

# “New business model of integration practices between TQM and SCM: the role of innovation capabilities”

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# NEW BUSINESS MODEL OF INTEGRATION PRACTICES BETWEEN TQM AND SCM: THE ROLE OF INNOVATION CAPABILITIES

## Abstract

The concept of "total quality management (TQM)" is broadly used in business. Regardless of the fact that several studies have analyzed this topic, little research has been conducted on integrating total quality management and supply chain management (SCM) practices in business organizations. The role of innovation capabilities is considered to be highly valuable, because they are considered feasible approaches, which can be applied by top management to enhance organizational effectiveness and productivity. This study aims to develop a new business model that integrates the most important practices between total quality management and supply chain management, while emphasizing the role of innovation capabilities. This paper also suggests possibilities toward a new approach with regard to minimizing the cost and improving operational performance. Furthermore, it proposes a conceptual framework that shows the major variables in explaining the new business model of integration practices between TQM and SCM, and addressing the role of innovation capabilities to handle this model.

## Keywords

integration practices, total quality management, supply chain management, innovation capabilities

## JEL Classification

D2, L2

## INTRODUCTION

It is fundamental to effectively integrate the firm's internal functions with the external transactions of the suppliers, to produce value, optimize profitability, and improve operational performance (Greene, 2015). One of the most important internal functions within the firm is total quality management, which plays an important role in the process of developing various management practices (Agus, 2011). TQM has been held up as a method for improving efficacy, competitiveness, and the ability of a firm to change, adapt and to meet their customers' needs (Fernandes, Sampaio, & Carvalho, 2014). TQM has also been identified as an enduring method for yielding improvement (Oza & Shiroya, 2015), producing positive employee and customer attitudes (Munizu, 2013) and enhancing operational performance through continuous improvement in the manufacturer's activities (Oyedele, Jaiyeoba, Kadiri, Folagbade, Tijani, & Salami, 2015).

Supply chain management is an external operation with the suppliers, by which firms improve value thus becoming more specialized (Souza & Brito, 2011). As a result, it is critical for firms to manage their supply network to improve their operational performance (Robinson & Malhotra, 2005). Moreover, firms join with members of the same chain to improve their competitive advantage, which affects positively the operational performance of all chain members (Agus, 2011).

In light of that, some previous studies have investigated the impact of TQM and SCM approach on performance measures (Oza & Shiroya, 2015; Oyedele et al., 2015). Others have looked into synergies among the existing approaches, and their collective effects on performance measures (Souza & Brito, 2011; Kheni & Ackon, 2015). In addition, there is a considerable amount of research suggesting that synergy among operational approaches exists, which can lead to higher operational performance (Ramos, Asan, & Majetic, 2007; Agus, 2011; Fernandes et al., 2014; Huo et al., 2014).

Economic globalization brings both opportunities and challenges for manufacturing companies that are faced with an increasingly competitive environment. To be successful, companies must develop versatile plans that are relevant in both domestic and international markets (Al-Assaf & Al-Malki, 2014).

In this respect, it is common knowledge that innovation plays a crucial role in predicting the long-term survival of organizations, determining their success and sustaining their global competitiveness, especially in an environment in which customers' attitudes, technologies, and competitive locations can change rapidly, reflecting the lifecycle of goods and services (Pavlou & El Sawy, 2011). However, the studies that investigated the role of innovation capabilities when developing new business model that integrated TQM and SCM practices could not provide a clear idea of that. Accordingly, there is a need for further investigations to clarify the role of innovation capabilities when developing a new business model (Lau et al., 2010).

Since the business environment is continuously changing, which causes manufacturing firms to grow their regional reach, the manufacturing firms can tap new resources of laborers and raw materials while decreasing costs, new operational approaches have to be implemented (Brandenburg, Govindan, Sarkis, & Seuring, 2014). When manufacturers expand their regional reach, this includes working with new suppliers and partners who specialize in particular components of the final product for a top-notch product or service for customers (Fernandes et al., 2014). To produce value and optimize profitability, firms must create partnerships with the supply chain organizations that allow for cooperation, communication, and integration among partners (Huo et al., 2014). Therefore, it is more significant to conduct the research on integration practices between TQM and SCM under the role of innovation capabilities.

