622-637

摘要

马尔代夫共和国是印度洋的一个小岛屿型发展中国家,已达到中上收入水平和高水平人类发展地位,在南亚国家中拥有顶级的信息和通信技术基础设施。然而,该国的图书馆情报领域在70多年前就已经起步,却尚未超越最初的发展阶段。本文追溯了该国图书馆情报领域的发展历程,并强调了该领域面临的众多挑战。另外,本文还试图引起政府决策者的关注,鼓励他们了解图书馆情报领域面临的困境,并通过该领域的用人单位、教育机构、专业培训人员以及图书馆情报学专业人员的共同参与来解决这些困境。本文明确了一些具体的困境,并提出了五个关键行动领域和相关行动步骤。这些可能会引起其他面临类似情况的小型发展中国家的共鸣。

关键词

图书馆情报学,图书馆情报专业,图书馆情报教育,专业进修,图书馆协会,马尔代夫共和国

### A Model of Access to Information among Nigeria Rice Farmers

尼日利亚稻农的信息获取模式

乌贡纳·菲德鲁武沃(Ugonna Benedette Fidelugwuowo Fidelugwuowo)

*IFLA Journal*, 48-4, 638-645

摘要

由于信息日益重要,提供信息的便利获取在过去始终是一个动态的过程,未来仍将如此。大量研究探索了影响信息获取的社会经济特征或农民

属性 针对相关预测模型的研究往往较为滞后,尤其是在发展中国家 本文采用结构化访谈,从尼日利亚1920名随机挑选的稻农中收集了有关信息获取和其他属性的数据 一半的农民(49.0%)能够获取有关水稻种植的信息,一半以上(64.9%)属于农民团体 大多数稻农已婚(90.7%)并受过教育(73.1%) 一个预测准确率为54.4%的逻辑回归模型显示,年龄、教育程度和是否属于农民团体可作为信息获取的预测标准 图书馆员应确定稻农的属性,从而重新整理信息资源,以方便获取

关键词

信息获取, 稻农, 预测模型, 农民属性, 逻辑回归模型

### **An assessment of health information literacy among women in rural Lake Zone, Tanzania**

坦桑尼亚农村湖区妇女卫生信息素养评估

穆罕默德 卡西姆(Mohamed Kassim), 法拉贾 恩杜巴罗(Faraja Ndumbaro)

*IFLA Journal*, 48-4, 646-660

摘要

本文介绍了一项有关坦桑尼亚农村湖区育龄妇女的卫生信息素养技能评估的描述性横断面研究的结果 共有349名妇女参与了这项研究 结果显示,目标地区的大多数农村妇女卫生信息素养水平较低 卫生信息素养总分的平均值为42.86%,呈现为正态分布曲线,偏态系数(0.172)和峰态系数(-0.297)接近0 卫生信息素养与妇女社会人口因素之间的因果关系表明,妇女的教育水平、收入、是否拥有通信工具和使用卫生设施对其卫生信息素养水平有着积极的、统计上显著的影响( $p < .01$ ) 妇女获取、阅读、理解、评价和使用卫生信息的能力不足,这些都是她们获取相关卫生信息的障碍 提高这些妇女的卫生信息素养技能有助于改善她们的健康状况

关键词

卫生信息, 信息素养, 育龄妇女, 农村湖区, 坦桑尼亚

### **Information Needs and Delivery Channels: Experimental Evidence from Cambodian Smallholders**

信息需求和提供渠道 来自柬埔寨小农户的实证 塞琳娜 布伦斯(Selina Bruns), 奥利弗 穆斯霍夫(Oliver Musshoff), 帕斯卡 斯特罗莱因(Pascal Stroehlein)

*IFLA Journal*, 48-4, 661-678

摘要

尽管有许多政策干预,贫困问题仍然存在 受影响最严重的是生活在低收入国家农村地区的群体,这些地区往往由于信息不对称而导致市场失灵 信息通信技术在世界各地偏远地区的广泛发展为消除农村贫困人口的信息障碍带来了巨大潜力 然而,关于信息提供渠道的有效性几乎无迹可寻,这可能是数字化咨询的效果在各地不尽相同的一个原因 本文作者调研了信息需求和有效的信息通信技术提供渠道,目的在于确定信息通信技术如何最高效地为小农户提供服务 另外,作者收集了人口和信息通信技术相关数据,并对柬埔寨的小农户进行了框架实地实验 要求他们构建一个对象,同时使用各种提供渠道获取指导 实验人员利用了不同的回归方法和匹配算法,结果表明,多感官学习法优于所有其他方法

关键词

延伸服务, 教学法, 图像, 音频, 多感官学习法, 贫困

### **Factors Influencing the Use of Agricultural Information by Vietnamese Farmers**

影响越南农民使用农业信息的因素

洪家黄(音译Hung Gia Hoang), 阮闻德(音译Duc Van Nguyen), 道格拉斯 德莱斯代尔(Douglas Drysdale)

*IFLA Journal*, 48-4, 679-690

摘要

本研究探讨了影响越南谷农使用农业信息的因素 研究人员挑选并调查了245名谷农,并将他们分为小型、中型和大型谷农 本文采用描述性统计和推理统计对数据进行分析 结果表明,大型谷农使用了来自优先贸易对象、推广人员、投入品供应商、手机和互联网上的信息 小型谷农从合作社、农民联盟和电视上获取信息 大型谷农能获得更多关于土壤整备、害虫和杂草控制、收割以及市场和投入品价格的信息,而小型谷农可以获得有关无机肥料的信息 回归分析表明,性别特征,农业经验,培训项目和社区组织的参与,互联网和有线电视接入,以及从优先贸易对象、村委会、推广人员、合作社、农民联盟和投入品供应商处获得的信息都对农民使用农业信息产生了显著影响( $\chi^2=140.784, p < .000$ )

关键词

谷农, 因素, 农业信息, 回归分析, 越南

### **Library Makerspace In Turkey: Public And University Libraries**

土耳其的图书馆创客空间 以公共图书馆与高校图书馆为例

艾斯努尔 居内 (Aysenur G nes G ne), 迈赫梅特 卡纳塔 (Mehmet Canatar)

*IFLA Journal*, 48-4, 691-705

摘要

本研究旨在明确土耳其的发展情况, 并展示图书馆提供创客空间服务的质量。作者根据从文化和旅游部获取的数据, 对提供该项服务的土耳其一所高校图书馆和三所公共图书馆进行了研究。其中, 本文在研究范围内对一家公共图书馆进行了详细调查。本文采用定性研究方法, 通过半结构化访谈收集数据, 并根据描述性分析方法进行评估。调查结果表明, 土耳其的图书馆在创客空间服务方面没有取得很大的进展。本文研究的公共图书馆只是提供该项服务, 无法充分实现创客理念。

关键词

图书馆创客空间, 创客空间, 公共图书馆, 高校图书馆

### The library as soft power actor: A review

图书馆的软实力 综述

埃米莉亚 贝尔 (Emilia Cara Bell), 玛丽 凯南 (Mary Anne Kennan)

*IFLA Journal*, 48-4, 706-716

摘要

本文旨在分析图书馆与软实力、公共外交和文化外交等概念之间的关系。作为一项跨学科研究, 本文收集了国际关系和图书情报学两个学科的文獻。通过对这些文獻进行分析, 本文揭示了三个关键缺口。首先, 明确阐述“图书馆与软实力”话题的研究很少。其次, 提到图书馆和软实力的有限的图书情报学文獻很少考虑当代论述。第三, 这些文獻往往隐含着自由制度主义的观点, 忽视了软实力的消极或霸权方面。在人们看来, 软实力与相关的国家利益越来越相关, 因此了解图书馆在国际关系中的作用和影响意义重大, 值得进一步研究。

关键词

软实力, 公共外交, 信息历史, 国际图书馆事业, 图书馆

### The antecedents and consequences of organizational learning in the library: A systematic literature review

图书馆“组织学习”的先例与影响 系统性文獻综述

迪亚 斯利拉哈尤 (Dyah Puspitasari Srirahayu), 阿尼斯 伊利亚娜 (Anis Eliyana), 埃斯蒂 阿努格拉 (Esti Putri Anugrah)

*IFLA Journal*, 48-4, 717-726

摘要

本研究旨在明确图书馆“组织学习”的发展和影响因素。本文采用系统性的文獻综述方法, 分析了20篇研究文章。结果表明, 图书馆“组织学习”由来已久, 也对图书馆产生了相应的影响。本研究针对图书馆“组织学习”提供了一个全面的框架。图书馆管理者可以根据条件和环境, 利用这些结果改善图书馆的组织学习。研究结果也可作为图书馆“组织学习”决策的参考材料。有关图书馆“组织学习”的系统文獻综述少之又少。因此, 本文可以作为一个开始, 可以进行进一步的讨论。

关键词

系统性文獻综述, 组织学习, 图书馆, 先例, 影响

### Framework for Provision of Information to the Visually Impaired Persons in Academic Libraries in Compliance with the Marrakesh Treaty

高校图书馆根据 马拉喀什条约 向视障人士提供信息的框架

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摘要

本研究旨在根据 马拉喀什条约 提出一个向视障人士提供信息的框架。其目标是研究在评估受版权保护的信息时面临的版权相关挑战。制定相关战略, 根据 马拉喀什条约 进一步完善受版权保护信息的获取方式。并根据 马拉喀什条约 提出向视障人士提供信息的框架。研究对象包括有视觉障碍的高校图书馆员和图书馆用户。本文通过访谈的方式收集数据, 并进行主题分析。结果显示, 这些挑战包括缺乏适当的政策以及获取版权许可的高成本等相关问题。完善受版权保护信息的获取的方法包括重新分配图书馆的工作职责、培训所有利益相关方, 并提高各方对 马拉喀什条约 的认识。本文最后提出了执行 马拉喀什条约 的拟议框架。

关键词

### Advocacy of Sustainable Development Goals in Jordanian Academic Libraries

[La promotion des Objectifs de développement durable dans les bibliothèques universitaires jordaniennes]

Faten Hamad, Maha Al-Fadel

*IFLA Journal*, 48–4, 492–509

## Résumé:

Compte tenu de l'importance croissante des Objectifs de développement durable et du nombre limité de bibliothèques publiques en Jordanie, il est important d'examiner le rôle et les pratiques des bibliothèques universitaires dans la promotion des connaissances et aptitudes pouvant contribuer à ces objectifs en Jordanie. Il est également important d'identifier les problèmes susceptibles d'empêcher la réalisation de ces objectifs. Les résultats de cette enquête montrent que les bibliothèques universitaires peuvent considérablement contribuer aux Objectifs de développement durable (M (Moyenne) = 3,53) en fournissant l'accès à des informations à jour (M = 4,16) et en proposant des formations à la maîtrise de l'information (M = 4,03). L'accès aux informations contribue à la qualité de la vie au sein de la société (M = 4,41). Cet article donne aux bibliothécaires universitaires et aux décideurs un aperçu des mesures à prendre afin de promouvoir les connaissances et aptitudes relatives aux Objectifs de développement durable auprès des étudiants et du public jordaniens. L'étude recommande certaines stratégies adaptées, par exemple une collaboration des bibliothèques universitaires avec les institutions gouvernementales et les organismes de santé afin de contribuer à la réalisation des Objectifs de développement durable en Jordanie.

