

The Mediating Role of Supply Chain Agility in the Relationship between Absorptive Capacity and Financial Performance

Dr. Saqib Muneer

Department of Economics and Finance,
College of Business Administration
University of Hail, Hail,
Saudi Arabia

Abstract

The main objective of the current study is to investigate the direct impact of the absorptive capacity and supply chain agility on the performance of manufacturing firms in Malaysia. In addition to that the mediating role of supply chain agility in the relationship between absorptive capacity and sound production. The study has used the survey-based methodology and response rate is turned out to be 53 percent. The current research used large sample size, i.e. 231 firms, which is sufficient to perform statistical analysis and to obtain ultimate outcomes, but larger sample sizes can also be employed in future researches to confirm the mediating effect revealed in this study. The SEM-PLS is used to analyze the data. The empirical findings support the supply chain competitiveness study because it inspires to hold both AC and SCA as dynamic capabilities for identifying additional synergies (Khan & Wisner, 2019), concerning a firm's performance improvement. In this study, the data suggest that AC can be reshaped to superior performance via SCA. Various industrial management implications were discussed in this paper. However, these limitations must be considered keeping in view the limitations of this research. Both AC and SCA constructs have been measured from managerial point of view; although they have already been employed in other researches. Therefore, this research could be replicated in future studies using dynamic capabilities measures (Forés & Camisón, 2016). Secondly, the nature of this study is cross-sectional which only suggests existing relationships among model variables. However, there is a further need for a longitudinal analysis to confirm and demonstrate the causality among variables.

Keywords: Supply Chain, Agility, Performance, SEM, Malaysia

Introduction

Business environment in recent times is characterized by continuously evolving global competition, making the achievement of sustainable competitive advantage even more difficult. Several scholars have shown that in today's world, businesses compete each other as supply chains and not as individual business entities (Aslam, Blome, & Roscoe, 2018; Zimmermann et al., 2016). The basic form of a supply chain is the firm, its customers and suppliers. There is an emerging need for supply chains and firms, to quickly react in response to market

changes and to keep their knowledge portfolio and technology up to date, either by adequately managing external knowledge utilization or by carrying out in-house research and development. Supply chain agility (SCA) and absorptive capacity (AC) are the two principal dynamic capabilities and also the powerful sources of achieving competitive advantage. Contrarily, absorptive capacity (AC) is the relevant dynamic capability, since it analyzes the ability of a firm to discover, assimilate, modify and then incorporate this external knowledge to the firm's operations or processes for achieving competitive advantage (Basheer, Hafeez, Hassan, & Haroon, 2018). As a result, the absorptive capacity enables the firm to quickly adapt market changes and become technologically updated with respect to innovation and knowledge perspective.

Moreover, supply chain agility (SCA) refers to the ability of a firm to quickly react in response to unexpected market changes, which is somehow essential for highly dynamic business environments (Chen, 2019; Fayezi, Zutshi, & O'Loughlin, 2015). Several studies have shown that absorptive capacity and agility have positive impact on the organizational performance (Ghobakhloo & Azar, 2018; Mikalef & Pateli, 2017). Keeping in view the ever changing business environment and a radical shift of individual level competition to supply chain level, the SCA and AC have become the critical organizational elements which influence the level of global competitiveness (Khan & Wisner, 2019). The SCA and AC relationship and its influence on the performance of an organization are the understudied areas. Although, significance of knowledge in SCM has also been mentioned by a number of scholars (Huo, Wang, & Yeung, 2017), whereas, other scholars Li and Holsapple (2018) also suggested the need for studying AC's impact on several SC characteristics, e.g. supply chain agility. This relationship has gained considerable importance due to the emerging demand to develop dynamic capabilities for ensuring firm's survival in a global competitive environment. Nowadays, innovation is multidisciplinary and is more open, therefore firms are required to develop coordination with dynamic capabilities in order to give more emphasis on the intangibles' significance in enhancing organizational performance (Hameed, Basheer, & Anwar, 2018). A number of scholars also suggested that for obtaining potential synergies benefits, firm should implement a set of agility practices instead of only a single practice.