## 1. TOTAL QUALITY MANAGEMENT PRACTICES

Some previous studies have investigated TQM practices and determined the best way to implement them. Ou-Yang and Tsai (2014) indicated that the operation process is important to the TQM's success in how to achieve the best implementation. While researching manufacturing and service companies, Saraph, Benson, and Schroeder (1989) revealed eight practices for the TQM implementation: employee relations, role of quality department, process management, product design, supplier quality management, training, quality data reporting, and leadership.

Another study by Brah, Li, and Madhu (2000) in the Singapore service sector on TQM and business performance proposed 11 practices of TQM implementation: quality improvement rewards, customer focus, process improvement, supplier quality management, employee involvement, employee training,

employee empowerment, service design, leadership, benchmarking, and cleanliness and organization.

Antony, Kumar, and Madu (2005) described 11 TQM practices: top management leadership, customer satisfaction orientation, training, supplier partnership, continuous improvement, employee involvement, product/service design, communication to improve quality, quality data and reporting, quality policies, and role of the quality department. On the other hand, Samat, Ramayah, and Mat (2006) emphasized seven dimensions out of ten TQM dimensions ranked by Sila and Ebrahimpour (2002): continuous improvement, employee involvement, training and education, information and communication, employee empowerment, customer focus, and top management support and commitment. Hafeez, Malak, and Abdelmeguid (2007) categorized TQM dimensions to ten dimensions: supplier quality management, organization for quality, continuous support, employee participation, top man-

agement commitment and support, customer focus, employee training continuous support, statistical quality technique use, information and analysis, and quality system improvement. Claver-Cortés et al. (2008) explained seven predominant practices in the service quality promotion: culture (of the organization), training, teamwork, communication (two-way), performance appraisals, rewards empowerment, and recruitment and selection.

Talib and Rahman (2010) identified nine TQM dimensions of service industries: top management leadership, customer focus, supplier management, continuous improvement and innovation, training, benchmarking, employee encouragement, employee involvement, and quality performance. Talib et al. (2010) classified nine critical factors on Greek companies, which were found to be of practical value to them and could support the firm's sustainability: supplier management, strategic quality planning, customer focus, information analysis, employee management and involvement, process management, continuous improvement, leadership, and knowledge and education.

Talib et al. (2011b) summarized TQM in six dimensions, which are appropriate to several organizations were classified individually from as many as fifty TQM dimensions. This reduced set of practices is treated as major practices and were obtained due to its high frequency in many previous researches. Also, Zehir et al. (2012) and Munizu (2013) concluded six dimensions that are important to the manufacturing firms: training, continuous improvement, management commitment, employee involvement, customer focus, supplier management.

Goetsch (2014) argued that there are ten major TQM dimensions of manufacturing industries: teamwork structures for process improvement, improvement of measurement systems, supplier partnerships, strategic quality management, customer satisfaction orientation, communication of improvement information, external interface management, operational quality planning, people and customer management, and corporate quality culture. Moreover, Jaca and Psomas (2015) categorized five TQM practices, where the most important practices for each manufacturing firm were: leadership, supplier management, continuous improvement and innovation, customer focus and employee involvement. This

study highlighted the major practices extracted from previous research and recorded based on their frequency of occurrence, which are leadership, continuous improvement and innovation, training and education, customer focus, supplier management, and employee involvement. These practices will enter into the process of integrating with major SCM practices. As a result, one approach will be found that combines TQM and SCM.