## Mots-clés :

Objectifs de développement durable, ODD, bibliothèque universitaire, défense, agenda des Nations Unies, accès aux informations, Jordanie

**An initial evaluation of UNSW Research Data Management online Training**

**[Évaluation initiale de la formation en ligne à la gestion des données de recherche proposée par l'Université de Nouvelle-Galles du Sud]**

*Adrian Chew, Cherry Zin Oo, Adeline Wong, Joanne Gladding*

*IFLA Journal*, 48–4, 510–522

## Résumé:

En raison du faible engagement à l'égard de la gestion des données de recherche à l'Université de Nouvelle-Galles du Sud en Australie, une formation préliminaire en ligne consacrée à cette gestion a été développée et mise en place à l'intention de tous les nouveaux étudiants en recherche de second cycle universitaire. Cet article montre comment cette formation en ligne a été développée et il en fait une première évaluation, considérée du point de vue des étudiants et

de l'université. En tant que tel, cet article vient compléter la documentation existante sur la formation à la gestion des données de recherche, afin d'aider les institutions et les parties prenantes concernées à concevoir une formation adaptée pour aider les chercheurs et les étudiants en recherche à adopter les meilleures pratiques de gestion des données de recherche. Globalement, la majorité des étudiants (n = 643) étaient satisfaits de la qualité de la formation et l'ont trouvée utile. Les avantages de cette formation pour l'université sont déterminés en établissant un lien cohérent entre les problèmes institutionnels en matière de gestion de données de recherche, la conception de la formation en ligne à cette gestion et les leçons retirées.

## Mots-clés:

Formation à la gestion des données, évaluation, approche participative, étudiants en recherche, développement universitaire

**Exploring Academic staff Engagement in Depositing Research Contents in OAIRs**

**[Dans quelle mesure les universitaires utilisent-t-il les dépôts institutionnels en libre accès pour leurs résultats de recherche]**

*Anna Shangwe Mbughuni Mbughuni, Wulystan Pius Mtega, Andrew Watson Malekani*

*IFLA Journal*, 48–4, 523–537

## Résumé:

Cette étude s'est intéressée à la motivation des universitaires pour déposer un contenu produit localement dans des dépôts institutionnels en libre accès au sein des universités publiques en Tanzanie. L'objectif général de cette étude était de déterminer dans quelle mesure les universitaires étaient disposés à déposer un tel contenu dans ces dépôts. L'étude a utilisé une méthode d'analyse transversale. Les données ont été rassemblées au moyen d'un questionnaire structuré, soumis à un échantillon de 292 membres du personnel universitaire sélectionnés de façon aléatoire. Un échantillonnage dirigé a été utilisé pour sélectionner 14 informateurs clés. Les résultats ont montré que 92,5 % des personnes interrogées connaissaient l'existence de dépôts institutionnels en libre accès et 46,2 % avaient eux-mêmes archivé leurs travaux universitaires dans de tels dépôts. Une connexion Internet défectueuse ou trop lente et une alimentation en électricité instable et laborieuse sont parmi les défis rencontrés par les universitaires lors du téléchargement de leurs travaux. Diverses recommandations sont faites pour accélérer cette procédure.

**Mots-clés:**

Déposer, contenu produit localement, dépôt institutionnel en libre accès, auto-archivage, résultats de recherche, Tanzanie

### **Technological scenarios for the new normality in Latin American academic libraries**

#### **[Stratégies technologiques pour la nouvelle normalité dans les universités d'Amérique latine]**

*Lourdes Feria Basurto, Humberto Martínez-Camacho, Alejandra Calderón-Swain*

*IFLA Journal, 48–4, 538–547*

**Résumé:**

Les stratégies technologiques développées dans les universités d'Amérique latine ont été considérablement modifiées ces derniers mois suite à l'urgence sanitaire provoquée par le COVID-19. La politique de confinement a montré qu'il était nécessaire d'acquérir des aptitudes en matière numérique et de maîtrise des informations afin de s'adapter à l'environnement et aux exigences de la formation à distance, ce qui est indispensable pour un enseignement intégral en ligne. Afin d'observer et de systématiser la transformation de l'environnement technologique dans les bibliothèques universitaires au cours de ces mois, la situation récente a été identifiée en se basant sur une analyse des résultats d'une enquête réalisée dans des pays d'Amérique latine. Ces résultats indiquaient des changements importants en matière d'utilisation des applications numériques, de services, d'aide aux utilisateurs et de formation des bibliothécaires pendant la pandémie, ainsi que d'engagements des bibliothèques à moyen terme.

**Mots-clés:**

Technologies de l'information et de la communication, nouvelle normalité, bibliothèques universitaires, Amérique latine, recherche quantitative, environnement d'apprentissage virtuel

### **Users' Experience of Reference Services in Thai Academic Libraries**

#### **[L'expérience des utilisateurs des services de référence dans les bibliothèques universitaires thaïlandaises]**

*Kittiya Suthiprapa, Kulthida Tuamsuk Tuamsuk*

*IFLA Journal, 48–4, 548–566*

**Résumé:**

Cette étude a analysé l'expérience des utilisateurs des services de référence dans les bibliothèques universitaires thaïlandaises en utilisant la notion mix marketing des 7 P. L'échantillon était composé d'enseignants et d'étudiants de huit universités nationales de recherche en Thaïlande. Les questionnaires ont été retournés par 337 enseignants (86,41 %) et 399 étudiants (100 %). Les résultats de l'étude montrent que, selon les utilisateurs, le personnel (people,  $\beta = .881$ ) est le principal composant de ce mix marketing pour les services de référence, suivi par la distribution ( $\beta = .868$ ), la promotion ( $\beta = .863$ ), le produit ( $\beta = .856$ ), le prix ( $\beta = .854$ ), les processus ( $\beta = .805$ ) et l'environnement matériel ( $\beta = .789$ ). En ce qui concerne le produit, les services les plus importants sont respectivement les services de conseil, la quête d'informations de recherche, la formation et la réponse. Les résultats de cette étude montrent les comportements des utilisateurs à l'égard de divers aspects, comportements dont il peut être tenu compte pour concevoir les services et créer un modèle afin d'innover en matière de services bibliothécaires.

**Mots-clés:**

Services de référence, expériences des utilisateurs, mix marketing, bibliothèques universitaires, Thaïlande

### **Inviting and/or inclusive: A study of the Flemish public library sector**

#### **[Accueillantes et/ou inclusives : une étude du secteur des bibliothèques publiques flamandes]**

*Dennis Mathysen, Ignace Glorieux*

*IFLA Journal, 48–4, 567–579*

**Résumé:**

Une comparaison des résultats de deux études de grande envergure menées en Flandre en 2004 et en 2018 montre que le secteur des bibliothèques publiques flamandes a su s'adapter avec succès à des circonstances difficiles, notamment une rigueur budgétaire croissante et la numérisation systématique de la société. Cependant, il est aussi évident que le nombre de visiteurs a baissé dans les bibliothèques flamandes depuis vingt ans, particulièrement en ce qui concerne les visiteurs ayant un plus faible niveau d'éducation, ce qui est préoccupant. Dans cet article, les auteurs présentent un ensemble d'analyses exploratoires visant à déterminer combien de bibliothèques publiques ayant participé à leur étude étaient considérées comme nettement plus (ou nettement moins) « accueillantes » par des sous-groupes de visiteurs spécifiques (classés par âge, sexe, niveau d'éducation, etc.). En



outre, certaines analyses de régression évoquées montrent que les caractéristiques des bibliothèques ont un effet positif sur la fréquentation de deux groupes sous-représentés parmi les utilisateurs des bibliothèques flamandes : les hommes et les personnes à faible niveau d'instruction.

Mots-clés:

Étude auprès des utilisateurs, inclusion, accueil, niveau d'éducation, efficacité

### **Management of e-resources in academic libraries in Ghana: Copyright implications**

**[Gestion des ressources numériques dans les bibliothèques universitaires du Ghana : implications des droits d'auteur]**

*Theresa Larteley Adu, Thomas B Van der Walt*

*IFLA Journal, 48–4, 580–597*

Résumé:

Cette étude examine les problèmes relatifs aux droits d'auteur dans la gestion des ressources électroniques au sein des bibliothèques universitaires ghanéennes. Quarante-sept employés et directeurs de quatre bibliothèques universitaires ont été interrogés à l'aide de questionnaires et d'interviews qualitatives, dans le cadre d'une approche séquentielle utilisant diverses méthodes afin de générer des données pour cette étude. Les conclusions montrent que dans ces quatre bibliothèques, des problèmes de droits d'auteur se sont posés pour proposer un apprentissage à distance, des cours en ligne et des réserves électroniques. Toutes les personnes interrogées ont déclaré qu'elles-mêmes ou leurs collègues avaient reçu des questions du corps enseignant relatives aux problèmes de droits d'auteur. Cependant, les bibliothécaires ont indiqué que la bibliothèque n'avait pas été consultée et que les enseignants proposant des cours en ligne ou des programmes de formation à distance n'avaient pas collaboré avec eux ; au contraire, c'est le service postant le matériel qui a dû prendre des décisions au sujet des droits d'auteur portant sur l'usage de ressources numériques pour l'apprentissage à distance, les cours en ligne ou les réserves électroniques. Cela ne laisse rien augurer de bon pour la gestion des droits d'auteurs des ressources numériques dans les bibliothèques universitaires du Ghana.

Mots-clés:

Bibliothèques universitaires, problèmes de droits d'auteur, copyright, programmes de formation à distance, gestion des ressources électroniques, Ghana, cours en ligne

### **Knowledge Mapping and Visualization of Personal Information Management Literature, 1988-2020**

**[Modélisation des connaissances et visualisation de la documentation sur la gestion des informations personnelles, 1988-2020]**

*Williams Nwagwu*

*IFLA Journal, 48–4, 598–621*

Résumé:

Cette étude a été conçue pour examiner la structure de la documentation en matière de gestion des informations personnelles portant sur la période de 1988 à 2020, en modélisant les auteurs et les mots-clés des index. L'article examine également le volume, la quantité et la croissance de cette documentation pendant cette période. Le 18 février 2021, une recherche a été effectuée dans la base de données Scopus avec l'expression « gestion des informations personnelles » dans les champs des titres, résumés et mots-clés. La croissance annuelle des publications est présentée comme le nombre de documents récupérés chaque année, et le taux d'augmentation annuelle des publications sur le sujet est analysé.

Au total, 887 documents ont été consacrés à ce sujet depuis 1988. Lorsqu'il est question de la gestion des informations personnelles, une attention particulière semble être accordée aux applications technologiques, mais à partir de 2015, les recherches commencent à s'intéresser à des facteurs individuels en rapport avec la gestion des informations personnelles.

Mots-clés:

Gestion des informations personnelles, technologies de l'information, visualisation, maîtrise de l'information

### **A Review of LIS Profession in the Maldives: Development, Challenges, and Opportunities**

**[Une étude du secteur de la bibliothéconomie et des sciences de l'information aux Maldives : développement, défis et opportunités]**

*Gina de Alwis Jayasuriya, Aminath Riyaz, Shaheen Majid*

*IFLA Journal, 48–4, 622–637*

Résumé:

La République des Maldives, pays en développement et petit archipel dans l'océan Indien, a acquis le statut de pays à revenu intermédiaire ayant un indice

de développement humain élevé, et ses infrastructures sur le plan des technologies de l'information et de la communication sont parmi les meilleures d'Asie du Sud-Est. Cependant, le secteur national de la bibliothéconomie, dont la création date d'il y a plus de soixante-dix ans, doit encore progresser au-delà de la phase initiale de développement. Cet article retrace l'émergence de ce secteur dans le pays et attire l'attention sur la multitude de défis auxquels il est confronté. L'article tente aussi d'attirer l'attention des décideurs institutionnels et de les inciter à comprendre et résoudre les difficultés auxquelles fait face le secteur de la bibliothéconomie, en motivant les employés de ce secteur, les établissements d'enseignement, les formateurs professionnels et les professionnels de la bibliothéconomie. Certaines préoccupations sont identifiées et cinq champs d'action principaux sont suggérés, accompagnés de mesures appropriées. Cela peut inspirer d'autres petits pays en développement confrontés à des situations similaires.

