

The Role of Supply Chain Antecedents on Supply Chain Agility in SMEs: The Conceptual Framework

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Abstract

Firms must be agile for the reason that being responsive is a crucial competency for them in present global economy. Organizations that are agile happen to be more successful. The agility of an organization is dependent on the agility of its supply chain. The main aim of this paper is to give a new dimension in explaining how Trust, Information Technology (IT) and agility can create sustained competitive advantage for firms and develop an integrated framework to facilitate this. For the literature review of the related academic articles for the previous studies has been taken by international journals in Logistics, Supply Chain Management and Operations Management. Achievement of supply chain agility (SCA) is linked to the other organization's resources, namely trust, IT and firm performance that play mediator role between them. IT is considered as a competitive tool by researchers and practitioners. Therefore, it is crucial for managers to apply their firms' IT and trust as lower-order organizational capabilities to improve agility as a higher-order organizational capability. Hence, the current article gives a conceptual framework to ascertain factors which affect SCA and finally firm performance. The findings of this study will present interesting information and insight about how to improve agility in small and medium-size enterprises (SMEs). Moreover, the information presented in this study will be the foundation of future supply chain capability studies. To aid the study, this present study for develop the framework has been used the RBV theory. The paper also proposes the framework for future research in empirical investigation in companies. The study related the gap by developing a framework for measuring SCA, which enables any organization to identify critical success factors for sense and respond to market.

Keywords: Information technology (IT); Resource based view (RBV); Supply chain agility (SCA); trust

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1.0 INTRODUCTION

Agility has been recognized as the one of the most prominent features of coeval Supply Chain Management (SCM) (Lee, 2004). Notwithstanding its importance, there has been little development of theory in the area of SCA. SCA's antecedents, described as the ability of a firm to rapidly adjust its supply chain operations and tactics Gligor and Holcomb (2012), have been mainly directed towards operational level. They stressed that to find out firm SCA Strategic-level antecedents more research is required. The work of Braunscheidel and Suresh (2009) has further been extended, who examined the function of various managerial positions for attaining SCA. Trust as antecedent has been examined by this study and its effect on the ability of IT to improve SCA, this study may help in understanding and eliminating hindrances which negatively affect agility and previous studies have not addressed this issue

(DeGroote, 2011; Liu *et al.*, 2013; Zhao *et al.*, 2011). Consequently, a prime contribution of this paper is the extension of theory by studying SCA strategic-level antecedents. Despite the advantages of agility been broadly recognized across many fields (Christopher, 2000; Van Oyen, 2001; Wilson, 2011; Zhang, 2011), little research covers the effect of IT and trust on firm SCA (Bagheri *et al.*, 2013; Gligor and Holcomb, 2012; Gligor and Holcomb, 2012b; Swafford *et al.*, 2008).

Scholars have called for more research to deeply understand performance results of firm SCA and emphasized the necessity to empirically investigate such outcomes from an efficiency and effectiveness perspective (Gligor and Holcomb, 2012). Therefore, by providing a greater comprehension of ways in which supply chain antecedents impact firm SCA, the paper advances the theory development in this respect. The theoretical lens of the firm's RBV, on which the current research relies, propels the generation of research hypotheses and helps in

developing theoretical model. Few SCM studies have taken into account the size of the organization (Çalıpınar, 2007). Little research, especially among SMEs, has been done to find the link between SCM and performance, as mentioned by Hsu *et al.* (2011) in their study. Evidence from previous researches endorses the idea that SMEs do not execute SCM in the right way; they do not use SCM strategies efficiently and do not choose SCM freely. As a matter of fact, there is a weak relationship between SCM and SMEs (Arend and Wisner, 2005; Gligor, 2013).

Antecedents that improve SCA potentiality have been evaluated in this paper and also trust as an IT antecedent to improve SCA has also been used here, both of which have not been done in previous studies (Lim *et al.*, 2005). On the contrary, antecedent for IT to improve SCA has been used in this study that previously is not studied (DeGroote, 2011; Zhao *et al.*, 2011). To improve SCA, IT and other capabilities are required. IT alone is not enough. An example is trust in supply chain relationships being an important factor for IT (Chen *et al.*, 2011; Chong *et al.*, 2009; Petersen *et al.*, 2005; Ramayah *et al.*, 2008; Sheu *et al.*, 2006).

