

# **The Impact of Supply Chain Quality Management Practices, Supply Chain Quality Management Capabilities and Knowledge Transfer on Firm Performance: A Proposed Framework**

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## **Abstract**

The innovative performance and operational performance, which are considered as vital dimensions of a firm's performance, have not been addressed sufficiently in the literature of supply chain quality management (SCQM). Additionally, limited studies have explored SCQM capabilities and knowledge transfer (KT) as crucial drivers for SCQM. The aim of this research is to develop a theoretical foundation for the nexus of SCQM practices, SCQM capabilities, knowledge transfer (KT) and a firm's performance; besides providing a complete review of the literature on the interdependent association of SCQM practices, SCQM capabilities and KT concerning firm performance (i.e. operational and innovative performance). This study provides insights for improving the firm performance by exploring the nexus between SCQM practice, SCQM capabilities and KT. In doing so, this research adds in the understanding of critical features of supply chain management after involving effective integration which has not been broadly explored before.

## **Keywords**

Supply chain quality management, Knowledge transfer, Innovative performance, Operational performance.

## **1. Introduction**

Generally, total quality management (TQM) and supply chain management (SCM) philosophies play a significant role in enhancing a firm's competitiveness (Talib & Rahman, 2010; Zaid et al., 2020). The integration of these two management areas is called supply chain quality management (SCQM) (Bastas & Liyanage, 2019). Literature has defined SCQM practices as a set of activities implemented by firms in their supply chain processes to achieve efficient management of product quality (Hong et al., 2018a). Some scholars state that SCQM is derived from SCM which is designed to assist companies to set up a superior supply chain via the implementation of effective quality management activities (Kuei et al., 2008). Additionally, SCQM deals with upstream practices, downstream practices and internal processes and includes both internal and external organizational issues (Sampaio et al., 2016). Most of the literature on SCQM agreed on a large number of benefits that companies obtain by merging supply chains and quality management (Bastas & Liyanage, 2018) such as improving customer satisfaction levels (Kaur et al., 2019), enhancing supply chain performance through quality management, continuous improvement in ideologies diffused inside supply chain network members (Terziovski & Hermel, 2011), and improved organizational performance (Baig & Zaid, 2020; Sampaio et al., 2016; Sarrico & Rosa, 2016; Zhong et al., 2016). Further, these vital approaches

(i.e., quality management and supply chain) have not been fully explored. Scholars state that it's vital to have a more concerted approach towards the assessment of the combination of the TQM area within the SCM context (Sampaio et al., 2016).

Recently, growing attention has been focused on knowledge transfer (KT) which is the basis for a firm's competitive advantage (Argote & Fahrenkopf, 2016). Indeed, supply chain knowledge can be built when KT inside a firm or across organizational boundaries. Client knowledge is a marketing-based enabler of resilience and may assist customer response in a proactive and reactive way (Hong et al., 2017). Christensen et al. (2005) affirmed that firms can improve their market performance when adopting client supply chain knowledge. Similarly, Liu et al. (2013) indicated that a firm can enhance its financial performance (i.e., increase revenue) when implementing client knowledge. Blome et al. (2014) affirmed a significant effect of KT on supply chain performance based on the knowledge-based view of the organization. Likewise, Lakshman and Parente (2008) found a positive influence of supplier-focused KT on a firm's economic performance. In short, many scholars, in the knowledge management field, have shed light on the significant role of KT activities in gaining a firm's competitive advantages.

On the other hand, the nexus between SCQM capabilities, which are considered the main driver of SCQM, and SCQM practices with their joint effect on organizational performance has been discussed lightly in the literature (Kuei et al., 2008). Literature shows that there is a need for more detailed research on numerous direct and indirect results of SCQM factors on firm's outcome (Yu et al., 2019). A number of scholars have debated on how an organization could establish capabilities for SCQM and obtain resources from an institutional capability point of view (Biotto et al., 2012). However, the institutional capability theory has been extracted from a resource-based view theory and could demonstrate how firms could generate competitive advantages out of their resources and capabilities (Huo, 2012). But it is still not clear how the organization earns its SCQM capabilities their reaction, direct and indirect influence and outcomes on supply chain processes. Additionally, although the current studies have illustrated the effect of SCQM practices on organizations' operational performance, there is a scarcity in examining how SCQM practices influence an organization's innovative performance which is considered the main aspect of competitive advantage. This issue leaves a major gap in the literature.