Mots-clés:

Bibliothéconomie et sciences de l'information, secteur de la bibliothéconomie et des sciences de l'information, formation en bibliothéconomie et sciences de l'information, formation professionnelle continue, associations bibliothécaires, République des Maldives

### **A Model of Access to Information among Nigeria Rice Farmers**

#### **[Un modèle d'accès aux informations pour les riziculteurs nigériens]**

*Ugonna Benedette Fidelugwuowo Fidelugwuowo*

*IFLA Journal, 48-4, 638-645*

Résumé:

Faciliter l'accès aux informations a été et reste un processus dynamique étant donné l'importance croissante des informations. De nombreuses études se sont intéressées aux caractéristiques ou particularités socio-économiques des agriculteurs susceptibles d'affecter leur accès aux informations. Les études portant sur des modèles prédictifs accusent souvent des retards, en particulier dans les pays en développement. Cet article est consacré à des données sur l'accès aux informations et d'autres particularités rassemblées par le biais d'interviews structurées auprès de 1920 riziculteurs sélectionnés de façon aléatoire au Nigeria. Près de la moitié des riziculteurs (49,0 %) avaient accès à des informations sur la culture du riz et plus de la moitié (64,9 %) appartenaient à un groupement agricole. La

majorité des riziculteurs étaient mariés (90,7 %) et éduqués (73,1 %). Un modèle de régression logistique a montré avec une probabilité de 54,4 % que l'âge, l'éducation et l'appartenance à un groupement agricole étaient des indicateurs d'accès aux informations. Les bibliothécaires devraient déterminer les particularités des riziculteurs et réorganiser les informations afin de permettre d'y accéder facilement.

Mots-clés:

Accès aux informations, riziculteur, modèle prédictif, particularités des paysans, modèle de régression logistique

### **An assessment of health information literacy among women in rural Lake Zone, Tanzania**

#### **[Évaluation de la maîtrise des informations de santé chez les femmes des régions lacustres rurales en Tanzanie]**

*Mohamed Kassim, Faraja Ndumbaro*

*IFLA Journal, 48-4, 646-660*

Résumé:

Cet article présente les résultats d'une étude transversale descriptive menée pour déterminer le niveau de maîtrise des informations de santé des femmes en âge de procréer dans les régions lacustres rurales en Tanzanie. Au total, 349 femmes ont été impliquées dans cette étude, qui a permis de constater que la plupart des femmes de la zone rurale étudiée avaient une faible maîtrise des informations de santé. Les notes totales en matière de maîtrise des informations de santé montrent une moyenne de 42,86 % avec une courbe de distribution normale et des valeurs d'asymétrie (0,172) et d'aplatissement (-0,297) proches de zéro. La relation causale entre la maîtrise des informations de santé et les facteurs socio-démographiques concernant ces femmes indique un effet positif et statistiquement significatif ( $p < ,01$ ) du niveau d'éducation, du revenu, de la détention de moyens de communication et de l'accès à des équipements de santé de ces femmes sur leur niveau de maîtrise des informations de santé. La capacité insuffisante des femmes à accéder, lire, comprendre, évaluer et utiliser les informations de santé est un obstacle à leur acquisition de telles informations. Augmenter la capacité de ces femmes à maîtriser ces informations devrait très probablement augmenter leur condition de santé.

Mots-clés:

Informations de santé, maîtrise de l'information, femmes en âge de procréer, régions lacustres rurales, Tanzanie

### **Information Needs and Delivery Channels: Experimental Evidence from Cambodian Smallholders**

**[Les besoins en informations et les canaux de distribution : preuve expérimentale obtenue auprès de petits exploitants cambodgiens]**

*Selina Bruns, Oliver Musshoff, Pascal Stroehlein*  
*IFLA Journal, 48-4, 661-678*

Résumé:

Malgré de nombreuses interventions politiques, la pauvreté existe toujours. Les individus les plus touchés sont ceux qui vivent dans les zones rurales de pays à faibles revenus, des régions souvent caractérisées par l'asymétrie des informations entraînant des dysfonctionnements du marché. La croissance généralisée des technologies de l'information et de la communication (TIC) dans des régions reculées du monde recèle un énorme potentiel pour supprimer les obstacles en matière d'information pour les ruraux pauvres. Cependant, peu d'éléments démontrent l'efficacité des canaux de distribution, ce qui peut expliquer pourquoi l'impact des conseils en matière numérique peut varier. En recherchant comment les TIC pourraient le mieux profiter aux petits exploitants, les auteurs étudient les besoins en informations et les canaux efficaces de distribution des TIC. Les données sociodémographiques et relatives aux TIC ont été rassemblées et une expérience encadrée sur le terrain a été menée auprès de petits exploitants cambodgiens ; il leur a été demandé de construire un objet tout en utilisant différents canaux de distribution pour les instructions. À l'aide de diverses techniques de régression et d'algorithmes correspondants, l'expérience a montré que les instructions multi-sensorielles surpassaient toutes les autres.

Mots-clés:

Services d'extension, approche didactique, images, audio, apprentissage multi-sensoriel, pauvreté

### **Factors Influencing the Use of Agricultural Information by Vietnamese Farmers**

**[Les facteurs influençant l'utilisation d'informations agricoles par les paysans vietnamiens]**

*Hung Gia Hoang, Duc Van Nguyen, Douglas Drysdale*  
*IFLA Journal, 48-4, 679-690*

Résumé:

Cette étude examine les facteurs influençant l'utilisation d'informations agricoles par les paysans vietnamiens qui cultivent des céréales. Un échantillon de 245 céréaliers vietnamiens a été sélectionné et étudié. Les participants ont été catégorisés en petits, moyens et grands céréaliers. Des statistiques descriptives et déductives ont été utilisées pour analyser les données. Les résultats montrent que les grands céréaliers utilisent les informations fournies par des négociants privilégiés, agents de vulgarisation, fournisseurs d'intrant, téléphones portables et Internet ; les plus petits céréaliers utilisent des informations provenant de coopératives, du syndicat des paysans et de la télévision. Les grands céréaliers ont plus accès aux informations concernant la préparation des sols, la lutte contre les nuisibles et les mauvaises herbes, la récolte et les prix du marché et des intrants, alors que les petits céréaliers ont accès à des informations sur des engrais inorganiques. L'analyse de régression montre que les caractéristiques de sexe, d'expérience en matière de cultures, de participation à des programmes de formation et à des organisations implantées dans la communauté, d'accès à Internet et à la télévision ainsi que les informations obtenues auprès de négociants privilégiés, le comité des communes populaires, les agents de vulgarisation, les coopératives, le syndicat des paysans et les fournisseurs d'intrants influencent considérablement l'utilisation par les céréaliers des informations agricoles ( $\chi^2 = 140.784, p < .000$ ).

Mots-clés:

Céréaliers, facteurs, informations agricoles, analyse de régression, Vietnam

### **Library Makerspace In Turkey: Public And University Libraries**

**[Makerspace dans les bibliothèques publiques et universitaires en Turquie]**

*Aysenur Günes Güne, Mehmet Canatar*  
*IFLA Journal, 48-4, 691-705*

Résumé:

Cette étude a pour but de déterminer l'évolution en Turquie des bibliothèques qui offrent un service d'atelier collaboratif dit « Makerspace » et de déterminer leur qualité. Grâce aux données obtenues auprès du ministère de la Culture et du Tourisme au moment de l'étude, une bibliothèque universitaire et trois bibliothèques publiques dans lesquelles ce service était proposé ont fait l'objet de cette étude. Cependant, une

seule bibliothèque publique a été examinée en détail dans le cadre de l'étude. Des méthodes de recherche qualitative ont été utilisées, et les données rassemblées au moyen d'une technique d'interviews semi-structurées ont été évaluées selon la méthode d'analyse descriptive. D'après les résultats, l'on constate peu de progrès en Turquie en matière de services offerts par le makerspace dans les bibliothèques. Cependant, le fait que les bibliothèques publiques ayant fait l'objet de cette étude n'offraient qu'un seul service montre qu'elles ne peuvent pas réaliser pleinement la philosophie à la base de ces ateliers collaboratifs.

Mots-clés:

Makerspace bibliothécaire, atelier collaboratif, bibliothèque publique, bibliothèque universitaire

### **The library as soft power actor: A review**

#### **[Étude du rôle de la bibliothèque dans le cadre du soft power]**

*Emilia Cara Bell, Mary Anne Kennan*

*IFLA Journal, 48–4, 706–716*

Résumé:

Cette étude narrative s'efforce de comprendre la relation des bibliothèques avec les notions de « soft power » (ou capacité à convaincre et séduire) et de diplomatie publique et culturelle. La nature pluridisciplinaire de l'étude nécessite une approche de recherche qui inclut aussi bien la discipline des relations internationales que celle de la bibliothéconomie et des sciences de l'information. La documentation analysée montre trois lacunes essentielles. Premièrement, il y a très peu de recherches portant explicitement sur le sujet « les bibliothèques et leur soft power ». Deuxièmement, le peu de documents de bibliothéconomie et sciences de l'information portant sur les bibliothèques et leur soft power tient rarement compte du discours contemporain. Troisièmement, les documents ont souvent une perspective institutionnaliste implicitement libérale, qui ignore les aspects négatifs ou hégémoniques du soft power. Étant donné que le soft power a une importance croissante dans la représentation des intérêts nationaux, il est intéressant de comprendre le rôle et l'impact des bibliothèques dans les relations internationales, ce qui justifie des recherches plus poussées.

Mots-clés:

Soft power, capacité à convaincre, diplomatie publique, histoire de l'information, bibliothéconomie internationale, bibliothèques

### **The antecedents and consequences of organizational learning in the library: A systematic literature review**

#### **[Les antécédents et conséquences de l'apprentissage organisationnel dans les bibliothèques : une étude systématique de la documentation]**

*Dyah Puspitasari Srirahayu, Anis Eliyana, Esti Putri Anugrah*

*IFLA Journal, 48–4, 717–726*

Résumé:

Le but de cette étude est de déterminer les développements et facteurs qui affectent l'apprentissage organisationnel dans les bibliothèques. L'étude utilise une méthode d'examen systématique de la documentation en analysant 20 articles de recherche. Les résultats de l'étude indiquent qu'il y a des antécédents et des conséquences de l'apprentissage organisationnel dans les bibliothèques. La recherche offre une structure complète des antécédents et conséquences de cet apprentissage dans les bibliothèques. Les directeurs des bibliothèques peuvent utiliser ces résultats pour améliorer l'apprentissage organisationnel dans leurs bibliothèques en tenant compte des circonstances et de l'environnement. Les résultats peuvent aussi être utilisés comme matériel de réflexion pour décider comment mettre en œuvre l'apprentissage organisationnel au sein de la bibliothèque. Il existe peu d'études systématiques de la documentation portant sur cet apprentissage ; par conséquent, cet article peut être utilisé comme une première étape vers une discussion plus poussée.

Mots-clés :

Étude systématique de la documentation, apprentissage organisationnel, bibliothèques, antécédents, conséquences

### **Framework for Provision of Information to the Visually Impaired Persons in Academic Libraries in Compliance with the Marrakesh Treaty**

#### **[Cadre pour fournir des informations aux aveugles et malvoyants dans les bibliothèques universitaires conformément au Traité de Marrakech]**

*Samuel Macharia Were, Japhet N Otiike, Emily K Bosire*

*IFLA Journal, 48–4, 727–741*

## Résumé:

Cette étude visait à proposer un cadre pour fournir des informations aux aveugles et malvoyants conformément au Traité de Marrakech. Son objectif était d'examiner les défis relatifs aux droits d'auteur pour accéder à des informations protégées par un copyright, d'identifier des stratégies pour améliorer l'accès aux informations protégées par un copyright conformément au Traité de Marrakech, et de proposer un cadre pour fournir des informations aux personnes aveugles et malvoyantes dans les bibliothèques universitaires conformément au Traité de Marrakech. L'étude a porté sur des bibliothécaires universitaires et des utilisateurs de bibliothèques ayant un déficit visuel. Des interviews ont permis de rassembler des données qui ont été analysées de façon thématique. Les résultats montrent que les défis comprennent l'absence de politiques appropriées, ainsi que les coûts élevés et les problèmes qui accompagnent l'autorisation d'accès à un contenu protégé par des droits d'auteur. Les stratégies pour améliorer l'accès à un tel contenu comprennent notamment la réaffectation des rôles dans les bibliothèques, la formation et la sensibilisation des parties prenantes au Traité de Marrakech. L'étude conclut en proposant un cadre pour mettre en œuvre le Traité de Marrakech.