## 2. SUPPLY CHAIN MANAGEMENT PRACTICES

The configuration and coordination in SCM are essential to make products in a satisfactory condition, reproducible, and timely. SCM activities consist a set of operations by companies to manage their supply chain effectively (Świerczek, 2014). Lee and Kincaid (2003) suggested six dimensions of SCM, namely partnership, information technology system, demand characterization, performance measurement, strategic planning, and operational flexibility. Ulusoy (2003) proposed four SCM practices that seek to evaluate innovation in the management and supply chain of the manufacturing industries of Turkey, which are: logistics, production, customer relations, and supplier relations. According to the Hong Kong manufacturers, Chin, Rao, Leung, and Tang (2004) studied the dimensions in implementing and developing SCM strategies. The practices used as SCM practices have been identified as follows: changing corporate culture, building customer-supplier relationship, identifying performance measures, re-engineering material flows, and using information and communication technologies.

Chen and Paulraj (2004) used supplier involvement, cross-functional teams, communication, lasting relationship and supplier base reduction to measure buyer-supplier relationships. In the empirical study, B. Flynn and E. Flynn (2005) investigated the connect between SCM and TQM using three dimensions: strategic planning, process management, and analysis information.

Li et al. (2005) attempted to validate and develop six practices: strategic supplier partnership, postponement, internal lean practice, information quality, information sharing, and customer relationship. Similarly, Burgess, Singh, and Koroglu

(2006) suggested seven dimensions: strategic planning, process improvement, logistics, inter-organizational relationship, information system, orientation, business results and outcomes obtained from structured literature in the field of SCM. Also, Talib et al. (2011b) distilled six SCM practices out of 40 TQM practices that are appropriate to different firms. The six major SCM practices are as follows: customer relationship, information and communication technologies, strategic supplier partnership, material management, management and strategic planning, and close supplier partnership. Qrunfleh and Tarafdar (2013) classified six aspects of SCM practices within factor analysis: JIT capability, information sharing, geographical proximity, customer service management, supply chain characteristics and supply chain integration. Świerczek (2014) determined 11 practices as critical success factors for SCM: just-in-time (JIT) supply, subcontracting, supply chain benchmarking, many suppliers, few suppliers, close partnerships with customers, strategic planning, outsourcing, close partnerships with suppliers, e-procurement, and holding safety stock.

Besides that, Ibrahim and Hamid (2014) argued that the critical success factor of SCM is customer relationship, close partnership with suppliers, changing corporate culture, and using information and communication technologies. Beske et al. (2014) summarized the SCM in five practices: customer relationship, strategic supplier relationship, information technologies, management and strategic planning, and close partnership with suppliers.

Upon summarizing these studies, it can be observed that the literature describes SCM practices from a wide variety of different views in an effort to eventually increase organizational performance (Alflayyeh, 2013). Depending on how SCM practice has a substantial effect on the efficient integration of the supply chain, the performance of each supply sequence practice should be examined (Nyamasege & Biraori, 2015). This study highlights the major SCM practices derived from previous research recorded based on their frequency of occurrence (Customer Relationship, Supplier Partnership, Management and Strategic Planning, Close Partnership with Suppliers). These practices will be included when integrating with the major practices in the TQM approach.

### 3. AGENCY THEORY

The partnership between TQM and SCM is about effective collaboration between manufacturers and suppliers to address the issues of sanctions, inspection and negotiation of quality contracts, associated rewards, as well as cooperation agreements in design, production and operations (Fayezi, O'Loughlin, & Zutshi, 2012). According to that, Steven et al. (2014) and Wilhelm et al. (2016) confirmed that the agency theory can mainly be used for identifying the attributes of supply chain relationships with the usage of management mechanisms for TQM and SCM (Steven et al., 2014; Wilhelm et al., 2016).

In this research, the agency theory assumptions are aligned with the concerns in TQM and SCM, sometimes the companies face problems, especially those associated with a partnership relationship with suppliers. In practice, companies assume that the supplier provides the products and services that the company needs at high quality, especially if they realize that the companies are getting all the benefits. And thus, from the standpoint of theory, this study will extend the theory of knowledge by considering the integration practices between TQM and SCM (Kuei et al., 2008; Kaynak & Hartley, 2008; Robinson & Malhotra, 2005).