Previous studies show that there is some nexus between SCQM practices, SCQM capabilities, KT and organization's outcome (Hong et al., 2017; Hong et al., 2019). Even though previous research has indicated that SCQM practices, SCQM capabilities and KT have a direct influence on a firm's performance, scholars have not fully explored the joint effect, along with the mechanism, of these variables on performance. Plenty of researches has suggested investigating the direct and indirect influence of SCQM practices, SCQM capabilities and KT on an organization's achievement (Sampaio et al. 2016; Zhong et al. 2016; Zhang et al., 2019). Therefore, this paper intended to develop a conceptual model to find out the impacts of SCQM practices, capabilities and KT on various dimensions of the organization's performance that are: innovation performance and operational performance. With this paper, the manufacturers are expected to recognize a helpful approach in applying SCQM practices, SCQM capabilities and KT to improve their overall performance (i.e. operational and innovative performances) effectively.

## **2. Literature Review**

### **2.1 Supply Chain Quality Management Practices**

SCQM practices are not only considered prime factors of SCM practices but also it is an add-on of quality management practices. Kaynak & Hartley (2008) affirmed, in their research, that SCQM practices combined conventional centralized practices within a firm and decentralized practices beyond the margins of an organization incorporating a firm with its providers and consumers.

Many studies have discussed different perspectives of SCQM practices in past years. With the perspective of Foster et al. (2011), the fundamental SCQM practices are provider's relations, human capital activities, leadership, consumers' focus, companies' outcome, and ergonomics. However, there are four features of SCQM practices namely upstream quality management activities, downstream quality management activities, internal process quality and support practices (Truong et al., 2017). Whereas, SCQM practices include quality administration, consumer focus, distributor focus, IT-empowered firms and integration (Soares et al., 2017). Research has emphasised that more studies should scrutinize SCQM practices to develop simple understanding among professionals related to the task and connected with one another. After the literature review, the current study has identified four major SCQM practices: upper management participation, consumer focus, distributor partnership management and information. These four components are considered immensely important for the integration of SCM and TQM in organizational areas (Kaur et al., 2019).

Indeed, many supply chain practices such as process integration and information integration are specified to support the progress of internal organizational processes and guarantee organizational KT. Loke et al. (2010) affirmed that the comprehensive implementation of TQM philosophy in the organization supply chain, lead to increasing supply chain learning and a greater level of organizational KT. Similarly, Mellat-Parast (2013) argued that supplier's quality management practices have a positive influence on KT in the supply chain from an internal organizational learning viewpoint. Hence, based on the previous discussion, the first proposition is as follows.

**P1:** SCQM practices have a significant effect on SCQM capabilities.

On the contrary, SC policies and valuable capitals should be employed to assist in achieving the competitive capabilities of the stakeholders. Likewise, Deshmukh (2001) state that organizations which adopted professional quality management activities in their supply chain will have excellent supply chain capabilities, which indicates that SCQM practices have a strong relation with SCQM capabilities. Kim (2009) examined the nexus between SC combinations, SCM activities, and competitive capabilities. The researcher has affirmed a positive association among SCM activities and supply chain capabilities. Furthermore, building a solid nexus between supply chain partners and strategic alignment is crucial in linking SCM practices and competitive capability for improvement of an organization's performance. SCM practices allow firms to get a competitive advantage and progressing supply chain capabilities simultaneously (Beske et. al., 2014; Hong et al., 2018b). Hence, the second proposition is as follows:

**P2:** SCQM practices have a significant effect on KT's.

## **2.2 Supply Chain Quality Management Capabilities**

For the firm's competitive advantage, supply chain capabilities have crucial importance (Rai et al., 2006). Therefore, these capabilities have composites of administration, firms, advanced expertise, critical ability and automation as core abilities and coordination and details swapping abilities (Spekman et al., 2002). The crucial supply chain capabilities are SCQM capabilities; with this ability, a firm can attain quality actions. While the results are gathered through a set of governable and quantifiable roles or actions in a supply chain. SCQM capabilities have a significant influence on supply chain management but only a few scholars have concentrated on it. Therefore, Yu et al. (2019) assert in their study that SCQM capabilities are considered as a multivariate construct comprising of three features: quality details exchange capability, quality coordination and combination capability, and supply chain receptivity capability. Previous research has declared that information exchange is a significant supply chain capability. An organization's ability to share strategic information related to the process and product quality in a constructive and a well-organized manner with its supply chain companions are referred to as the quality information exchange capability. A previous study shows that there is a strong connection between quality details distribution among supply chain partners and SCQM capabilities. In a recent dynamic business environment, supply chain understanding has become a highly appreciated capability. Sometimes, supply chain understanding capability conduct operational events in organizations along with supply chain partners so as to modify or adapt to the marketplace, which is called "supply chain swiftness (Liu et al., 2013).