Therefore, jointly analyzing AC and SCA dynamic capabilities may better explain the organizational performance instead of studying them separately. On the contrary, AC acts as a basic capability of keeping track of the market changes using external knowledge assimilation and in-house learning based on the past experiences. Absorptive capacity is pertinent in developing firm-agent relationship with a supply chain, since a continuous SC goal is to

circulate and spread good practices. Thus, under this framework, SCA may positively contribute to improve the financial performance and to quickly respond in accordance with the environmental changes by increasing the productivity of absorptive knowledge across the SC. A little empirical evidence is available regarding financial performance and AC's positive relationship; however, it has not been adequately studied within a framework of SC. Also, less research is found on the causal mechanism which may explain the nature of this relationship. Therefore, this paper aims to investigate whether SCA acts as a mediator in the financial performance and AC relationship. For proving this mediating role, SCA is taken as a mechanism to simplify the impact of AC on the firms' performance improvement. The mediating effect of SCA may bring significant managerial implications, as it would help to explain the need to investigate coordination among these two dynamic capabilities that has not been adequately tested but is highly desirable (Forés & Camisón, 2016). Thus, this paper is organized in the following way: in the next section literature review is presented followed by the development of the research hypothesis. The next section includes research methodology and results obtained from the empirical analysis, followed by the discussion of these findings and managerial implications. The last section includes conclusion and study limitations.

Theoretical Framework and hypothesis development

Dynamic capabilities perspective and Resource-based view (RBV)

To develop a theoretical framework, the current study depends on the firm's resource-based view (RBV), and is further enhanced with the capability's perspective, majorly because both RBV and dynamic capabilities perspective facilitate in explaining SCA and AC's competitive implications. Alternatively, RBV is based on the premise that competitive advantage of a firm primarily depends on implementing the resource bundles, that are characterized as rare, valuable, non-substitutable and in-imitable (Carter, Kosmol, & Kaufmann, 2017). Considerable attention has been received by RBV from business management scholars and has also gained popularity in supply chain management and production research fields. Such employed Resource-based view (RBV) for developing a connection among SCM strategies, financial performance, and entrepreneurial SCM competence. The dynamic capabilities on the other hand consider that resource accumulation is not sufficient. Therefore, Fainshmidt, Pezeshkan, and Markowski (2016) stated that firms must develop capabilities in order to stay competitive by integrating, reconfiguring, developing and applying the valuable resources. In addition, innovation is essential to improve financial performance (Hafeez, Basheer, & Rafique, 2018) and to compete, however, alone

innovation management is not a sufficient condition to be successful. According to Leyer, Stumpf-Wollersheim, and Pisani (2017), those dynamic capabilities must also be integrated which would enable firms to develop, expand and reshape resource base. Effective dynamic capabilities also help firm to achieve competitive advantage, through providing a chain of advantages, thereby enabling it to surpass competitors and maintain its competitive position. For instance, developing dynamic capabilities allow a supply chain's speedy reconfiguration and ensure great potential, particularly in the fast-changing and dynamic environment. Similar arguments for AC were found in study, such as, Forés and Camisón (2016).

AC

Tortoriello (2015) were the first ones to introduce the concept of AC. They demonstrated that external knowledge flows cannot provide benefits to companies by merely being exposed to them. Rather, firms should have a certain ability of identifying external knowledge value to fully comprehend and utilize it for commercial usage. Afterwards, other scholars also expanded the initial typology for dimensions, these are: identify, assimilate and utilize external knowledge. Four AC dimensions were also proposed by Ali, Kan, and Sarstedt (2016), these are acquisition, assimilation, transformation, and exploitation of new knowledge, which were further incorporated in studies by a number of scholars. Where acquisition phase refers to new knowledge identification and how knowledge is being transferred across firms; the assimilation phase shows the ability of a firm to use its skills, routines, and resources for assimilation of the obtained knowledge; the transformation phase refers to the in-house and external knowledge combination in accordance with the needs of the firm; and exploitation phase refers to the achievement of organizational goals to gain benefits out of the invested resources and efforts. AC is one of those dynamic capabilities of firm which is not easy to imitate and is a valuable capability since it largely depends on the prior knowledge and each firm's trajectory. In view of Patterson and Ambrosini (2015), AC is a scarce capability which is difficult to replace and imitable by competing firms, thereby enabling firms to achieve competitive advantage. The dimensions of AC include; acquisition, assimilation, modification, and exploitation, these dimensions co-exist and give support to each other, thereby making AC another significant dynamic capability, which improves organizational performance and encourages innovation (Zahra, Waseem, Fiaz, & Farhan). Therefore, the higher the AC the more effectively a firm reacts in response to needs of the customers, by offering adapted or new range of products, and also improve those management practices and routines of a firm which positively contributes in the performance of an organization.