High level of trust among supply chain partners is the basis for successful supply chain performance (Kwon and Suh, 2004). Trust has been pointed out as one of the major factors which help to achieve strategic alliance success (Krishnan *et al.*, 2006). Trust leads to greater honesty in SC (Chen *et al.*, 2011). It decreases the perceived risks related to opportunistic (Krishnan *et al.*, 2006; Moore, 1998). In supply chain partnerships trust facilitates information flow (Nyaga *et al.*, 2010), stability (Handfield and Bechtel, 2002) and performance (Zaheer *et al.*, 1998). The main reason for failed relationships between the partners is the absence of trust (Hsu *et al.*, 2008). Because of trust supply chain team members can rely on each other (McAllister, 1995).

Additionally, this study examined antecedent factors that can improve and enhance such capabilities that are lower-order capabilities (Liu *et al.*, 2013). On this basis of capabilities' hierarchy, which suggests that the capabilities of lower-order (IT and Trust) can assist an organization to formulate higher-order (SCA) one (Liu *et al.*, 2013). Hence, assuming the IT's importance (Chen and Paulraj, 2004; DeGroote, 2011; Li *et al.*, 2008; Wu *et al.*, 2006) as a SCC antecedent and trust as IT's antecedent (DeGroote, 2011) and SCA (Khan and Pillania, 2008; Kwon and Suh, 2005). Hierarchy of capabilities and SCC perspective have been taken into consideration in this study, a conceptual model has been proposed that explains that how trust and IT (antecedents) as capabilities of lower-order affect capabilities of higher-order, namely SCA (Liu *et al.*, 2013). Internal supply chain of a firm has been focused in this study and supply chain's upstream and downstream actors have been excluded. Literature, research gap, theoretical model and propositions are the next sections that are described below.

■ 2.0 LITERATURE REVIEW

2.1 Small and Medium Size Enterprises (SMEs)

The depended variable in the model for this study addressed the impact of SCA capability on firm performance. The performance concept as well as its role in organizational effectiveness for a long time (Steers, 1977), it still remains one of the thorniest issues to academics as well as to business practitioners (Ravichandran *et al.*, 2009). SCM and the activity of SME alliances and networks supposedly helps SMEs overcome size and resource constraints through increased

innovation, reduced costs and reduced circumstances of uncertainty (Coviello and McAuley, 1999). SCM and the alliances and networks of SMEs also help reduce the casualty rate among these enterprises (Janvier-James, 2012). SCM can be an effective approach to engage SMEs in environmental initiatives based on their relationships within their market and industry (Bayraktar *et al.*, 2009).

SMEs essentially provide specialty manufacturing and support services to large firms (Huin *et al.*, 2002). Unlike large size companies, SMEs differ in terms of their approach to SCM applications. They view SCM as the exertion of power by the larger customers which are managed at arm's length (Quayle, 2003) and are also considered as a dispensable part of a supply chain. Then, the efficiency of SMEs with respect to the implementation of SCM practices becomes vital for better operational performance. This makes it conspicuously critical to derive a composite index to measure their relative efficiency. Based on input and output activities of each firm, relative efficiency index provides invaluable information about the implementation of SCM practices suggesting whether more input is required to achieve a given output or more output with a given input. Knowledge of the relative efficiency of SCM could also help SMEs understand their deficiencies and identify industry leaders to benchmark (Radhakrishnan, 2005).

On the other side, SMEs are now more and more taking part in the global business network participating in many interlinked SC (Thakkar *et al.*, 2008). The reduction of risk to the company is the main advantage. The risks include overall cost and time reduction for the completion of the product or service to meet the needs of the customer; overall additional shared resources that are often limited to SMEs; and developing dependencies that lead to a foundation in the customer base (Sukati *et al.*, 2012; Chen *et al.*, 2011).