SCQM capabilities comprise three categories: interior cooperation and integration capabilities, quality information sharing capabilities and supply chain sensitivity capability. Wu et. al. (2014) states that IT capabilities (i.e. which are difficult to copy) and quality detail sharing capabilities can both support the development of SCQM capabilities which in turn can enhance an organization's operational performance (OP) (Xu, 2011). The productive practices of supply chain cooperation can develop a strong trust amongst supply chain partners. Deep integration is very much related to higher operational performance (Huo et al., 2013). Definitely, there is a crucial impact of competitive SCQM capabilities and SCQM practices on a firm's performance (Kim, 2009). Researchers looked at the capabilities of supply chains as a vital factor influencing corporate innovative performance. Particularly, Ju et al. (2016) stated that supply chain dynamic capabilities that are: supply chain cooperation, supply chain integration and supply chain information sharing, have an important influence on technology innovation. Researchers claimed that centralized organizational innovative performance (IP) could be enhanced through the acceptance of an adjustable technology infrastructure amongst supply chain partners, which is the main factor to define the dynamic capabilities of SCM. (Liu et al., 2013 and Cheng et. al., 2014). Therefore, we propose the following:

**P3:** The SCQM capabilities have a significant impact on IP.

**P4:** The SCQM capabilities have a significant impact on OP.

## **2.3 Knowledge Transfer**

Currently, knowledge transfer (KT) is an increasingly important research topic, especially in universities, business and communities. The process of KT is a learning experience between organizations and sometimes within the organization (Argote et al., 2000). The previous study provided two kinds: external KT and internal KT (Blome et al., 2014). Internal KT can empower in-house knowledge to spread within the organization (Schulz & Jobe, 2001), whereas external KT can combine the outer knowledge and is shared with external partners by cooperating with them (Van Wijk et al., 2008). Although internal KT mostly depends upon inner components, it is also possible that internal and external features can impact external KT. It has been observed that strong connections, confidence and knowledge sharing patterns leave a great impact on an organization (Wood et al., 2016). He et al. (2011) also supported previous understanding that confidence, dedications, interrelationships, shared meaning and provide the power of equal opportunity to expedite KT in supply chain partnerships.

Literature has indicated that KT could enhance the supply chain process and a company's performance. Besides, the effectiveness of KT is playing a significant role in a firm's competitive advantage and supply chain activities (Clemons & Slotnick, 2016). An organization can get benefits by introducing KT inside its supply chain process (e.g. problem-solving and enhancing productivity). Therefore, KT could have a significant effect on a company's OP (Tuan, 2016). Also, knowledge management has a direct influence on a company's innovativeness (Hung et al., 2010), through knowledge transfer which working on developed the firm's knowledge asset. This leads to the enhancement of the IP of firms (Hung et al., 2010; Martín-de Castro et al., 2011). Therefore, we propose that:

**P5:** The KT's have a significant impact on IP.

**P6:** The KT's have a significant impact on OP.

Despite the direct nexus among SCQM practices and organization's performance is illustrated deeply in the literature (Bastas & Liyanage, 2018), it is also important to examine the indirect relation via KT which has not yet been fully explored in the literature. Hong et al. (2018a) found that the advancement of SCQM practices will interact with KM, which affects an organization's performance. In other words, the integration of quality management and supply chain practices can deploy KT ideologies leading to improvement in a firm's performance. Thus, the following propositions are made:

**P7:** KT mediates the nexus among SCQM practices and IP.

**P8:** KT mediates the nexus among SCQM practices and OP.

While the direct relation among SCQM practices and an organization's performance was deliberated earlier, it is also vital to explore their mediation relation (Yu et al., 2019). Kim (2009) proposes that the indirect influence among SCM practices and an organization's performance via supply chain capabilities is important. Likewise, Wong and Wong (2011) discovered that the progress of supply chain actions will interrelate with knowledge management capabilities thereby affecting an organization's performance. Therefore, we propose that:

**P9:** SCQM capabilities mediate the nexus among SCQM practices and IP.

**P10:** SCQM capabilities mediate the nexus among SCQM practices and OP.

## **2.4 Firm's Performance**

The overall performance of an organization is based on OP and IP, which can respectively be used to determine operational dominance and mutation of an organization (Flynn et al., 2010). The firm's competitiveness and profitability can be explained under OP which further refers to the firm's operational efficiency in the market. OP is a classical component that engages the active ambitious preferences into the strategic capabilities of firms. It can be assessed by measures of a short time, involving: standard, value, distribution and mobility (Baig & Zaid, 2020; Gambi et al., 2015). Contrarily, IP is a continuing assessment about the capability of an organization to enhance the understanding, practicality and activity of its products and facility. Consequently, it becomes difficult for competitors to reproduce some innovative technologies which are personalized by a firm. Moreover, its valuableness and uniqueness contribute importantly to support the competitive advantage of the entire supply chain. IP is classically split into two types: valuable innovation and progressive innovation (Prajogo & Olhager, 2012). However, Gunday et al. (2011) and Kim et al. (2012) suggested a new element called management innovation to analyse IP more extensively.