SCA

Supply chain refers to a particular arrangement of firms which work and coordinate within a network that requires constant improvement in their capacity and operations through customer or suppliers. SCA has been receiving considerable attention in SCM and production research because of its significant role in managerial practice. The concept of agility is one of those dynamic capabilities which provide firms the ability to quickly respond and adapt in accordance with the changes across the SC (Khan & Wisner, 2019). Thus, the SCA concept involves customers and supplier's alignment with the firms and also goes beyond a single firm context.

Srinivasan and Swink (2018) studied the relationship among SCA and integration and Prajogo, Toy, and Bhattacharya (2018) did empirical review of SCA studies and also attempted to examine operational performance and SCA relationship. Similar to AS, the supply chain agility is a multi-dimensional and a broader concept which creates a linkage among various SCM disciplines. With the recognition of agility's positive impact, various conceptualization and normative frameworks have been offered by the researchers to propose the relationship between those variables which come under the concept of agility. A study examined agility-related frameworks having both advantages and disadvantages of analyzing SCA study. This study emphasizes on those frameworks which attempt to discover those characteristics a SC must possess in order to be agile, since frameworks having single-firm and internal focus may not have any usefulness in developing a linkage between SCA and AC. This paper adopted He, Jrad, and Sundaram (2015) framework, which has later been adapted by other studies such as Braunscheidel and Suresh (2018). The main features of this framework includes: process integration, market sensitivity, and network based SC and virtual SC. The market sensitivity dimension enables the supply chains to act in accordance to real demand and to better anticipate market threats and opportunities.

Moreover, the virtual supply chain is the one which functions on the basis of obtained information, i.e. by using information technology for online data sharing among suppliers and the buyers (Basheer, Siam, Awn, & Hassan, 2019). In a similar vein, agile SCs tend to develop collaborative networks between the SC members, since higher collaboration allow firms to quickly and effectively respond to market variations. Furthermore, process integration is described as the collaborative working among suppliers and buyers, common systems, shared information, and joint product development. These characteristics in supply chains enable them to become more competitive and quickly adapt with changes in competitive market (Huo et

al., 2017).

Role of SCA as A Mediator in AC and Financial Performance Relationship

RBV always takes account of the firm's knowledge as an important resource for surpassing competitors and achieving competitive advantage. However, various scholars (Huo et al., 2017) have also recognized the significant contribution of firm's knowledge in the SCM. However, not enough studies are available in the literature which could explain the knowledge flow among the members of supply chain, or what effects does new knowledge cause on the SCM (Li & Holsapple, 2018). Therefore, this study aims to analyze whether SCA plays the role of a mediator in the SC and financial performance relationship. It is an important analysis since it may explain the transformation of AC to superior performance, through SCA. Those firms having absorptive capacity (AC) of higher level can more easily achieve superior performance because of the newly acquired, assimilated, modified and use of that knowledge. However, there is still a question that if greater improvement can be achieved in case of more favorable SCA conditions.