The difference of interests between buyers and suppliers produces results only for their personal interests. In this case, ethical risks and harmful selective problems are likely to arise. When purchasing companies cannot supervise the process at suppliers' sites constantly because of the difficulty of doing so at high cost, suppliers may hide the difficulties they face in delivering the quality required by buyers (i.e. the negative choice), in addition to simple efforts that control the improvement the quality of products and processes (Plambeck & Gibson, 2010). In addition, there may be different positions for buyers and suppliers towards the risks related to quality failure, especially those caused by after-sales to consumers, leading to risk sharing between the parties. Consequently, companies need to assess the nature of the relationship with suppliers on how to manage quality with them and choose the appropriate mechanism for doing so (Fayezi et al., 2012).

## 4. INTEGRATION PRACTICES OF TOTAL QUALITY MANAGEMENT AND SUPPLY CHAIN MANAGEMENT

Most of the TQM practices are similar to the SCM practices. Integration practices mean integrating these practices and reducing the set of the TQM and SCM practices by eliminating duplicate practices. The TQM and SCM practices were obtained on the basis of their high frequency of occurrence in different previous research and are treated as major practices (Kuei et al., 2008; Talib & Rahman, 2010; Qrunfleh & Tarafdar, 2013; Kuei & Lu, 2013).

According to Chen and Popovich (2003), Li et al. (2005), Gilaninia et al. (2011), Sukati et al. (2012) and Świerczek (2014), the customer relationship management is an integrated approach to managing relationships by paying a lot of attention to relationship development and customer retention. This means that customer focus on the TQM side has the same meaning and objectives with customer relationship management in SCM. This study will integrate both of these practices into a single practice in terms of customer focus.

Recent research confirms the importance of connecting the leadership with strategic planning (Kurucz et al., 2017). Through a productive strategic planning process, the leadership will clarify and affirm the mission and values of the firm and define its role in the community. This can also identify external and internal challenges and opportunities that firm may encounter and help it design well thought-out strategies to address them (Birasnav et al., 2010; Kiptoo & Mwirigi, 2014; Rhine, 2015; Kazmi & Naaranoja, 2015). Leadership and strategic planning are powerful tools to keep the firm energized, focused and effective (Bouhali et al., 2015). Therefore, this study connects the leadership of TQM with the management and strategic planning of SCM into one concept, which is leadership and strategic planning.

Recent research also indicates that employee involvement and commitment are important parts of TQM and SCM approaches. They each include many strategies to improve lack of participation and commitment issues: enhance employee engagement through two-way communication, incentives have a part to

play, ensure that employees have everything they need to do their jobs, build a distinctive corporate culture, have strong feedback system, give satisfactory opportunities for development and advancement, and give employees appropriate training (Markos & Sridevi, 2010; Munizu, 2013; Al-Ettayem & Zu'bi, 2015; Priya, 2015). This means that the employee involvement and commitment from the TQM side have the same strategies and objectives with training and education from the TQM side, as well as using information and communication technologies from SCM practices. This study will integrate three of these practices into a single practice with respect to employee involvement and commitment.

When discussing integration and mutually beneficial supplier relationships, many terms are used such as: long-term relationship partnership, supplier quality management, supplier relationship, supplier involvement, reliable suppliers, and collaboration (Talib & Rahman, 2010; Sukati et al., 2012; Zehir et al., 2012; Beske et al., 2014; Al-Ettayem & Zu'bi, 2015; Agus, 2015). This means that there is a similarity between the close collaboration with suppliers and supplier partnership in SCM practices and supplier management in TQM. This study will integrate three of these practices into a single practice in terms of integrating mutually beneficial supplier relationships. Other continuous improvement and innovation practices from TQM differ when compared to information and communication from SCM. This means that these practices will be included separately in a new combined TQM and SCM practices.