Based on previous studies that used many types of firm performance and Many studies have selected a combination of pertinent operational and financial measures to reflect overall organizational performance, this article focuses operational and financial performance for improving firm performance through SCA capabilities. SCM is one of the most effective ways for firms to improve their performance (Ou *et al.*, 2010). Dimensions for firm performance in this article consist of operational and financial performance.

2.2 Developed Conceptual Framework and Propositions

The suggested conceptual framework consists of four variables such as trust, IT, SCA and firm performance. Table 2 shows variables and dimensions that suggest for further research. Therefore, the study set the following propositions for future research.

2.2.1 Relationship Between Trust and Firm Performance

Over three decades ago, Argyris (1964) proposed that trust is important for organizational performance. In recent years, this acknowledgment of the significance of trust in organizational affiliations has developed quickly which is demonstrated by a great number of publications on the topic relevant to both practitioner and academic audiences. In spite of this interest, difficulties in defining and operationalizing trust have hampered the empirical study of its relationship with performance. Although some research has investigated how trust affects group performance and the performance of inter-organizational relationships (Zaheer *et al.*, 1998; Zaheer and Zaheer, 2006).

According to Zaheer and Zaheer (2006), trust has emerged as a central theme in international strategy research from the

middle of 1990s. Researchers from a variety of disciplines and numerous time periods appeared to be agreed that trust is extremely useful to the organizations' operations (Dirks and Ferrin, 2001). In the past decades there has been a resurrection of interest in comprehending the consequences and sources of trust in economic exchanges. This attention has ensued in fresh exploration from a range of disciplinary perceptions which contain social psychology, organizational theory and strategy, business history and economics (Gulati and Sytch, 2008). According to many foreign studies, company's performance is affected by inter-organizational trust, thus it is a very important area for research. The aim of present research is to verify the affiliation amid performance and trust.

The benefits arising from harmonization among partners, according to Gattorna and Berger (2001) involve lower SC cost, improved delivery performance, superior prediction accuracy, inventory reduction, enhanced capacity, greater overall productivity and decrease in fulfillment cycle time.

Wintrobe and Breton (1986) argued that an increase in trust throughout the organization does not necessarily predict a positive effect on performance, because in their article it is contended that the effect of trust on performance depends upon the distribution of the trust. This study, with a competitive advantage as the final objective, will remain unsatisfied if a relationship between final performance and trust is not verified. Therefore, the following proposition is formulated:

Proposition 1: Trust has a positive influence on the Firm Performance

2.2.2 Trust and SCA Connection

Connection between trust and agility has not been touched in literature but strategic flexibility gives a clue. Argument presented by Oosterhout (2010) is that agility can be considered as an enhancement of the strategic flexibility construct. Therefore the connection between trust and strategic flexibility is examined as per the literature. While strategic flexibility and agility are totally separate, the former gives an idea of the relationship between trust and agility. A study by Young-Ybarra and Wiersema (1999) found that strategic flexibility is deeply connected to trust. The authors divided strategic flexibility into modification and exit. Their definition of modification was "the ability of partners to adjust their behaviors or terms of the agreement to changes in the environment or needs of partners". As their definition is closely related to the definition of agility used in the study, there is a possibility that a positive relationship between trust and agility could exist. Figure 2 shows the comparison manufactures that are agile.

Increased costs, lower productivity (McAllister, 1995) and inefficient ways of working could be due to an absence of trust. On the other hand, to respond rapidly to the external environment agile organizations require excellent and quick processes. Hence, lower productivity decrease the agility of organizations. Despite not so much being written in literature about trust and agility, trust appears to be crucial for the development of extended enterprise networks and partnering agility. Furthermore, willingness to share strategic information is a requirement for operational agility (Sambamurthy et al., 2003). Trust between partners result in higher profits, more adaptability and better customer service (Kumar, 1996). By taking into account and the aforementioned effects of trust on strategic flexibility, assumption is that trust will have a positive effect on agility as well.