Few studies have also analyzed the mediating role of SCA, such as, Li and Holsapple (2018) investigated agility as a mediator between the financial performance and antecedents, i.e. SC organizational initiatives and SC information technology. Chen (2019) also put forward agility as a mediator to create a linkage among competitive business performance and impact of information technology. Prajogo et al. (2018) also analyzed the presence of any mediating effect in the demand side and supply side performance and competence relationship, similarly, the study by Danese and Romano (2013) revealed that fast network supply structure affects the relationship of efficiency performance and customer integration. This study suggests SCA as a dynamic capability, which develops the ability in AC to quickly adapt in response to market changes, which ultimately result in superior performance.

Firms have been facing increased competition, where customer needs and technological advances are changing constantly. Therefore, firms are required to remain updated with these market changes and customer needs as both require constant regeneration. Furthermore, AC allows new knowledge application for enhancing in-house operations. Therefore, firms by developing such capability must renew experience and knowledge for various SC operations, resulting in increased performance and know-how. The areas in which know-how can be developed includes knowledge processes, market knowledge, and knowledge about customer needs.

According to Abualoush, Bataineh, and Alrowwad (2018),

greater AC helps in acquiring updated knowledge about the whole SC. Firstly, greater AC enable firms to quickly adapt and identify customer needs and market changes. Secondly, this newly acquired knowledge may provide precise understanding of all interactions and processes among the members of supply chain, thereby enabling firms to enhance relationships and timing and the efficiency and effectiveness of internal processes throughout the supply chain. In addition, firms also become able to remain technologically updated which is important for the supply chain agility (SCA). Thus, the study proposed that:

H1: ABSC has significant Impact on the financial performance

H2: ABSC has significant impact on the supply chain agility.

H3: Supply chain agility has significant Impact on the financial performance.

H4: Supply chain agility mediates the relationship between ABSC and financial performance.

Methodology

The Mann-Whitney U-tests revealed no significant difference among two groups i.e. indicators of study constructs and demographic variables, indicating that non-response bias has not been an important area of concern in this research. Non-response bias was also examined by assessing if there is any difference between respondents and non-respondents but failed to find any significant difference either in case of performance or demographic variables ($p > 0.05$) (according to SABI database). Therefore, after reviewing the literature, the questionnaire was further elaborated.

In our research model, the two theoretical constructs comprise of latent variables, for which indirect measures are required. AC and SCA were operationalized by extracting items of the survey from Ali and Park (2016) scales, respectively. For AC, four dimensions are included, i.e. three items for acquisition, three items for assimilation, four items for transformation, and four items for exploitation dimension. On the other hand, four SCA dimensions were also included, that is eight items were added for market sensitivity, five items for process integration and network-based integration, and three items for virtual integration. Lastly, for the variable of financial performance, those items were used which indicate competitive position of a firm based on return on assets, market share and return on sales. Afterwards, by taking the services of five experts, the items of the questionnaire were being reviewed, where the three experts belonged to SC industry and the two of them were the researchers. The items were reviewed with a purpose to ensure comprehensive understanding as well as content validity. A seven-point scale, which ranges from 1-7 was

used, where 1 refers strongly disagree and 7 refers strongly agree, to examine the degree to which respondents agree with the items. The number of valid responses is 231 and response rate is 54 percent.

Analysis

Firstly, for current study the finalized research model was presumed to be complex, having several indicator variables and paths. Complex model is a larger model having several latent indicators, for instance, 50 items or above (Jaafar, Noor, & Rasoolimanesh, 2015). Considering the complex nature of this study, PLS-SEM was considered because of its high competence in determining complex relationship (Wamba et al., 2017), thereby deemed suitable for this research. In addition, with limited characteristics of information procedure, this technique can efficiently handle model complexity without the occurrence of any estimation problems (Castaño, Méndez, & Galindo, 2016; Hair, Hult, Ringle, & Sarstedt, 2016). Moreover, using PLS for complex model estimation results in reduction in model complexity and greater (Jaafar et al., 2015). Secondly, this