## Mots-clés :

Traité de Marrakech, bibliothèques universitaires, fourniture d'informations, aveugles et malvoyants, déficit visuel, cadre

**Advocacy of Sustainable Development Goals in Jordanian Academic Libraries**  
(Förderung der Ziele zur nachhaltigen Entwicklung in jordanischen Universitätsbibliotheken)

*Faten Hamad, Maha Al-Fadel*

*IFLA Journal, 48–4, 492–509*

## Zusammenfassung:

In Anbetracht der zunehmenden Bedeutung der Ziele für nachhaltige Entwicklung und der begrenzten Anzahl öffentlicher Bibliotheken in Jordanien ist es wichtig, die Rolle und die Praktiken von Universitätsbibliotheken bei der Förderung von Wissen und Fähigkeiten zur Unterstützung der Ziele für nachhaltige Entwicklung in Jordanien zu erforschen. Darüber hinaus gilt es, die Herausforderungen zu untersuchen, die die Verwirklichung der Ziele für nachhaltige Entwicklung behindern könnten. Die Ergebnisse dieser Studie belegen, dass Universitätsbibliotheken

einen wichtigen Beitrag zu den Zielen für nachhaltige Entwicklung leisten können ( $M = 3,53$ ), indem sie Zugang zu relevanten und aktuellen Informationen bieten ( $M = 4,16$ ) und Schulungen zur Informationskompetenz durchführen ( $M = 4,03$ ). Der Zugang zu Informationen trägt zur Lebensqualität der Gesellschaft bei ( $M = 4,41$ ). Dieser Artikel bietet Universitätsbibliothekar\*innen und Entscheidungsträgern Einblicke in die Verbreitung von Maßnahmen zur Förderung von Wissen und Fähigkeiten im Zusammenhang mit den Zielen für nachhaltige Entwicklung unter Studierenden und in der öffentlichen Gemeinschaft in Jordanien. Die Studie empfiehlt einige relevante Strategien, wie die Zusammenarbeit von Universitätsbibliotheken mit Regierungs- und Gesundheitseinrichtungen, um die Verwirklichung der Ziele für nachhaltige Entwicklung in Jordanien zu unterstützen.

## Schlüsselbegriffe:

Nachhaltige Entwicklungsziele, SDGs, Universitätsbibliothek, Förderung, Agenda der Vereinten Nationen, Zugang zu Informationen, Jordanien

**An initial evaluation of UNSW Research Data Management online Training**  
(Eine erste Bewertung der Online-Schulung zum Forschungsdatenmanagement der UNSW)

*Adrian Chew, Cherry Zin Oo, Adeline Wong, Joanne Gladding*

*IFLA Journal, 48–4, 510–522*

## Zusammenfassung:

Als Reaktion auf das geringe Interesse für Forschungsdatenmanagement an der University of New South Wales, Australien, wurde eine Online-Schulung zur Einführung in die Verwaltung von Forschungsdaten entwickelt und für alle neu immatrikulierten Kandidat\*innen für Forschungsstudiengänge (HDR) eingeführt. Dieser Artikel skizziert den Entwicklungsprozess der Online-Schulung zum Forschungsdatenmanagement und liefert eine erste Bewertung der Schulung aus der Sicht der Kandidat\*innen und der Universität. In diesem Sinne knüpft dieser Artikel an die vorhandene Literatur über die Ausbildung im Bereich des Forschungsdatenmanagements an, um Institutionen und Akteure im Bereich des Forschungsdatenmanagements bei der Entwicklung von Schulungsmaßnahmen im Bereich des Forschungsdatenmanagements zu unterstützen, die Wissenschaftlern und Studierenden in der Forschung helfen

sollen, bewährte Verfahren im Bereich des Forschungsdatenmanagements anzuwenden. Insgesamt war die Mehrheit der Kandidat\*innen (n = 643) mit der Qualität der Schulung zufrieden und fand sie hilfreich. Der Nutzen der Schulung für die Universität wird dargestellt, indem die Probleme des institutionellen Forschungsdatenmanagements, das Design der Online-Forschungsdatenmanagement-Schulung und die Ergebnisse zu einem kohärenten Narrativ verbunden werden.

Schlüsselbegriffe:

Datenmanagementschulung, Evaluierung, partizipativer Designansatz, Studierende in der Forschung, akademische Entwicklung

### **Exploring Academic staff Engagement in Depositing Research Contents in OAIRs**

**(Untersuchung zum Engagement des wissenschaftlichen Personals bei der Hinterlegung von Forschungsinhalten in OAIRs)**

*Anna Shangwe Mbughuni Mbughuni, Wulystan Pius Mtega, Andrew Watson Malekani*

*IFLA Journal, 48–4, 523–537*

Zusammenfassung:

Diese Studie untersuchte das Engagement des wissenschaftlichen Personals bei der Hinterlegung von lokal produzierten Inhalten in institutionellen Open-Access-Repositoryn an öffentlichen Universitäten in Tansania. Das allgemeine Ziel dieser Studie war es, festzustellen, inwieweit wissenschaftliches Personal lokal produzierte Inhalte in frei zugänglichen institutionellen Repositoryn hinterlegt. Die Studie wurde als Querschnittsstudie angelegt. Die Datenerhebung erfolgte mit Hilfe eines strukturierten Fragebogens, der 292 wissenschaftlichen Mitarbeitenden vorgelegt wurde, die durch systematische Zufallsstichproben ausgewählt wurden. Für die Auswahl von 14 Schlüsselinformant\*innen wurde eine gezielte Stichprobe verwendet. Die Ergebnisse zeigen, dass 92,5 % der Befragten über das Vorhandensein von frei zugänglichen institutionellen Repositoryn Bescheid wussten und 46,2 % der Befragten ihre wissenschaftlichen Arbeiten selbst in frei zugänglichen institutionellen Repositoryn archiviert hatten. Beim Hochladen seiner Arbeit war das wissenschaftliche Personal jedoch mit Herausforderungen wie schlechten Internetverbindungen, geringen Bandbreiten und einer zeitaufwändigen und instabilen Stromversorgung konfrontiert. Um den Prozess voranzubringen, werden mehrere Empfehlungen ausgesprochen.

Schlüsselbegriffe:

Hinterlegung, lokal produzierte Inhalte, institutionelles Open-Access-Repository, Selbstarchivierung, Forschungsergebnisse, Tansania

### **Technological scenarios for the new normality in Latin American academic libraries (Technologische Szenarien für die neue Normalität in den wissenschaftlichen Bibliotheken Lateinamerikas)**

**Lourdes Feria Basurto, Humberto Martínez-Camacho, Alejandra Calderón-Swain**

*IFLA Journal, 48–4, 538–547*

Zusammenfassung:

Die technologischen Szenarien, die an lateinamerikanischen Universitäten entstanden sind, haben sich in den letzten Monaten durch den internationalen Gesundheitsnotstand aufgrund von COVID-19 erheblich verändert. Die Lockdown-Politik zeigte die Notwendigkeit, digitale und informationstechnische Fähigkeiten zu entwickeln, um sich an das Umfeld und die Anforderungen des Fernunterrichts anzupassen, die für eine integrale Online-Ausbildung erforderlich sind. Um den Wandel des technologischen Umfelds in den wissenschaftlichen Bibliotheken in diesen Monaten zu beobachten und zu systematisieren, wurde die aktuelle Situation auf der Grundlage der Datenanalyse aus einem Fragebogen ermittelt, der in lateinamerikanischen Ländern eingesetzt wurde. Die Ergebnisse zeigen signifikante Veränderungen bei der Nutzung digitaler Anwendungen, Dienstleistungen, Benutzerunterstützung und bibliothekarischer Ausbildung während der Pandemie sowie bei den mittelfristigen Verpflichtungen der Bibliotheken.

Schlüsselbegriffe:

Informations- und Kommunikationstechnologien, neue Normalität, Universitätsbibliotheken, Lateinamerika, quantitative Forschung, virtuelle Lernumgebung

### **Users' Experience of Reference Services in Thai Academic Libraries**

**(Erfahrungen der Nutzer von Auskunftsdiensten in thailändischen Universitätsbibliotheken)**

*Kittiya Suthiprapa, Kulthida Tuamsuk Tuamsuk*

*IFLA Journal, 48–4, 548–566*

**Zusammenfassung:**

Mit dieser Studie sollten die Erfahrungen der Nutzer von Auskunftsdiensten in Universitätsbibliotheken auf der Grundlage des 7P-Modells des Marketing-Mix zu analysiert werden. Die Stichprobe bestand aus Lehrkräften und Studierenden von acht nationalen Forschungsuniversitäten in Thailand. Die Fragebögen wurden von 337 Lehrkräften (86,41 %) und 399 Studierenden (100 %) zurückgesandt. Den Ergebnissen zufolge standen nach Ansicht der Nutzer als wichtigste Komponente des 7P-Marketing-Mix für Referenzdienstleistungen die Menschen (people) ( $\beta = .881$ ) an oberster Stelle, gefolgt von Ort (place) ( $\beta = .868$ ), Werbung (promotion) ( $\beta = .863$ ), Produkt ( $\beta = .856$ ), Preis ( $\beta = .854$ ), Prozess ( $\beta = .805$ ) und physischer Umgebung (physical facilities) ( $\beta = .789$ ). Bei der Betrachtung des Produkts waren die wichtigsten Dienstleistungen die Beratung, die Suche nach Forschungsinformationen, die Anleitung und die Beantwortung von Fragen. Die Ergebnisse dieser 7P-Studie zum Marketing-Mix zeigen die Einstellung der Nutzer zu verschiedenen Aspekten, die in die Gestaltung von Dienstleistungen integriert werden können, und schaffen ein Modell für die Entwicklung innovativer Bibliotheksdienstleistungen.

**Schlüsselbegriffe:**

Auskunftsdienste, Nutzererfahrungen, Marketing-Mix, Universitätsbibliotheken, Thailand

**Inviting and/or inclusive: A study of the Flemish public library sector****(Einladend und/oder inklusiv: Eine Studie über den flämischen öffentlichen Bibliothekssektor)**

*Dennis Mathysen, Ignace Glorieux*

*IFLA Journal, 48–4, 567–579*

**Zusammenfassung:**

Der Vergleich der Ergebnisse zweier groß angelegter Nutzerumfragen, die 2004 und 2018 in Flandern durchgeführt wurden, zeigt, dass sich der flämische öffentliche Bibliothekssektor erfolgreich an schwierige Bedingungen wie die zunehmende Haushaltsknappheit und die allgegenwärtige Digitalisierung der Gesellschaft angepasst hat. Gleichzeitig zeigt sich jedoch, dass die Besucherzahlen in flämischen öffentlichen Bibliotheken in den letzten zwei Jahrzehnten zurückgegangen sind, insbesondere bei Besucher\*innen mit niedrigerem Bildungsniveau, was Anlass zur Sorge gibt. In diesem Artikel geben die Autoren einen Überblick über explorative Analysen, mit denen sie herauszufinden versuchen,

wie viele der öffentlichen Bibliotheken, die an ihrer Studie teilgenommen haben, von bestimmten Untergruppen (Alter, Geschlecht, Bildungsniveau usw.) des Besuchspublikums als deutlich mehr (oder weniger) „einladend“ empfunden wurden. Darüber hinaus werden Regressionsanalysen vorgestellt, die zeigen, welche Bibliotheksmerkmale sich positiv auf den Besuch von zwei unterrepräsentierten Gruppen unter den flämischen Bibliotheksnutzern auswirken: Männer und Personen mit niedrigerem Bildungsniveau.