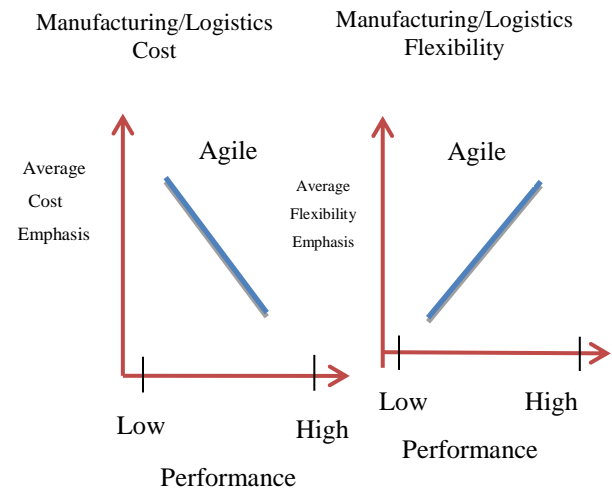


Figure 2 Agility in the cost/flexibility manufacturing. Source: (Gillyard, 2003)

Based on above literature, this study used one of the common dimensions based on the work of Swan and Trawick (1987). They grouped all these dimensions into four major dimensions of trust that consist of dependability/reliability trust, honesty trust, competence trust, and friendliness/benevolence trust. Dependability/reliability trust refers to the expectation that partners will not carry out unprincipled behavior or enhance our susceptibility to the threat of opportunistic behavior. Honesty trust defined as the expectation that partners will do business with fairness and had no motivation to lie. Competence trust mentions the ability of partners to perform their role and duties and finally friendliness/ benevolence trust believe that the other party is caring and wants to do good for us, aside from profit motive (Swan et al., 1985; Abdullah, 2009). Thus, the following proposition is formulated:

Proposition 2: Trust has a positive influence on agility

2.2.3 Relationship Between Trust and IT

Adopting IT can be riskier (Ulu and Smith, 2009). If the particulars of new technology are not clear, most of the times, it will lead to people being insecure (Brashers, 2001). Individuals' trust is dependent on their perception of the quality of a technology. Hence, technology implementation can be thought of as a trusting process. This is because of some trust new products more while others trust less. In societies where trust is high, individuals are more likely to search for new information and adopt new innovations (Hofstede, 2006). According to researchers, taking risk (high level of trust) is directly proportional to the acceptance of new product (Nakata and Sivakumar, 2001) because high level of trust in a society leads to increased flow of information which helps to spread information about a new technology.

Significance of this study can be seen because of the following reasons: Focus on how trust affects IT; identification of effects on trust of technical and social conditions; how these factors relate and their effects; emphasis on the significance of contextual and temporal factors to increase trust. According to McAllister (1995) "the expressive qualities of behavior in organizations should be given more systematic treatment" (p.53). This study acknowledged that trust is very important for successful IT and hence investigated the effect of trust in a

methodical manner. This study adds to the existing literature by applying factors which increase trust. Besides helping projects succeed, this research also helps socially by picking up those factors which help to increase trust in IT. This socio technical view of systems development dwells on factors such as openness, identification, reliability, and competence that are critical to the team members' attributes and behavior (Tawiah, 2012).

On the basis of the foregoing, we propose the following proposition and Figure 1 shows the conceptual framework for this paper.

Proposition 3: Trust has a positive influence on IT

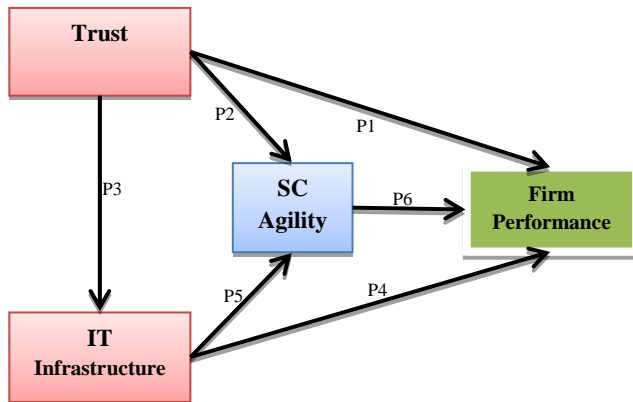


Figure 1 Proposed conceptual framework (see variables in Table 2)