technique was chosen with a purpose to address small sample size problems, since it does not pose strict requirements regarding sample size and residual distributions, in comparison with other SEM alternative techniques, e.g. covariance-based techniques AMOS and LISREL. Therefore, for this PLS-SEM study having 134 usable responses, PLS successfully managed to get higher statistical power for handling complex and small sample size model in this study(Henseler, Ringle, & Sarstedt, 2015). According to Henseler et al. (2015), the goodness of fit index do not provide suitable results for model validation. Such as, by employing simulated data with PLS path models, the goodness of fit index was found to be unsuitable for the model validation due to its incapability of separating valid from the invalid models (Basheer, Hameed, Rashid, & Nadim; Hair, Sarstedt, & Hopkins, 2014). Therefore, a two-step process was adopted to evaluate the PLS-SEM path results and report following the Henseler et al. (2015) suggestion. In current study, the two-step process comprised of 1) a measurement model assessment and 2) a structural model assessment.

Figure 1: Measurement Model

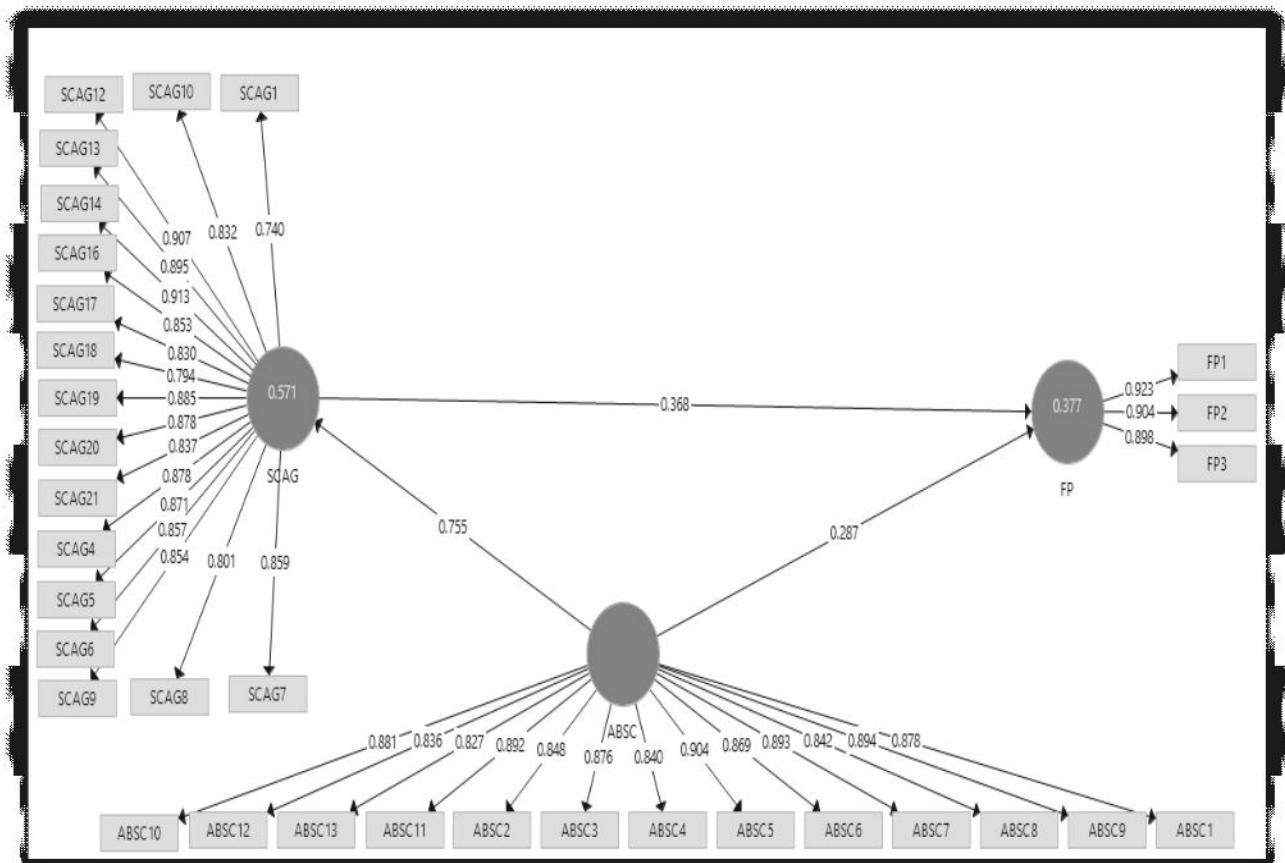


Figure 1 shows that a measurement model assessment consists of certain measures i.e. determining internal consistency reliability, individual item reliability, convergent validity and discriminant validity (Hair et al., 2014; Henseler et al., 2015). Hair et al. (2014) suggested that individual item reliability explains each individual item's reliability. Thus, each construct's outer-loadings were examined to assess the individual item reliability (Hair et al.,