### 3. Conceptual Model

As mentioned earlier, there is a lack of studies, proposing a theoretical basis, that explored the association between SCQM practices, SCQM capabilities and KM (Hong et al., 2019; Hong et al., 2018a). As referred before, the key aspects of SCM have been ignored while focusing on the logistics system. We introduce a theoretical framework to further explore, in a broader way, the potentialities and obstacles of the integration in these three areas. The current study opened avenues for investigating the effect of SCQM practices on OP and IP with mediating roles of SCQM capabilities and KT. Based on the discussions and arguments mentioned previously, the following conceptual model is proposed as shown in Figure 1, establishing the relations between SCQM practices, SCQM capabilities, KM, IP and OP.

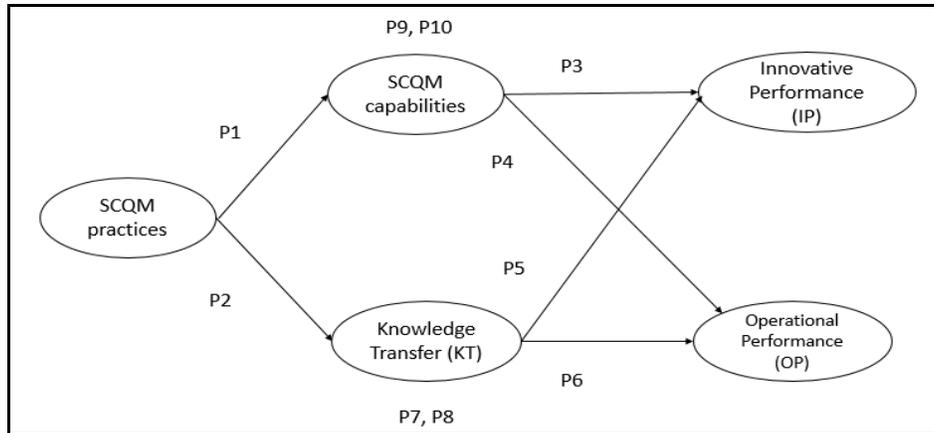


Figure 1. A proposed framework

### 4. Implications

The current study contributes to theoretical and practical implications. From the theoretical standpoint, this research contributes to the literature of SCQM, KT, IP and OP, besides providing a strategic conceptual model which illustrates the established synergistic nexus between these latent variables. Furthermore, the current study demonstrates that SCQM capabilities and KT mediate the relation among SCQM practices and firm performance (i.e. IP and OP). Hence, this research fills the gap in the literature which calls for more studies on the links between SCQM practices, SCQM capabilities and KT. Lastly, by applying the conceptual model of this research, scholars can develop empirical studies that illustrate the proposition's relationships in an effective way.

From a practical perspective, the conceptual model assists decision-makers and managers in improving performance as a synergistic influence. Also, the current study can help managers better understand the influence of the adoption of KT philosophy in individual firms and their supply chain processes. Consequently, firms must be concerned about enhancing the level of SCQM practices and attempt for generating more progressive quality management knowledge in their practices so as to deliver the basis for KT. Additionally, the current study assists managers with in-depth knowledge of a concept of SCQM capabilities, its components, and how to utilize supply chain capabilities to improve the company's overall performance and create the firm's competitive advantage.

### 5. Conclusion and Recommendations

The latest researches have given much attention to SCQM concepts in recent years but there is a gap regarding SCQM practices, SCQM capabilities and KM and their integration analysis (Hong et al., 2019; Hong et al., 2018). Numerous resemblances and variances between TQM and SCM areas and the understanding of their importance can contribute to future research on operational management. In order to understand this topic, the study must present results of research projects that have been managed in order to analyse the integration of SCQM practice, SCQM capabilities, KM and its impact on a firm's performance (i.e. IP and OP). In the organizational context, both areas are equally important in management studies which can cover a wide range of scope and applications. This research contributes to the management literature by expanding the examination of SCQM practices. A number of studies suggested that there is a need to fill this gap, therefore this study recommended a conceptual model.

The main limitation of this work is the absence of empirical research. The validity and the theoretical soundness of the conceptual framework of SCQM can only be tested by collecting empirical data from real-life cases and testing the propositions of the framework subsequently. This will be taken up as the future scope of the present work. Moreover, the conceptual framework suggested in this research will be statistically validated, using the structural equation model technique, based on a survey that is being performed on an international basis. Future research can validate the current conceptual framework through focus group and qualitative analysis, which can enrich the current study. A complete affirmation process of the framework is needed to further understand the topic. Additionally, it also makes us understand how organizations impose and combine SCQM practice, SCQM capabilities and KM strategies and how this combination influences the firm's performance. For that reason, it is essential to apply distinct evaluating techniques in numerous situations. The questionnaire for this study has been developed and the survey will be performed on a large scale. Correspondingly, the framework of this paper can validate the nexus among SCQM practice, SCQM capabilities, KM and the firm's performance.

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