**Schlüsselbegriffe:**

Nutzerbefragung, Eingliederung, einladend, Bildungsniveau, Wirksamkeit

**Privacy practices in academic libraries in Ghana: Copyright implications****(Datenschutzpraktiken in Universitätsbibliotheken in Ghana: Auswirkungen des Urheberrechts)**

*Theresa Larteley Adu, Thomas B Van der Walt*

*IFLA Journal, 48–4, 580–597*

**Zusammenfassung:**

Diese Studie untersuchte die urheberrechtlichen Fragen im Zusammenhang mit der Verwaltung von E-Ressourcen in Universitätsbibliotheken in Ghana. Siebenundvierzig Bibliotheksmitarbeitende und -leitende aus vier Universitätsbibliotheken wurden mit Hilfe von Fragebögen und qualitativen Interviews in einem sequenziellen Mixed-Methods-Ansatz befragt, um Daten für diese Studie zu sammeln. Die Ergebnisse zeigen, dass in allen vier Einrichtungen urheberrechtliche Probleme bei der Bereitstellung von Fernunterricht, Online-Kursen und E-Reserves-Diensten auftraten. Alle Befragten gaben an, dass sie oder ihre Kolleg\*innen von Lehrkräften Fragen zu Urheberrechtsfragen gestellt bekommen haben. Die Bibliotheksfachkräfte gaben jedoch an, dass die Bibliothek nicht konsultiert wurde und die Dozierenden von Online-Kursen oder Fernlehrgängen nicht mit den Bibliothekaren zusammenarbeiteten; vielmehr traf die Abteilung, die die Materialien bereitstellte, die urheberrechtlichen Entscheidungen über die Nutzung digitaler Ressourcen für Fernlehrgänge, Online-Kurse oder E-Reserves. Und dies verheißt nichts Gutes für das Management der Urheberrechte an elektronischen Ressourcen in Universitätsbibliotheken in Ghana.

**Schlüsselbegriffe:**

Universitätsbibliotheken, Urheberrechtsfragen, Fernstudienprogramme, Management elektronischer Ressourcen, Ghana, Online-Kurse

## **Knowledge Mapping and Visualization of Personal Information Management Literature, 1988-2020**

### **(Knowledge Mapping und Visualisierung von Literatur zum Personal Information Management 1988-2020)**

*Williams Nwagwu*

*IFLA Journal, 48–4, 598–621*

Zusammenfassung:

Ziel dieser Studie war es, die Struktur der Literatur zum Thema Personal Information Management im Zeitraum 1988-2020 anhand der Zuordnung von Autoren- und Indexierungsstichworten zu untersuchen. Der Artikel befasst sich auch mit dem Umfang, der Menge und dem Wachstum der Literatur zum persönlichen Informationsmanagement in diesem Zeitraum. Dazu wurde die Scopus-Datenbank am 18. Februar 2021 mit den Begriffen „Personal Information Management“ im Titel, in der Zusammenfassung und in den Schlagwortfeldern durchsucht. Der jährliche Zuwachs an Veröffentlichungen wird als Anzahl der jährlich abgerufenen Dokumente dargestellt, und die jährliche Wachstumsrate der Veröffentlichungen zu diesem Thema wird analysiert. Seit 1988 wurden insgesamt 887 Dokumente zu diesem Thema verfasst. Das Hauptaugenmerk bei der Behandlung des Problems des persönlichen Informationsmanagements scheint auf technologischen Anwendungen zu liegen, seit 2015 befasst sich die Forschung jedoch auch mit individuellen Faktoren im Zusammenhang mit dem persönlichen Informationsmanagement.

Schlüsselbegriffe:

Personal Information Management, PIM, Informationstechnologie, Visualisierung, Informationskompetenz

## **A Review of LIS Profession in the Maldives: Development, Challenges, and Opportunities**

### **(Ein Überblick über den Beruf in der Bibliotheks- und Informationswissenschaft (LIS) auf den Malediven: Entwicklung, Herausforderungen und Chancen)**

*Gina de Alwis Jayasuriya, Aminath Riyaz, Shaheen Majid*

*IFLA Journal, 48–4, 622–637*

Zusammenfassung:

Die Republik Malediven, ein kleiner Inselentwicklungsstaat im Indischen Ozean, hat den Status eines

Landes mit gehobenem mittlerem Einkommen und hoher menschlicher Entwicklungsstufe erreicht und verfügt über eine der stärksten Informations- und Kommunikationstechnologie-Infrastrukturen in Südasien. Der Bereich der Bibliotheks- und Informationswissenschaft des Landes, der vor mehr als sieben Jahrzehnten ins Leben gerufen wurde, ist jedoch noch nicht über die erste Entwicklungsstufe hinausgekommen. In diesem Artikel wird die Entwicklung im Bereich der Bibliotheks- und Informationswissenschaft im Land nachgezeichnet und auf die zahlreichen Herausforderungen hingewiesen, denen er sich stellen muss. Der Artikel ist auch ein Versuch, die Aufmerksamkeit von Entscheidungsträgern in der Regierung zu wecken und sie zu motivieren, die Schwierigkeiten im Bereich der Bibliotheks- und Informationswissenschaft zu verstehen und zu lösen, indem sie die Arbeitgeber in diesem Bereich, nämlich Bildungseinrichtungen, Berufsausbilder und Fachleute im Bereich der Bibliotheks- und Informationswissenschaft einbeziehen. Es werden einige Sorgen geäußert und fünf zentrale Aktionsbereiche mit zugehörigen Aktionsschritten vorgeschlagen. Dies könnte auch auf andere kleine Entwicklungsländer zutreffen, die mit ähnlichen Szenarien konfrontiert sind.

Schlüsselbegriffe:

Bibliotheks- und Informationswissenschaft, LIS-Beruf, LIS-Ausbildung, berufliche Fortbildung, Bibliotheksverbände, Republik Malediven

## **A Model of Access to Information among Nigeria Rice Farmers**

### **(Ein Modell für den Zugang zu Informationen unter nigerianischen Reisbauern)**

*Ugonna Benedette Fidelugwuowo Fidelugwuowo*

*IFLA Journal, 48–4, 638–645*

Zusammenfassung:

Die Erleichterung des Zugangs zu Informationen war und ist angesichts der wachsenden Bedeutung von Informationen ein dynamischer Prozess. Zahlreiche Studien haben die sozioökonomischen Merkmale oder Eigenschaften der Landwirte untersucht, die den Zugang zu Informationen beeinflussen. Studien zu Vorhersagemodellen sind oft verzögert, insbesondere in Entwicklungsländern. In diesem Artikel wurden Daten über den Zugang zu Informationen und andere Eigenschaften von 1.920 zufällig ausgewählten Reisbauern in Nigeria mittels strukturierter Interviews erhoben. Die Hälfte der Landwirte (49,0 %) hatte Zugang zu Informationen über den Reisanbau, und mehr als die Hälfte (64,9 %) gehörte einer



Bauerngruppe an. Die Mehrheit der Reisbauern war verheiratet (90,7 %) und hat eine Schulbildung genossen (73,1 %). Ein logistisches Regressionsmodell mit einer Vorhersagegenauigkeit von 54,4 % zeigte, dass Alter, Bildung und Zugehörigkeit zu einer Bauerngruppe den Zugang zu Informationen vorher-sagen. Die Bibliothekare sollten die Eigenschaften der Reisbauern ermitteln, damit sie die Informationen für einen leichten Zugang neu zusammenstellen können. Schlüsselbegriffe:

Zugang zu Informationen, Reisbauern, Vorhersage-modell, Eigenschaften der Bauern, logistisches Regressionsmodell

### **An assessment of health information literacy among women in rural Lake Zone, Tanzania**

#### **(Eine Bewertung der Gesundheitskompetenz von Frauen in der ländlichen Lake Zone, Tansania)**

*Mohamed Kassim, Faraja Ndumbaro*

*IFLA Journal, 48–4, 646–660*

Zusammenfassung:

In diesem Artikel werden die Ergebnisse einer deskriptiven Querschnittserhebung vorgestellt, die durchgeführt wurde, um die Gesundheitskompetenz von Frauen im gebärfähigen Alter in der ländlichen Lake Zone in Tansania zu bewerten. Insgesamt nahmen 349 Frauen an der Studie teil. Die Studie ergab, dass die meisten Landfrauen im Untersuchungsgebiet nur über ein geringes Maß an Informationskompetenz im Gesundheitsbereich verfügen. Die Gesamtwerte der Gesundheitskompetenz zeigen einen Mittelwert von 42,86 % mit einer Normalverteilungskurve und geschätzten Werten für Schiefe (0,172) und Wölbung (-0,297) nahe Null. Die kausalen Beziehungen zwischen der Gesundheitskompetenz und den soziodemografischen Faktoren der Frauen deuten auf einen positiven und statistisch signifikanten Einfluss ( $p < .01$ ) des Bildungsniveaus der Frauen, des Einkommens, des Besitzes von Kommunikationsmitteln und des Zugangs zu Gesundheitseinrichtungen in Bezug auf ihr Niveau der Gesundheitskompetenz hin. Die unzureichende Fähigkeit der Frauen, auf Gesundheitsinformationen zuzugreifen, sie zu lesen, zu verstehen, zu bewerten und zu nutzen, ist ein Hindernis für den Erwerb relevanter Gesundheitsinformationen. Die Verbesserung der Gesundheitskompetenz dieser Frauen wird höchstwahrscheinlich zu einer Verbesserung ihrer Gesundheitsergebnisse führen.

Schlüsselbegriffe:

Gesundheitsinformationen, Informationskompetenz, Frauen im gebärfähigen Alter, ländliche Lake Zone, Tansania

### **Information Needs and Delivery Channels: Experimental Evidence from Cambodian Smallholders**

#### **(Informationsbedürfnisse und -kanäle: Experimentelle Beweise von kambodschanischen Kleinbauern)**

*Selina Bruns, Oliver Musshoff, Pascal Stroehlein*

*IFLA Journal, 48–4, 661–678*

Zusammenfassung:

Trotz zahlreicher politischer Maßnahmen besteht weiterhin Armut. Am stärksten betroffen sind Menschen, die in ländlichen Gebieten von Ländern mit niedrigem Einkommen leben, Regionen, die häufig durch Informationsasymmetrien gekennzeichnet sind, die zu Marktversagen führen. Die umfassende Verbreitung von Informations- und Kommunikationstechnologien (IKT) in abgelegenen Gebieten auf der ganzen Welt birgt ein immenses Potenzial für die Überwindung der Informationsbarrieren für die arme Landbevölkerung. Es gibt jedoch nur wenige Belege für die Wirksamkeit der verschiedenen Bereitstellungskanäle, was ein Grund dafür sein könnte, dass die digitale Beratung unterschiedliche Auswirkungen hat. Um herauszufinden, wie Kleinbauern am besten mit IKT versorgt werden können, untersuchten die Autoren den Informationsbedarf und die effektiven IKT-Bereitstellungskanäle. Es wurden soziodemografische und IKT-bezogene Daten erhoben und ein Feldexperiment mit Kleinbauern in Kambodscha durchgeführt, die ein Objekt bauen sollten, während sie verschiedene Kanäle für die Anleitung nutzten. Durch den Einsatz verschiedener Regressionstechniken und Abgleichalgorithmen zeigt das Experiment, dass multisensorische Anweisungen allen anderen überlegen sind.