2014). The social science literature has provided various cases of obtaining weak outer loadings (Davicik & Sharma, 2016). All those items for which the outer loadings lie between 0.40-0.70 range, must be omitted if this deletion would result in the improvement of average variance extracted (AVE) and composite reliability, i.e. greater than the recommended range (Hair et al., 2016).

Table 1: Outer loading

	ABSC	FP	SCAG
ABSC10	0.881		
ABSC11	0.892		
ABSC12	0.836		
ABSC13	0.827		
ABSC2	0.848		
ABSC3	0.876		
ABSC4	0.840		
ABSC5	0.904		
ABSC6	0.869		
ABSC7	0.893		
ABSC8	0.842		
ABSC9	0.894		
FP1		0.923	
FP2		0.904	
FP3		0.898	
SCAG1			0.740
SCAG10			0.832
SCAG12			0.907
SCAG13			0.895
SCAG14			0.913
SCAG16			0.853
SCAG17			0.830
SCAG18			0.794
SCAG19			0.885
SCAG20			0.878
SCAG21			0.837
SCAG4			0.878
SCAG5			0.871
SCAG6			0.857
SCAG7			0.859
SCAG8			0.801
SCAG9			0.854
ABSC1	0.878		

According to Henseler et al. (2015) internal consistency reliability shows that at what level a particular scale items measure the same concept. However, the most generally employed internal consistency estimators include composite reliability coefficient and Cronbach alpha coefficient for measuring the organizational research instruments. Therefore, to determine the measure's internal consistency reliability, composite reliability coefficient was obtained. This study preferred composite reliability coefficient over Cronbach alpha for two reasons; firstly, the former provided comparatively less biased reliability estimate than the Cronbach alpha coefficient, since all indicators in Cronbach alpha test were assumed to have equal weights or same loadings (Amaro & Duarte, 2016).

Secondly, unlike composite reliability test, the Cronbach alpha may overestimate or underestimate the scale reliability. On the contrary, composite reliability considers the occurrence of different loadings for the indicators. Therefore, it recognizes and highlights each items' individual loadings and their contribution. On the other hand, convergent validity shows that to what extent, the items precisely explain a particular latent construct (Hair, Hult, Ringle, & Thiele, 2017) as well as correlate to the other measures of the same construct. Thus, through analyzing AVE, convergent validity was determined for each latent construct, following Tzempelikos and Gounaris (2017) recommendation

Table 2: Reliability

	Cronbach's Alpha	rho_A	CR	(AVE)
ABSC	0.973	0.974	0.975	0.754
FP	0.895	0.902	0.934	0.825
SCAG	0.976	0.978	0.978	0.728