2.2.4 Relationship Between IT and Firm Performance

Firms gradually devoting additional resources in their IT and supply chain communication system departments in order to grow the internal expertise essential to take full advantage of cutting-edge technologies (Philip and Booth, 2001). Though, a greater amount of IT investment does not certainly suggest healthier use of firm resources. Massive expenditures in communication and IT most of the occasions do not essentially bring about expected benefits for a firm (Barney *et al.*, 2001). However, by adopting advanced IT, it is possible that firms effectively improve productivity in their business processes and activities (Bagheri *et al.*, 2012; Stank *et al.*, 2005).

In order for IT to turn into a firm-specific means and enhancing its appropriability as a result, the study claimed that it has to be implemented ahead of competitors or implanted within an organizational process (Barney *et al.*, 2001; Tippins and Sohi, 2003). Implementing advanced IT before their competitors, raises the likelihood that the owning firms obtain some unique advantages. A high level of IT innovation once accumulated is expected to deliver added advantages that would not be accessible to late adopters. IT advancement, to be precise, is a mirror of strategic emphasize of a firm in accepting the most innovative technology so as to keep updated against competitors. IT becomes imperfectly mobile and unique across firms, in such a situation, and it can deliver the adopting firms with special aids via greater productivity against its rivals for as a minimum a certain time period (Philip and Booth, 2001; Wu *et al.*, 2006). Hence, the following proposition is formulated:

Proposition 4: Information technology has a positive effect on firm performance.

2.2.5 Relationship Between IT and SCA

Examining trust as an antecedent and its effect on the ability of IT to improve SCA may provide a deeper understanding in eliminating hindrances which negatively affect agility and ultimately on FP (Chen *et al.*, 2011; Chong *et al.*, 2009; DeGroot, 2011; Petersen *et al.*, 2005; Ramayah *et al.*, 2008; Sheu *et al.*, 2006). Scholars point out that IT is a competitive tool in SCM (Liu *et al.*, 2013). When acting alone, IT, as part of a firm's resource portfolio, may not meet the RBV criteria (Clemons and Row, 1991). Consequently, one of the main research topics in the past few years has been the ways IT as a resource can help in achieving Sustained Competitive Advantage for a firm. Cycle times, efficiency and product delivery time can all be improved by IT (Radjou, 2003).

High-order organizational capabilities, specifically SCA, are unique to firms and are difficult to copy. IT can help in the development of these high-order organizational capabilities if IT is integrated in the SC process of a firm. Sustained competitive advantage is achieved by information benefit gained via the adoption of complex technologies and the synergistic benefits gained through an integrated system (Bharadwaj, 2000). Thus, the application of the firm's IT capabilities to improve high-order capabilities, SCA is very important for managers (Liu *et al.*, 2013).

This article used IT infrastructure as antecedents for SCA to sense and respond to market and IT play mediating role between trust and SCA that has not been investigate in previous study. Therefore the study intends to investigate the following proposition:

Proposition 5: IT has a positive influence on SCA

2.2.6 Relationship Between SCA and Firm Performance

Agility is not a goal in itself, but the necessity to uphold the competitiveness in the uncertainty of the market (Jackson and Johansson, 2003). Logically, an agile organization should stay competitive and improve its performance (Sherehiy *et al.*, 2007). What could be done by gathering data, to sense opportunities and threats, to learn from new knowledge, and respond to (un) predictable events in the internal and external environment? Theoretical evidence is generated from Tallon and Pinsonneault (2011) that the more agile an organization is, the higher the performance of the firm will be.