Schlüsselbegriffe:

Beratungsdienste, Didaktik, Bilder, Audio, multisensorisches Lernen, Armut

### **Factors Influencing the Use of Agricultural Information by Vietnamese Farmers**

#### **(Faktoren, die die Nutzung von landwirtschaftlichen Informationen durch vietnamesische Landwirte beeinflussen)**

*Hung Gia Hoang, Duc Van Nguyen, Douglas Drysdale*

*IFLA Journal, 48–4, 679–690*

Zusammenfassung:

In dieser Studie wurden die Faktoren untersucht, die die Nutzung von landwirtschaftlichen Informationen durch vietnamesische Getreidebauern beeinflussen. Es wurde eine Stichprobe von 245 Getreidebauern ausgewählt und befragt. Die Teilnehmer wurden in kleine, mittlere und große Getreidebauern eingeteilt. Zur Analyse der Daten wurden deskriptive und inferenzielle Statistiken verwendet. Die Ergebnisse zeigen, dass Großbauern Informationen von bevorzugten Händlern, Beratern, Lieferanten von Betriebsmitteln, Mobiltelefonen und dem Internet nutzten, während Kleinbauern Informationen von Genossenschaften, dem Bauernverband und dem Fernsehen verwendeten. Großbauern hatten mehr Zugang zu Informationen über Bodenbearbeitung, Schädlings- und Unkrautbekämpfung, Ernte sowie Markt- und Betriebsmittelpreise, während Kleinbauern Informationen über anorganische Düngemittel erhielten. Die Regressionsanalyse zeigt, dass die Merkmale Geschlecht, landwirtschaftliche Erfahrung, Teilnahme an Schulungsprogrammen und gemeindebasierten Organisationen, Zugang zu Internet und Fernsehen, Informationen von bevorzugten Händlern, dem Volkskomitee der Gemeinde, Beratern, Genossenschaften, dem Bauernverband und Inputlieferanten die Nutzung landwirtschaftlicher Informationen durch die Landwirte signifikant beeinflussen ( $\chi^2 = 140,784$ ,  $p < .000$ ).

Schlüsselbegriffe:

Getreidebauern, Faktoren, landwirtschaftliche Informationen, Regressionsanalyse, Vietnam

### **Library Makerspace In Turkey: Public And University Libraries**

#### **(Makerspaces in Bibliotheken in der Türkei: Öffentliche und Universitätsbibliotheken)**

*Aysenur Günes Güne, Mehmet Canatar*

*IFLA Journal, 48–4, 691–705*

Zusammenfassung:

Mit dieser Studie sollen die Entwicklungen in der Türkei ermittelt und die Qualität der Bibliotheken, die Makerspaces anbieten, aufgezeigt werden. Auf der Grundlage der Daten, die das Ministerium für Kultur und Tourismus zum Zeitpunkt der Studie zur Verfügung stellte, wurden eine Universitätsbibliothek und drei öffentliche Bibliotheken in der Türkei untersucht, in denen diese Dienstleistung angeboten wird. Eine öffentliche Bibliothek wurde

jedoch im Rahmen der Studie eingehender untersucht. Es wurden qualitative Forschungsmethoden angewandt, und die mit der halbstrukturierten Interviewtechnik erhobenen Daten wurden mittels deskriptiver Analyse ausgewertet. Den Ergebnissen zufolge wurden in der Türkei keine großen Fortschritte in Bezug auf die von den Bibliotheken angebotenen Makerspace-Dienste beobachtet. Die Tatsache, dass die in dieser Studie untersuchten öffentlichen Bibliotheken nur eine Dienstleistung anbieten, zeigt jedoch, dass sie die Maker-Philosophie nicht vollständig umsetzen können.

Schlüsselbegriffe:

Makerspace in Bibliotheken, Makerspace, öffentliche Bibliothek, Universitätsbibliothek

### **The library as soft power actor: A review (Die Bibliothek als Soft-Power-Akteur: Ein Überblick)**

*Emilia Cara Bell, Mary Anne Kennan*

*IFLA Journal, 48–4, 706–716*

Zusammenfassung:

In dieser Arbeit geht es darum, das Verhältnis von Bibliotheken zu den Konzepten der Soft Power und der öffentlichen und kulturellen Diplomatie zu verstehen. Aufgrund des interdisziplinären Charakters der Studie musste der Suchansatz sowohl Literatur aus dem Bereich der internationalen Beziehungen als auch aus dem Bereich der Bibliotheks- und Informationswissenschaften umfassen. Die analysierte Literatur zeigt drei wesentliche Lücken auf. Erstens gibt es nur wenige Forschungsarbeiten, die sich explizit mit dem Thema „Bibliotheken und Soft Power“ befassen. Zweitens berücksichtigt die wenige bibliotheks- und informationswissenschaftliche Literatur, die sich mit Bibliotheken und „Soft Power“ befasst, nur selten den zeitgenössischen Diskurs. Und drittens wird in der Literatur häufig eine liberal-institutionalistische Perspektive eingenommen, die negative oder hegemoniale Aspekte von Soft Power außer Acht lässt. Angesichts der Tatsache, dass „Soft Power“ als zunehmend wichtig für die Vertretung nationaler Interessen angesehen wird, ist das Verständnis der Rolle und des Einflusses von Bibliotheken in den internationalen Beziehungen von Bedeutung und bedarf weiterer Forschung.

Schlüsselbegriffe:

Soft Power, öffentliche Diplomatie, Informationsgeschichte, internationales Bibliothekswesen, Bibliotheken

## **The antecedents and consequences of organizational learning in the library: A systematic literature review**

### **(Die Voraussetzungen und Folgen des organisatorischen Lernens in der Bibliothek: Eine systematische Literaturanalyse)**

*Dyah Puspitasari Srirahayu, Anis Eliyana, Esti Putri Anugrah*

*IFLA Journal, 48–4, 717–726*

Zusammenfassung:

Ziel dieser Studie ist es, die Entwicklungen und Faktoren zu ermitteln, die das organisatorische Lernen in Bibliotheken beeinflussen. Die Studie basiert auf einer systematischen Literaturanalyse, bei der 20 Forschungsartikel ausgewertet wurden. Die Ergebnisse der Studie zeigen, dass es Voraussetzungen und Folgen des organisatorischen Lernens in der Bibliothek gibt. Die Untersuchung bietet einen umfassenden Rahmen für die Vorbedingungen und Folgen des organisatorischen Lernens in Bibliotheken. Bibliotheksleiter können diese Ergebnisse nutzen, um das organisatorische Lernen in ihren Bibliotheken in Übereinstimmung mit den Bedingungen und dem Umfeld zu verbessern. Die Ergebnisse können auch als Entscheidungsgrundlage für die Anwendung des organisatorischen Lernens in der Bibliothek genutzt werden. Es gibt nur wenige systematische Literaturübersichten über organisatorisches Lernen in Bibliotheken; daher kann dieser Artikel als Anstoß für weitere Diskussionen dienen.

Schlüsselbegriffe:

Systematische Literaturanalyse, organisatorisches Lernen, Bibliotheken, Voraussetzungen, Folgen

## **Framework for Provision of Information to the Visually Impaired Persons in Academic Libraries in Compliance with the Marrakesh Treaty**

### **(Rahmen für die Bereitstellung von Informationen für Sehbehinderte in Universitätsbibliotheken gemäß dem Vertrag von Marrakesch)**

*Samuel Macharia Were, Japhet N Otike, Emily K Bosire*

*IFLA Journal, 48–4, 727–741*

Zusammenfassung:

Mit dieser Studie sollte ein Rahmen für die Bereitstellung von Informationen für Sehbehinderte im Einklang mit dem Vertrag von Marrakesch

vorgeschlagen werden. Ihre Ziele waren die Untersuchung urheberrechtlicher Herausforderungen beim Zugang zu urheberrechtlich geschützten Informationen, die Ermittlung von Strategien zur Verbesserung des Zugangs zu urheberrechtlich geschützten Informationen in Übereinstimmung mit dem Vertrag von Marrakesch und der Vorschlag eines Rahmens für die Bereitstellung von Informationen für Sehbehinderte in Übereinstimmung mit dem Vertrag von Marrakesch. Die Studie richtete sich an Universitätsbibliothekarinnen und Universitätsbibliothekare und Bibliotheksbenutzer\*innen mit Sehbehinderungen. Die Daten wurden in Interviews erhoben und thematisch ausgewertet. Die Ergebnisse zeigen, dass das Fehlen geeigneter Maßnahmen sowie die hohen Kosten und Probleme beim Zugang zu urheberrechtlicher Zustimmung zu den Herausforderungen gehören. Strategien zur Verbesserung des Zugangs zu urheberrechtlich geschützten Informationen sind unter anderem die Neuverteilung der Aufgaben in Bibliotheken, Schulungen und die Sensibilisierung aller Beteiligten für den Vertrag von Marrakesch. Die Studie schloss mit einem Vorschlag für einen Rahmen zur Umsetzung des Vertrags von Marrakesch.

Schlüsselbegriffe:

Vertrag von Marrakesch, Universitätsbibliotheken, Informationsversorgung, Sehbehinderte, Rahmen

## **Advocacy of Sustainable Development Goals in Jordanian Academic Libraries**

*Faten Hamad, Maha Al-Fadel*

*IFLA Journal, 48–4, 492–509*

### **Пропаганда Целей устойчивого развития в Иорданских академических библиотеках Фатен Хамад, Маха Аль-Фадель**

*Журнал ИФЛА, 48–4, 492–509*

Аннотация:

Ввиду возросшей значимости целей в области устойчивого развития и ограниченного числа публичных библиотек в Иордании важно изучить роль и практику академических библиотек в распространении знаний и навыков для поддержания данных целей в области устойчивого развития в Иордании. В статье подчеркивается важность изучения проблем, которые могут помешать достижению этих целей в области устойчивого развития. Результаты данного исследования подтверждают тот факт, что академические библиотеки могут внести значительный вклад в достижение целей устойчивого развития ( $M = 3,53$ ), предоставляя доступ к релевантной и актуальной информации ( $M = 4,16$ ) и проводя обучение

информационной грамотности ( $M = 4,03$ ). Доступ к информации способствует повышению качества жизни общества ( $M = 4,41$ ). Эта статья дает представление академическим библиотекарям и лицам, принимающим решения, о мерах по распространению знаний и навыков, связанных с целями устойчивого развития, среди студентов и общественности Иордании. В исследовании рекомендуются некоторые соответствующие стратегии, такие как сотрудничество академических библиотек с правительственными учреждениями и учреждениями здравоохранения для поддержания реализации целей устойчивого развития в Иордании.

Ключевые слова:

Цели устойчивого развития, ЦУР, академическая библиотека, пропаганда, Повестка дня Организации Объединенных Наций, доступ к информации, Иордания

### **An initial evaluation of UNSW Research Data Management online Training**

Adrian Chew, Cherry Zin Oo, Adeline Wong, Joanne Gladding

*IFLA Journal*, 48–4, 510–522

**Первоначальная оценка онлайн-обучения UNSW по управлению исследовательскими данными**

Эдриан Чу, Черри Зин Оо, Аделине Вонг, Джоанна Глэддинг

Журнал ИФЛА, 48–4, 510–522

Аннотация:

В ответ на низкий уровень вовлеченности в управление исследовательскими данными в Университете Нового Южного Уэльса, Австралия, разработали вводный онлайн-тренинг по управлению исследовательскими данными, распространенный на всех вновь поступивших кандидатов для получения высшего образования. В этой статье уделяется внимание разработке онлайн-тренинга по управлению исследовательскими данными и дается первоначальная оценка тренинга с точки зрения кандидатов и университета. Таким образом, эта статья дополняет существующую литературу по обучению управлению исследовательскими данными, чтобы помочь учреждениям и заинтересованным сторонам в управлении исследовательскими данными в разработке тренинга по управлению исследовательскими данными, с целью помочь исследователям и студентам, занимающимся научной работой, внедрить лучшие практики управления. В целом,

большинство кандидатов ( $n = 643$ ) были удовлетворены качеством обучения и сочли его полезным. Преимущества, которые обучение принесло университету, определяются путем увязки проблем управления данными институциональных исследований, дизайна онлайн-тренинга по управлению данными исследований и результатов в последовательный рассказ.