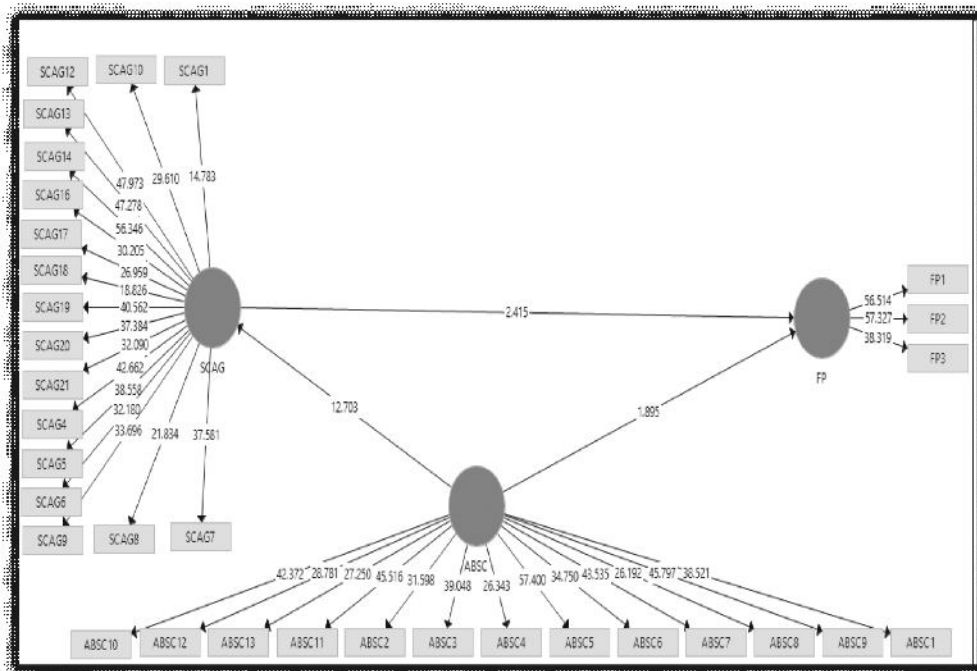
According to Hair et al. (2014) discriminant validity shows that to what extent a particular construct is different from other latent constructs, empirically. Thus, for a purpose of examining discriminant validity, the cross-loadings criterion and AVE criterion by Tzempelikos and Gounaris (2017) were used in this research. On the basis of Tzempelikos and Gounaris (2017) criterion,, the present

study may establish discriminant validity if square roots for the AVE must be above the correlations of other latent constructs. For current study, the squared roots for AVE's were found to be greater than the other latent variables' correlations, as shown in Table 3 , thereby indicating that an adequate level of discriminant validity is achieved.

Table 3: Validity

	ABSC	FP	SCAG
ABSC	0.868		
FP	0.765	0.909	
SCAG	0.755	0.685	0.853

Figure 2: Structural Model



Thus, to check the significance of path coefficients, this current research applied bootstrapping procedure having 5000 samples, for 197 cases, as suggested by Henseler et al. (2015) and Hair et al. (2014). In PLS, applying bootstrapping procedure was essential (Hair et al., 2014) as the data was not assumed to be normally distributed. In

addition, bootstrapping procedure provides better estimates for standard error. Author explained that path coefficients show the relational strength among dependent and independent variables as well as other hypothesized relationships.

Table 4: Reliability

	(O)	(M)	(STDEV)	T Statistics	P Values
ABSC -> FP	0.565	0.568	0.070	1.895	0.000
ABSC -> SCAG	0.755	0.758	0.060	12.703	0.000
SCAG -> FP	0.368	0.373	0.151	2.415	0.007

Table 5: Mediation

	(O)	(M)	(STDEV)	T Statistics	P Values
ABSC -> SCAG -> FP	0.278	0.283	0.118	2.348	0.009

In PLS-SEM, the R-squared criterion can also be used for structural model assessment, since it is an important criteria which also referred as coefficient of determination (Hair et al., 2016; Henseler et al., 2015). It represents that how much variation (percentage) in dependent variable is explained by model's predictor variables (Hair et al., 2016). Hair et al. (2017) suggested that higher R2 value shows greater predictive accuracy and predictor's greater explanatory

power. However, the research context greatly affects the acceptable R2 level (Hair et al., 2014), moreover, the R-squared=0.10 was proposed as an acceptable level (Ringle, Wende, & Becker, 2015). Later, 0.19, 0.33 and 0.67 are recommended as weak, moderate and substantial predictive power, having 0.12-0.30 values for path coefficients.

Table 6: R-square

	R Square
FP	0.377
SCAG	0.571

Conclusion

The current research provides several supply chain management related topics. Firstly, the study demonstrates that the greater the AC of a firm the higher is the performance of an organization, which also confirms the contributions made by other studies, for instance, the study involves the joint-ventures analysis, contribution of the food and chemistry industries, Zubieli, Jones, and Lester (2016) contribution in manufacturing industry and regarding new market entrants. Also, obtaining positive relationship among financial performance and SCA, support those studies (DeGroote & Marx, 2013; Huo et al., 2017) which attempted to explain SCA's influence in achieving competitive advantage.