In particular, in markets where a rapid change rate exists, being agile namely means that a firm responds rapidly to change and gives the firm the opportunity to engage in other actions to control market risk and uncertainty (Sambamurthy *et al.*, 2003). When organizations are able to respond quickly, expand into new markets, and increase the innovation rate, they could reduce costs and experience higher profit (Tallon and Pinsonneault, 2011). Moreover, Locke (1999) stated that new knowledge could lead to a competitive advantage; consequently one could say that agility, which is about involving customers and partners and thus gaining new knowledge, increases productivity.

This study try to use two step for improve firm performance that consist of lower order capabilities and higher order capability. Trust and IT as lower order capability and also as antecedent to higher order capability that namely is SCA and finally to improve firm performance (financial/non-financial) to get competitive advantage. Based on previous studies SCA affected by IT and trust. Table 1 shows the theoretical justification for each variables used in this article. Therefore, the following proposition is formulated:

Proposition 6: The agility of an organization has a positive influence on the performance of an organization.

Table 1 Theoretical background of propositions

Variables	Theoretical Background
Trust → Firm Performance	(Zaheer <i>et al.</i> , 1998); (Zaheer and Zaheer, 2006); (Gulati and Sytch, 2008); (Subramani and Venkatraman, 2003)
Trust → SCA	(DeGroote, 2011); (Oosterhout, 2010); (Young-Ybarra and Wiersema, 1999); (Das and Elango, 1995); (Sambamurthy <i>et al.</i> , 2003)
Trust → IT	(Tawiah, 2012); (Ulu and Smith, 2009); (Nakata and Sivakumar, 2001); (Hofstede, 2006)
IT → Firm Performance	(Barney <i>et al.</i> , 2001); (Philip and Booth, 2001); Wu <i>et al.</i> , 2006); (Tippins and Sohi, 2003)
IT → SCA	(Chen <i>et al.</i> , 2011); (DeGroote, 2011); (Chong <i>et al.</i> , 2009); (Petersen <i>et al.</i> , 2005); (Ramayah <i>et al.</i> , 2008); (Sheu <i>et al.</i> , 2006); (Radjou, 2003)
SCA → Firm Performance	(Tallon and Pinsonneault, 2011); (Sherehiy <i>et al.</i> , 2007); (Sambamurthy <i>et al.</i> , 2003); (Jackson and Johansson, 2003)

2.2.7 The Relationship Between SCA, IT, Trust and Firm Performance

Examining trust and inter-organizational processes as antecedents and their effect on the ability of IT to improve SCA may provide a deeper understanding in eliminating hindrances which negatively affect agility (DeGroote, 2011). RBV assumes that achieving and maintaining sustained competitive advantage is a function of the resources a firm possesses to compete and the key sources of a firm's success are these resources (Mata *et al.*, 1995). Stemming from the assertion that diversity and uniqueness of resources results in variable competence and performance level (Prahalad and Hamel, 1990), researchers have put their efforts in investigating the relationship between resources and better than normal performance.

Additionally, research on manufacturing strategy suggests that development of capabilities is the antecedent to performance (Radhakrishnan, 2005). By putting a focus on SCC, this study tries to assess the strategic part played by SCA capability in considering the capabilities to deliver superior customer value and competitive advantages. SCC and resources are a potential source of competitive advantage and they form the basis of SC strategy (Morash and Lynch, 2002). SCM is one of the better ways for firms to improve their performance (Ou *et al.*, 2010). RBV, being the underlying theory, has been used in this research. RBV suggests that in a firm's strategy its internal competencies (resources and capabilities) can form the basis of competitive advantage (Barney, 2001).

The importance of agility has increased as business' model of thinking has changed the conception that individual businesses no longer compete as solely autonomous entities, but rather as supply chains (Christopher, 2005; Defee and Stank, 2005; Lambert and Cooper, 2000; Stank *et al.*, 2005). It has been acknowledged that firms must align their operations with suppliers and customers to harmonize operations and together attain level of agility better than that of competitors, in order to achieve competitive advantage in the fast paced business environment (Lin *et al.*, 2006). Members of the supply chain must have the capability to quickly align their collective

capabilities so that they can respond to demand and supply changes (Gligor and Holcomb, 2012). Table 2 shows Variables and dimensions of the study.