## 5. CONCEPTUAL FRAMEWORK

Six practices have been considered to conceptualize TQM and SCM practices, namely leadership and strategic planning, employee involvement and commitment, integration and mutually rewarding supplier relationships, continuous improvement and innovation, information technology system and customer focus. All of the existing practices were taken into account. A few will be briefly explained, and other aspects are integrated into the major activities. These practices are the most critical for ensuring the higher operational performance for organizations through the implementation of the new approach. The new approach was produced as a result of the integration practices between TQM and SCM.

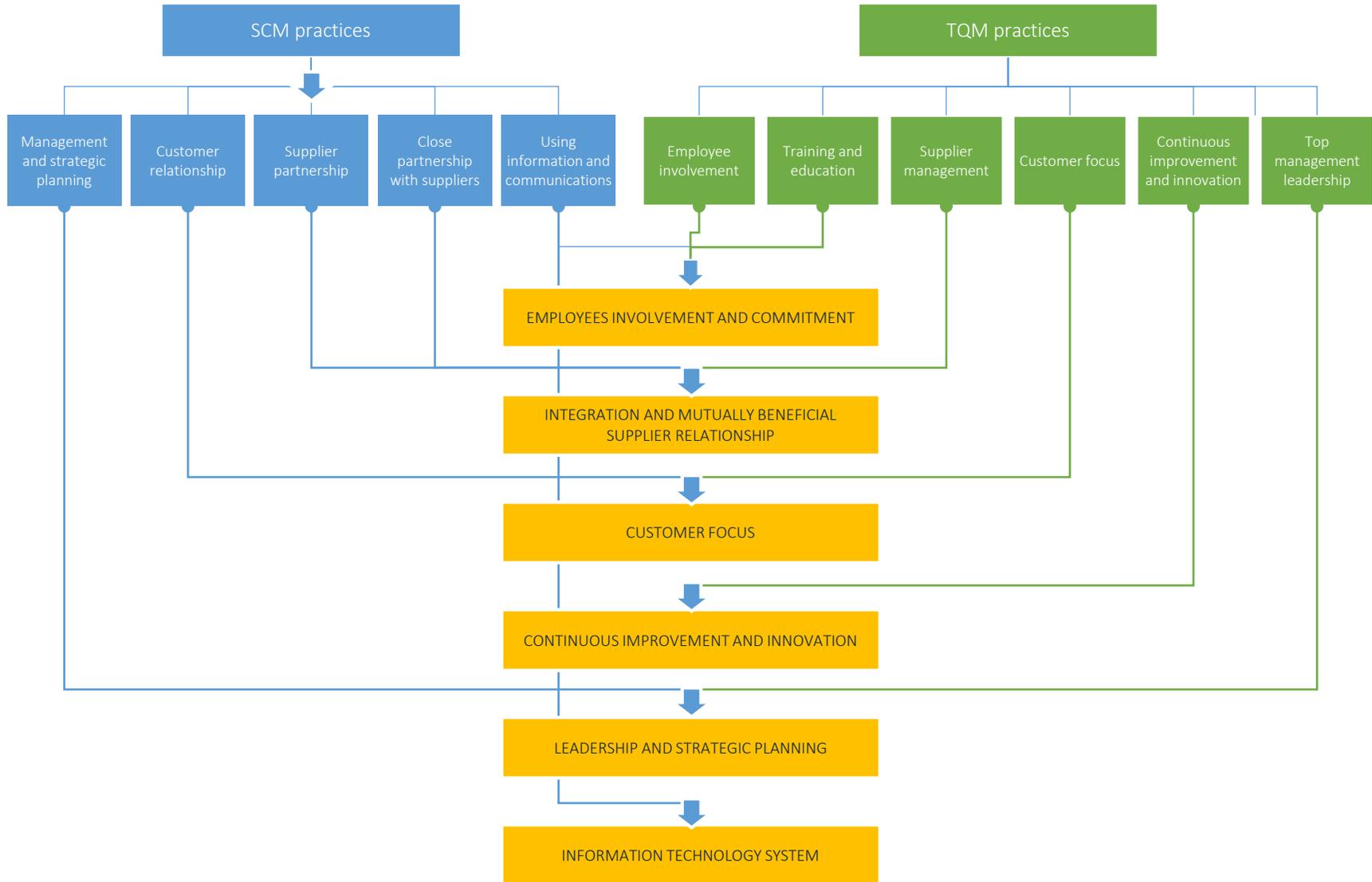


Figure 1. Conceptual framework

## 6. INNOVATION CAPABILITIES

In each organization, innovation plays the role of providing unique services and products, which creates greater value and limits the entry of new competitors. Thus, innovation has stimulated the interest of many researchers in identifying motivational factors. Several previous studies have addressed the idea of integrating the internal and external departments of the organization under the name of strategic innovation, while some studies opposed this idea, namely that innovation creates easy conditions for the integration of the internal and external departments of the organization. This study came to solve some of this discrepancy.

In addition, with regard to the current state of global markets and high competitiveness, while developing the organization's innovation strategies, the evaluation of the company's performance has become a very important element. Previous studies have also confirmed that organizations can benefit from innovation if there is a high level of compatibility between internal and external systems such as TQM and supply chain management. Thus, innovation can have a positive impact on integration among systems, which is reflected in competitive advantage and performance. This role has been the subject of study by several authors including Din and Cheema (2013), as well as the analysis of the impact of innovation on organizational performance.

While innovation refers to the activation of all organizational efforts that can provide skills to strengthen competitive advantage (Andersson et al., 2008), this study finds that organizations com-

pete to identify pros and cons of the internal environment, and opportunities and threats from the external environment for the sake of survival in competitive markets (Antunes, Quirós, & Justino, 2017). The previous research confirms the positive effect of the TQM and SCM in the development of manufactures industries (Arrfou, Amlus, & Jusoh, 2016). Some of the studies concluded that TQM and SCM practices could improve the efficiency of the firms to full fill the customer requirements (Oakland, 1993), while others emphasize that TQM and SCM are the primary source of competitive advantage, doing business from the first time and each time in the right way, so there is no chance of error and increasing costs (Maistry, Hurreeram, & Ramessur, 2017).