Our sample explains improved organizational performance in terms of various benefits provided by each SCA

dimension. Therefore, it is the collaboration between supply chain members which enable firms to quickly and effectively react to market changes, particularly because of the level of increased visibility across the SC. In a similar manner, integrating processes and information in SC improves efficiency as well as effectiveness of decision making. In addition, the interaction among the activities of all supply chain agents thus improve the supply chains' overall efficiency and effectiveness. However, this study predominantly contributes by suggesting that SCA may assist in explaining that why positive association exists among AC and financial performance. A key issue in achieving successful supply chain is the knowledge exchange, which calls for the need to analyze knowledge creation and how it evolves through SC members' interaction. Furthermore, clarifying impacts of new knowledge on different SCM areas is also important.

In current research, SCA is proposed as a potential mechanism for reshaping AC efforts to achieve greater performance of an organization. Firms with greater AC seem to have advantages because of new knowledge acquisition, assimilation, reshaping and application in those areas which could benefit SCA. Such as, those firms with higher AC may quickly identify any market changes because of their higher sensitivity of anticipating moves of their competitors, capturing customer needs, or identifying business areas. Similarly, knowledge in areas, like information processing of demand must enable organizations to be effectively focused upon customers, through enhancing SCA's market sensitivity dimension. Absorptive capacity may act as an important element in positively contributing to the SC relationships. Exploiting, assimilating, and reshaping the updated and relevant knowledge obtained from external sources enable firms to better understand their suppliers and customers for enhancing firm-supplier synchronization, coordinating and aligning SC resources, and enhancing the efficiency management and responsiveness throughout the SC. It may also facilitate in integrating information, thereby allowing firms to remain updated about communication technologies and information which is required for exchanging knowledge among suppliers, firms and customers, along the SC. Thus, SCA is considered as a mechanism which enhances organizational performance through AC, as indicated in this study.

Limitation

The present research examined SCA as a mediator in the AC and financial performance relationship. Findings revealed that SCA does not just partially rather totally mediates this relationship. The empirical findings support the supply chain competitiveness study because it inspires to hold both AC and SCA as dynamic capabilities for identifying additional synergies (Khan & Wisner, 2019), concerning a firm's performance improvement. In this study, the data suggest that AC can be reshaped to superior performance via SCA. Various industrial management implications were discussed in this paper; however, these limitations must be considered keeping in view the limitations of this research.

Firstly, Both AC and SCA constructs have been measured from managerial point of view; although they have already been employed in other researches. Therefore, this research could be replicated in future studies using dynamic capabilities measures (Forés & Camisón, 2016). Secondly, the nature of this study is cross-sectional which only suggest existing relationships among model variables, however, there is a further need for a longitudinal analysis to confirm and demonstrate the causality among variables. Current research used large sample size i.e. 231 firms, which is sufficient to perform statistical analysis and to obtain valid

outcomes, but larger sample sizes can also be employed in future researches to confirm the mediating effect revealed in this study. Thirdly, with the increasing globalized supply chains, our study includes sample of international and multinational suppliers, therefore, the empirical findings obtained in this research cannot be generalized for other countries. Thus, a larger sample base of European firms could be used in future studies for generalizing results to other studies. In addition, future research can use new variables to investigate the relationships among financial performance and AC, financial performance and SCA, or SCA as a mediator in the AC-financial performance relationship. Variables related to same company can also be used, such as, organizational structure or corporate culture of a firm. Thus, in order to address those questions that was suggested after obtaining outcomes of this research, for instance: Does certain corporate culture brings higher AC? Do firms become more agile based on certain organizational culture? Is the performance of firms positively influenced by AC? Does greater coordination between firms improve their SCA and AC capabilities? Addressing these questions may act as useful sources for improving SCM globally.

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