Table 2 Construct and sub-constructs of framework

Variables	Dimensions
Trust	<ul style="list-style-type: none"> • Dependability/Reliability • Honesty • Competence • Friendliness/Benevolence
Information Technology (IT)	<ul style="list-style-type: none"> • Data Consistency • Cross-Functional Application Integration
Supply Chain Agility (SCA)	<ul style="list-style-type: none"> • Sense to Market Change • Respond to Market Change
Firm Performance	<ul style="list-style-type: none"> • Financial Performance • Organizational Performance / non-financial performance

3.0 METHODOLOGY

Following the methodology successfully used in previous papers (Gunasekaran and Ngai 2005, Van der Vaart and Van Donk, 2008; Fabbe-Costes *et al.* 2008), this study reviews prior research publications. A critical review of the literature on SCA was undertaken in relevant Operations Management (OM) and Supply Chain/Logistics Management journals in order to identify previous studies and lack in the SCA. The number of literature on SCM is growing rapidly (Alfalla-Luque and Medina-Lopez 2009). Therefore, it is very important to focus on only the papers that deal with SCA. The objective of this literature review is not to make a classic synthesis of what has been published on SCA, but to define SCA clearly and to identify antecedents as lower order capabilities to support SCA and finally firm performance with the purpose of developing a conceptual framework for sense and respond to market.

In order to achieve the above objective, 13 major academic journals in Supply Chain/Logistics Management and OM have been identified. The selection of the journals for this study is guided by journal rankings and citation index. As per Harzing (2010), Interfaces, International Journal of Operations and Production Management (IJOPM), International Journal of Production Economics (IJPE), International Journal Production Research (IJPR), Journal of Operations Management (JOM), Management Science (MS), Omega, International Journal of Logistics Management (IJLM), International Journal of Physical Distribution and Logistics Management (IJPDL), Journal of Business Logistics (IJBL), Journal of Supply Chain Management (JSCM) and Supply Chain Management: An International Journal (SCMIJ) are ranked high and referred in the area of OM/SCM. The Association of Business School in their Academic Journal Quality Guide (2010) recommends these 12 journals for academic publications. Additionally, many UK-based Business Schools have ranked SCM Review in their list of journals. Similarly, several studies in SCM (e.g. Fabbe-Costes and Jahre 2008, Van der Vaart and Van Donk 2008, Hsieh and Chang 2009, Piercy *et al.* 2009, Holsapple and Lee-Post 2010) select Interfaces, IJOPM, IJPE, IJPR, JOM, MS, Omega, IJLM, IJPDL and JBL as leading OM/SCM journals.

A systematic content analysis of papers was undertaken for identifying lacking in the SC and antecedents for SCA and developing the conceptual SCA framework. We suggest for future studies that use quantitative method research which would utilize the questionnaire to collect the data. Based on the

conceptual framework of study the questionnaire should be design.

■4.0 CONCLUSION

The firm should evaluate its resources, organizational priorities, and current supply chain capabilities and constraints. It should then select the best strategy to improve its sensing and responding capabilities. For this purpose, this research is the first research that investigation trust and IT as antecedents for improve SCA. The paper also suggest the framework for future research to empirical investigate in manufacturing and also for more suggestion for future research can use another capabilities as an higher-order capabilities such as supply chain integration for improve supply chain agility.

The proposed SCA framework has practical implications also. It offers managers to reveal the variables and the level of sensing and responding to SC partners. Additionally, it helps measure effectiveness of SCI and means for improvement. Using the conceptual framework and taking into account their sector, companies could establish the current SCA level. For this, they could identify and gather information on SCA against each proxy through interviewing the key stakeholders and derive strengths and weaknesses of SC. Likewise, SCA opportunities and threats could be analyzed in order to determine the expected SCA in coming years and adopt the appropriate strategic, tactical and operational measures to achieve the desired level. The proposed SCA framework enables achieving superior SC performance by analyzing the sense and respond to market.

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