Most of the previous research argued that the role of innovation capabilities in adopting a new business model has two opposite ideas, where the first idea is that this new business model will be successful in innovation strategies. Therefore, several studies have found the interrelation relationship between TQM and innovational performance (Yusr, Mokhtar, Othman, & Sulaiman, 2017). In general, studies have demonstrated a positive influence of TQM on innovation management, which confirms the possibility that TQM and SCM can positively affect creative capabilities, and few studies demonstrate the opposite (Hoang et al., 2010). Some researchers argued that negative effects of the TOM, SCM, and innovations capabilities (Yusr et al., 2017). Like the previous research, this article tries to find the role of innovation capabilities as soon as the company intends to adopt a new business model (integration practices between TQM and SCM).

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## FINAL CONSIDERATIONS

Even though there have been a large number of studies investigating the effects of different operational approaches on the overall performance in separate investigations, the studies on the integration of TQM and SCM practices are still limited (B. Flynn & E. Flynn, 2005; Lin, Chow, Madu, Kuei, & Yu, 2005; Kannan & Tan, 2005; Kaynak & Hartley, 2008).

In addition, it is apparent that TQM and SCM are closely interrelated in the sense that achieving the objectives of one depends on the role played by the other. Due to the close links between TQM and SCM, it is sometimes difficult to differentiate between practices of TQM and SCM (Vanichchinchai & Igel, 2009). In the literature of both management approaches, it is possible to observe a practice that is consid-

ered a TQM practice in one study, but in another, the same study element might be accepted as an SCM practice (Lin et al., 2005; Kaynak & Hartley, 2008). Thus, in this study, the nature of the integration practices between TQM and SCM is to integrate similar practices as a single practice between both approaches, alongside dissimilar practices. The main goal of the integration practices between TQM and SCM is to get a unique approach that may reduce costs and positively affect the manufacturing prices and profit. This study suggested that the innovation capabilities have important role once the company going to adopt new business approach. This module provides a proposal for developing technological capabilities within the scope of TQM and SCM for organizations.

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