Ключевые слова

Обучение управлению данными, оценка, совместный подход к проектированию, студенты-исследователи, академическое развитие

### **Exploring Academic staff Engagement in Depositing Research Contents in OAIRs**

Anna Shangwe Mbughuni Mbughuni, Wulystan Pius Mtega, Andrew Watson Malekani

*IFLA Journal*, 48–4, 523–537

**Изучение участия профессорско-преподавательского состава в размещении материалов исследований в институциональных хранилищах с открытым доступом**

Анна Шангве Мбууни Мбууни, Вулистан Пиус Мтега, Эндрю Уотсон Малекани

Журнал ИФЛА, 48–4, 523–537

Аннотация:

В этом исследовании изучалось участие профессорско-преподавательского состава в размещении контента местного производства в институциональных хранилищах открытого доступа в государственных университетах Танзании. Общая цель этого исследования состояла в том, чтобы установить, в какой степени профессорско-преподавательский состав участвует в размещении контента местного производства в институциональных хранилищах открытого доступа. В исследовании использовался метод поперечного сечения. Данные были собраны с помощью структурированной анкеты, которая была разослана 292 преподавателям, отобранным путем систематической случайной выборки. Целенаправленная выборка была использована для отбора 14 ключевых информантов. Результаты показывают, что 92,5% респондентов знали о наличии институциональных хранилищ открытого доступа, а 46,2% респондентов самостоятельно архивировали свои академические работы в институциональных хранилищах с открытым доступом. Недостаточное подключение к Интернету, низкая пропускная способность, а также

трудоемкое и нестабильное электроснабжение - это проблемы, с которыми столкнулись преподаватели в процессе загрузки своих работ. Автор предлагает несколько рекомендаций для ускорения этого процесса.

Ключевые слова:

Депонирование, контент местного производства, институциональное хранилище с открытым доступом, само-архивирование, результаты исследований, Танзания

### **Technological scenarios for the new normality in Latin American academic libraries**

**Lourdes Feria Basurto, Humberto Martínez-Camacho, Alejandra Calderón-Swain**

*IFLA Journal*, 48–4, 538–547

**Технологические сценарии новой нормальности в латиноамериканских академических библиотеках**

**Лурдес Фериа Басурто, Умберто Мартинез-Камачо, Алехандра Кальдерон-Свейн**

Журнал ИФЛА, 48–4, 538–547

Аннотация:

Технологические сценарии, возникшие в латиноамериканских университетах, существенно изменились в последние месяцы в результате международной чрезвычайной ситуации в области здравоохранения, вызванной эпидемией COVID-19. Политика карантина выявила необходимость развития цифровых и информационных навыков для адаптации к окружающей среде и требованиям дистанционного обучения, необходимого для целостного образования онлайн. Данная ситуация была выявлена на основе анализа данных, полученных из анкеты, использованной в странах Латинской Америки с целью наблюдения и систематизирования трансформации технологической среды в академических библиотеках в течение этих месяцев. Полученные результаты отображают значительные изменения в сфере применения цифровых приложений, услуг, помощи пользователям и обучении библиотекарей во время пандемии, а также обязательства библиотек на средний промежуток времени.

Ключевые слова:

Информационно-коммуникационные технологии, новая нормальность, академические библиотеки, Латинская Америка, количественные исследования, виртуальная среда обучения

### **Users' Experience of Reference Services in Thai Academic Libraries**

**Kittiya Suthiprapa, Kulthida Tuamsuk Tuamsuk**

*IFLA Journal*, 48–4, 548–566

**Опыт пользователей справочных служб в Академических библиотеках Таиланда**

**Киттия Сутхипрапа, Култида Туамсук Туамсук**

Журнал ИФЛА, 48–4, 548–566

Аннотация:

Целью данного исследования был анализ пользовательского опыта справочных служб в академических библиотеках на основе концепции маркетингового комплекса 7Ps. Выборку составили преподаватели и студенты из восьми национальных исследовательских университетов Таиланда. Анкеты были возвращены 337 преподавателями (86,41%) и 399 студентами (100%). Результаты показывают, что компонентом комплекса маркетинга 7Ps, который был наиболее важен для справочных служб по мнению пользователей, были люди ( $\beta = .881$ ), за которыми следовали место ( $\beta = .868$ ), продвижение ( $\beta = .863$ ), продукт ( $\beta = .856$ ), цена ( $\beta = .854$ ), процесс ( $\beta = .805$ ) и физическая среда ( $\beta = .789$ ). В процессе анализа продукта наиболее важными услугами стали консультирование, поиск исследовательской информации, инструктаж и ответы, соответственно. Результаты данного исследования marketing mix 7Ps выявляют отношение пользователей к различным аспектам, которые могут быть интегрированы в дизайн сервиса, что помогает создать модель развития инноваций в обслуживании библиотек.

Ключевые слова:

Справочные службы, пользовательский опыт, маркетинговый комплекс, академические библиотеки, Таиланд

### **Inviting and/or inclusive: A study of the Flemish public library sector**

**Dennis Mathysen, Ignace Glorieux**

*IFLA Journal*, 48–4, 567–579

**Приглашающий и/или инклюзивный: исследование сектора публичных библиотек Фландрии**

**Деннис Матисен, Игнас Глорье**

Журнал ИФЛА, 48–4, 567–579

Аннотация:

Сравнение результатов двух крупномасштабных опросов пользователей, проведенных во Фландрии в 2004 и 2018 годах, показывает, что фламандский

сектор публичных библиотек успешно адаптировался к сложным условиям, таким как ужесточение бюджетных ограничений и повсеместная цифровизация общества. Однако также очевидно, что за последние два десятилетия число посещений фламандских публичных библиотек сократилось, особенно среди посетителей с более низким уровнем образования, что вызывает беспокойство. В этой статье авторы представляют обзор исследовательских анализов, которые проливают свет на вопрос, сколько публичных библиотек, принимавших участие в данном исследовании, были признаны значительно более (или менее) «привлекательными» со стороны конкретных подгрупп (возраст, пол, уровень образования и т.д.) публики, посещающей библиотеки. В исследовании также представлен регрессионный анализ, показывающий, какие особенности библиотек оказывают положительное влияние на посещаемость двух групп фламандских пользователей библиотек, представленных в наименьшем количестве: мужчин и лиц с низким уровнем образования.

Ключевые слова: Опрос пользователей, вовлеченность, привлекательность, уровень образования, эффективность

### **Management of e-resources in academic libraries in Ghana: Copyright implications** **Theresa Larteley Adu, Thomas B Van der Walt**

*IFLA Journal*, 48–4, 580–597

**Управление электронными ресурсами в академических библиотеках в Гане: последствия для авторского права**

**Тереза Лартли Аду, Томас Б. Ван дер Валт**

Журнал ИФЛА, 48–4, 580–597

Аннотация:

В данном исследовании изучались вопросы авторских прав, связанные с управлением электронными ресурсами в академических библиотеках Ганы. Сорок семь сотрудников библиотеки и главных библиотекарей из четырех академических библиотек были опрошены с помощью анкет и качественных интервью в рамках последовательного подхода со смешанными методами для получения данных приводимого исследования. Полученные данные свидетельствуют о том, что во всех четырех учебных заведениях возникали проблемы, связанные с авторскими правами, при предоставлении услуг дистанционного обучения, онлайн-курсов,

а также электронных резервов. Все респонденты заявили, что им или их коллегам преподаватели задавали вопросы, связанные с авторскими правами. Однако профессиональные библиотекари указали, что с библиотекой консультации не проводились, а преподаватели онлайн-курсов или программ дистанционного обучения не сотрудничали с библиотекарями; а департамент, размещающий материалы, принимал решения об авторских правах в отношении использования цифровых ресурсов для дистанционного обучения, онлайн-курсов или электронных резервов. Данная практика не предвещает ничего положительного для управления авторскими правами на электронные ресурсы в академических библиотеках Ганы.

Ключевые слова:

Академические библиотеки, вопросы авторского права, программы дистанционного образования, управление электронными ресурсами, Гана, онлайн-курсы

### **Knowledge Mapping and Visualization of Personal Information Management Literature, 1988-2020**

**Williams Nwagwu**

*IFLA Journal*, 48–4, 598–621

**Отображение знаний и визуализация литературы по управлению персональной информацией, 1988-2020 годы**

**Вильямс Нвагву**

Журнал ИФЛА, 48–4, 598–621

Аннотация:

Данное исследование было разработано для изучения структуры литературы по управлению персональной информацией за период 1988-2020 годов путем сопоставления ключевых слов автора и индекатора. В статье также рассматривается объем, количество и рост наименований литературы по управлению персональной информацией за этот период. 18 февраля 2021 года в базе данных Scopus был проведен поиск по фразе ‘управление персональной информацией’ в полях название, аннотация и ключевое слово. Ежегодный прирост публикаций представлен как количество извлеченных документов каждый год, и анализируются ежегодные темпы роста публикаций по данной теме. С 1988 года по этому вопросу было написано в общей сложности 887 документов. Основное внимание в решении проблемы управления персональной информацией, по-видимому,

уделяется применению технологий, но исследования, начиная с 2015 года, начинают учитывать отдельные факторы, связанные с управлением персональной информацией.

Ключевые слова:

Управление персональной информацией, PIM, информационные технологии, визуализация, информационная грамотность

### **A Review of LIS Profession in the Maldives: Development, Challenges, and Opportunities**

**Gina de Alwis Jayasuriya, Aminath Riyaz, Shaheen Majid**

*IFLA Journal*, 48–4, 622–637

**Обзор профессии LIS на Мальдивах: развитие, проблемы и возможности**

**Джина де Алвис Джаясурия, Аминат Рияз, Шахин Маджид**

*Журнал ИФЛА*, 48–4, 622–637

Аннотация:

Мальдивская Республика - малое островное развивающееся государство в Индийском океане - достигла статуса страны с доходом выше среднего и высоким уровнем гуманитарного развития, а также статуса одной из самых сильных инфраструктур в области информационных и коммуникационных технологий в Южной Азии. Однако сектор библиотечного дела и информатики страны, созданный более семи десятилетий назад, еще не вышел за пределы начальной стадии развития. В этой статье прослеживается становление библиотечного и информационного сектора в стране и уделяется внимание множеству проблем, возникающих с этим. Статья также являет собой попытку привлечь внимание лиц, принимающих решения в правительстве, и побудить их понять и решать проблемы, с которыми сталкивается сектор библиотечного дела и информатики, путем привлечения работодателей в этой области, а также путем привлечения сотрудников образовательных учреждений, профессиональных инструкторов и специалистов в области библиотечного дела и информатики. В данной работе сформулированы некоторые проблемы, а также предлагается пять ключевых областей с соответствующими шагами действий. Результаты данного исследования могут найти применение в других малых развивающихся странах, которые сталкиваются с аналогичными сценариями.

Ключевые слова:

Библиотечное дело и информатика, профессия LIS, образование LIS, непрерывное профессиональное развитие, библиотечные ассоциации, Мальдивская Республика

### **A Model of Access to Information among Nigeria Rice Farmers**

**Ugonna Benedette Fidelugwuowo Fidelugwuowo**

*IFLA Journal*, 48–4, 638–645

**Модель доступа к информации среди нигерийских рисоводов**

**Угонна Бенедетт Фиделугвуowo Фиделугвуowo**

*Журнал ИФЛА*, 48–4, 638–645

Аннотация:

Облегчение доступа к информации было и будет оставаться динамичным процессом в свете ее растущей важности. Во многих исследованиях изучались социально-экономические характеристики или характеристики фермеров, которые влияют на доступ к информации. Исследования моделей для их прогнозирования часто запаздывают, особенно в развивающихся странах. При помощи структурированных интервью были собраны данные у 1920 случайно выбранных фермеров, выращивающих рис в Нигерии. В этой статье собраны данные о доступе к информации и других характеристиках на основе исследования. Половина фермеров (49,0%) имели доступ к информации о выращивании риса, и более половины (64,9%) принадлежали к группе фермеров. Большинство рисоводов состояли в браке (90,7%) и имели образование (73,1%). Модель логистической регрессии с правильным прогнозом в 54,4% показала, что возраст, образование и принадлежность к группе фермеров являются предполагаемыми условиями доступа к информации. Библиотекарям следует изучить образцы поведения рисоводов с целью обеспечения их доступа к информации для удобства пользования ресурсами.

Ключевые слова:

Доступ к информации, рисовод, модель прогнозирования, атрибуты фермеров, модель логистической регрессии

### **An assessment of health information literacy among women in rural Lake Zone, Tanzania**

**Mohamed Kassim, Faraja Ndumbaro**

*IFLA Journal*, 48–4, 646–660

**Оценка информационной грамотности в области здравоохранения среди женщин в сельской озерной зоне, Танзания**

**Мохаммед Кассим, Фараджа Ндумбаро**

*Журнал ИФЛА*, 48–4, 646–660

Аннотация:

В этой статье представлены результаты описательного перекрестного опроса, проведенного для оценки навыков информационной грамотности в области здравоохранения среди женщин детородного возраста в сельской озерной зоне Танзании. В исследовании приняли участие в общей сложности 349 женщин. Исследование показало, что большинство сельских женщин в исследуемом районе имеют низкий уровень информационной грамотности в области здравоохранения. Совокупные баллы информационной грамотности в области здравоохранения указывают на среднее значение 42,86% с нормальной кривой распределения и оценочными показателями асимметрии, близкими к нулю (0,172) и эксцесса (-0,297). Причинно-следственные связи между информационной грамотностью в области здравоохранения и социально-демографическими факторами женщин указывают на положительное и статистически значимое влияние ( $p < 0,01$ ) уровня образования женщин, дохода, владения средствами связи и доступа к медицинским учреждениям на их уровень информационной грамотности в области здравоохранения. Недостаточная способность женщин получать доступ, читать, понимать, оценивать и использовать медицинскую информацию является препятствием для получения ими соответствующей медицинской информации. Повышение навыков информационной грамотности в области здравоохранения у этих женщин, скорее всего, улучшит показатели их здоровья.

Ключевые слова:

Медицинская информация, информационная грамотность, женщины детородного возраста, сельская озерная зона, Танзания

**Information Needs and Delivery Channels: Experimental Evidence from Cambodian Smallholders**

**Selina Bruns, Oliver Musshoff, Pascal Stroehlein**

*IFLA Journal*, 48–4, 661–678

**Информационные потребности и каналы доставки: Экспериментальные данные камбоджийских мелких фермеров**  
**Селина Брунс, Оливер Масхофф, Паскаль Струлейн**

*Журнал ИФЛА*, 48–4, 661–678

Аннотация:

Несмотря на многочисленные предпринимаемые меры политического характера, тема бедности все еще стоит на повестке дня. Наиболее сильно пострадали люди, живущие в сельских районах стран с низким уровнем дохода, регионов, которые часто характеризуются информационной асимметрией, приводящей к краху рынка. Повсеместный рост информационно-коммуникационных технологий (ИКТ) в отдаленных районах по всему миру обладает огромным потенциалом для устранения информационных барьеров сельской бедности. Однако отсутствуют свидетельства эффективности каналов передачи информации, что может быть одной из причин того, что цифровые источники информации отличаются по своему воздействию. Стремясь выяснить, как ИКТ могут наилучшим образом служить мелким фермерам, авторы исследовали информационные потребности и эффективные каналы предоставления ИКТ. В ходе исследования были собраны социально-демографические данные и данные, связанные с ИКТ, а также был проведен рамочный полевой эксперимент с мелкими землевладельцами в Камбодже, которым было предложено построить объект, используя различные способы получения информации. Путем использования различных методов регрессии и алгоритмов сопоставления, экспериментальным образом было установлено, что мультисенсорные инструкции превосходят все остальные.

Ключевые слова:

Услуги по распространению знаний, дидактика, картинки, аудио, мультисенсорное обучение, бедность

**Factors Influencing the Use of Agricultural Information by Vietnamese Farmers**

**Hung Gia Hoang, Duc Van Nguyen, Douglas Drysdale**

*IFLA Journal*, 48–4, 679–690

**Факторы, влияющие на использование сельскохозяйственной информации вьетнамскими фермерами**



### **Хунг Джиа Хоанг, Дук Ван Нгуен, Дуглас Драйсдейл**

Журнал ИФЛА, 48–4, 679–690

Аннотация:

В данном исследовании изучались факторы, влияющие на использование сельскохозяйственной информации вьетнамскими фермерами, выращивающими зерновые культуры. Выборка из 245 фермеров, выращивающих зерновые культуры, была отобрана и опрошена. Участников разделили на мелких, средних и крупных фермеров, занимающихся выращиванием зерновых культур. Для анализа данных были применены описательная статистика и статистика выводов. Результаты показывают, что крупные фермеры использовали информацию от предпочитаемых торговцев, специалистов по распространению знаний, поставщиков сырья, мобильных телефонов и Интернета; мелкие фермеры использовали информацию от кооперативов, союза фермеров и телевидения. Крупные фермеры имели больший доступ к информации о подготовке почвы, борьбе с вредителями и сорняками, сборе урожая, а также рыночных ценах и ценах на сырье, в то время как мелкие фермеры имели доступ к информации о неорганических удобрениях. Регрессионный анализ показывает, что гендерные характеристики, опыт ведения сельского хозяйства, участие в учебных программах и общественных организациях, доступ к Интернету и телевидению, информация, полученная от предпочтительных торговцев, Народного комитета коммуны, работников по распространению знаний, кооперативов, союза фермеров и поставщиков сырья, значительно повлияли на использование фермерами информации относительно ведения

Ключевые слова:

Фермеры, выращивающие зерновые, факторы, сельскохозяйственная информация, регрессионный анализ, Вьетнам

### **Library Makerspace In Turkey: Public And University Libraries**

**Aysenur Günes Güne, Mehmet Canatar**

*IFLA Journal*, 48–4, 691–705

**Библиотечное пространство в Турции: публичные и университетские библиотеки**  
Айсенур Гюнеш Гюне, Мехмет Канатар

Журнал ИФЛА, 48–4, 691–705

Аннотация:

Данное исследование предназначено для определения развития Турции и выявления качества

библиотек, предлагающих услуги мейкерспейса. В свете данных, полученных от Министерства культуры и туризма на момент проведения исследования, были изучены: одна университетская библиотека и три публичные библиотеки, где подобная услуга предлагалась в Турции. Однако в рамках исследования подробно была изучена одна публичная библиотека. Качественные методы использовались в процессе исследования, а данные, собранные с помощью метода полуструктурированного интервью, оценивались с помощью метода описательного анализа. Согласно результатам, в Турции не наблюдается особого прогресса в отношении услуг, предлагаемых библиотечным мейкерспейсом. Однако тот факт, что публичные библиотеки, оцененные в этом исследовании, предлагают только одну услугу, показывает, что они не могут полностью реализовать философию основателя.

Ключевые слова:

Библиотека мейкерспейс, мейкерспейс, публичная библиотека, университетская библиотека

### **The library as soft power actor: A review**

**Emilia Cara Bell, Mary Anne Kennan**

*IFLA Journal*, 48–4, 706–716

**Библиотека как субъект мягкой силы: обзор**  
Эмилия Кара Белл, Мэри Энн Кеннан

Журнал ИФЛА, 48–4, 706–716

Аннотация:

Данный повествовательный обзор преследует цель понять связь библиотек с концепциями мягкой силы и общественной и культурной дипломатии. Междисциплинарный характер исследования требовал, чтобы поисковый подход включал литературу как из области международных отношений, так и из библиотечно-информационных дисциплин. Проанализированная литература выявляет три ключевых недостатка. Во-первых, исследований, непосредственно посвященных теме "библиотеки и мягкая сила", очень мало. Во-вторых, в небольшой литературе по библиотековедению и информатике, посвященной библиотекам и мягкой силе, редко рассматривается современный дискурс. В-третьих, в литературе часто присутствует скрытая либерально-институционалистская точка зрения, игнорирующая негативные или гегемонистские аспекты мягкой силы. Учитывая, что мягкая сила считается все более актуальной для представления национальных интересов, понимание роли и влияния библиотек в международных отношениях имеет важное значение и требует дальнейших исследований.

Ключевые слова:

Мягкая сила, публичная дипломатия, информационная история, международное библиотечное дело, библиотеки

**The antecedents and consequences of organizational learning in the library: A systematic literature review**

**Dyah Puspitasari Srirahayu, Anis Eliyana, Esti Putri Anugrah**

*IFLA Journal*, 48–4, 717–726

**Предпосылки и последствия организационного обучения в библиотеке: систематический обзор литературы**

**Дья Пушпитасари Шрирахаяу, Анис Элияна, Эсти Путри Ануграх**

*Журнал ИФЛА*, 48–4, 717–726

Аннотация:

Целью данного исследования является определение изменений и факторов, влияющих на организационное обучение в библиотеках. В исследовании использовался метод систематического обзора литературы путем анализа 20 научных статей. Результаты исследования показывают, что существуют предпосылки и последствия организационного обучения в библиотеке. Исследование предлагает всеобъемлющую структуру предпосылок и последствий организационного обучения в библиотеках. Руководители библиотек могут использовать эти результаты для улучшения организационного обучения в своих библиотеках в соответствии с условиями и окружающей средой. Результаты также могут быть использованы в качестве материала для рассмотрения при принятии решений о применении организационного обучения в библиотеке. Систематических обзоров литературы по организационному обучению в библиотеках слишком мало; следовательно, эта статья может быть использована в качестве отправной точки для дальнейшего обсуждения.

Ключевые слова:

Систематический обзор литературы, организационное обучение, библиотеки, предпосылки, последствия

**Framework for Provision of Information to the Visually Impaired Persons in Academic Libraries in Compliance with the Marrakesh Treaty**

**Samuel Macharia Were, Japhet N Otike, Emily K Bosire**

*IFLA Journal*, 48–4, 727–741

**Структура предоставления информации лицам с нарушениями зрения в Академических библиотеках в соответствии с Марракешским договором**

**Самюэл Махариа Вере, Яфет Н Отике, Эмили К Босир**

*Журнал ИФЛА*, 48–4, 727–741

Аннотация:

Целью данного исследования явилось предоставление рамочной информации лицам с нарушениями зрения в соответствии с Марракешским договором. Его цели заключались в изучении проблем, связанных с авторскими правами, при наличии доступа к информации, защищенной авторскими правами; определении стратегий улучшения доступа к информации, защищенной авторскими правами, в соответствии с Марракешским договором; и предоставлении рамочной информации лицам с нарушениями зрения в соответствии с Марракешским договором. Исследование было предназначено для университетских библиотекарей и пользователей библиотек с нарушениями зрения. Интервью использовались для сбора данных и были проанализированы тематически. Результаты показали, что проблемы включают в себя отсутствие соответствующей политики и высокие затраты и проблемы, связанные с получением согласия на авторские права. Среди стратегий улучшения доступа к информации, защищенной авторскими правами, указываются следующие: перераспределение ролей в библиотеках, обучение и повышение осведомленности о Марракешском договоре среди всех заинтересованных сторон. Исследование завершилось предложением структуры мер для осуществления Марракешского договора.

Ключевые слова:

Марракешский договор, академические библиотеки, предоставление информации, слабовидящие, рамки