

The Impact of Supply Chain and Business Process Managements on Firm Performance: The Mediating Effect of Competitive Advantage: Part 1 Constructing Hypotheses

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Abstract

Building business competence is a necessity for firms' survival and long term effectiveness in today's rival business environment. This paper discusses how supply chain and business process managements are instrumental in building firms' competitive advantage and for better performance outcomes. Supply chain and business process management practice antecedents were identified from prior literature. We presented an integrated framework of SCM and BPM. Based on this framework we constructed 6 research hypotheses. In future research we will test hypotheses based on data from real firms. We will also show the empirical test results if both SCM and BPM are essential practices for the improvement of firms' overall performance measures.

Keywords: *SCM, BPM, competitive advantage, organizational performance*

1. Introduction

As competition intensified since late 19th century and markets become more global, and so did the challenge associated with getting materials, supplies and products at the right price, at the right time, at the right place and at the right quality. These have already required organizations to improve not only their internal business process, but their entire supply chain to be made competitive [1, 18, 19, 41]. Therefore, the understanding and practice of supply chain management (SCM) is necessary for any company, regardless of the nature of their business, to remain competitive and profitable. SCM has gained popularity since the late 20th century and yet it is one of the most popular fields of study drawing many researchers attention [32].

BPM has been viewed from a wide and highly diverse perspective ranging from a management strategy to a software system, so much so, that there is still not a common consensus even about the definition of the name itself [39]. For the purpose of this study, BPM is defined as all efforts in an organization to analyze, and continually improve all activities and operations of the organization [33, 36, 42]. In order to tackle the ever changing business environment, to respond to the furious global competition, companies must implement best management practice principles, strategies and technologies [4, 14]. Since it builds on several management approaches mainly, embracing quality aspect of the total quality management (TQM) in 1980s and business process reengineering (BPR) approach from the 1990s [31], BPM is regarded as best practice management principle that helps companies to build and sustain their competitive advantage in the near and far futures.

The purpose of this study is to develop a framework identifying the relationship between BPM and SCM and their impact on organizational performance with a mediating

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effect of organizational competitiveness. Final goal is to answer the following specific questions in particular. How and to what extent SCM improves firm's financial and operational performance through improving their competitive advantage? How and to what extent BPM affects overall organizational performance by helping firms to build their competitive advantage? How and to what extent understanding and practice of BPM will help firms to build a competitive SCM practice?

2. Supply Chain Management

SCM, as a set of activities undertaken by an organization to promote best management of its supply chain, a range of these practices have been discussed by many researchers. Donlon (1996) [8] described the latest supply chain practices as supplier partnership, outsourcing, cycle time compression, continuous process flow, and information technology sharing. Tan *et al.*, (1998)[34], in their empirical study, they have used purchasing practice, quality, and customer relations as measures of SCM. In this study, in order to determine the domain that encompasses the SCM practices, exhaustive theoretical, empirical and practitioner review has been conducted. Accordingly, the SCM dimensions to be investigated in this study include strategic supplier partnership, customer service level, level and quality of information sharing, internal lean practice and the concept of postponement.

Table 1. SCM Practices; Strategic Supplier Partnership, Customer Service Level, Information Sharing, Internal Lean Practice and Postponement

Construct	Description	Literature
Strategic supplier partnership (SP)	A long term relationship of an organization with its suppliers. It helps individual participating business entities to leverage on their strategic and operational capabilities.	Youn, <i>et al.</i> , (2013), Gunasekaran, <i>et al.</i> , (2001) Monczka, <i>et al.</i> , (1998), Li, <i>et al.</i> , (2005), Li, <i>et al.</i> , (2006)
Customer service level (CS)	Refers to the entire array of activities done for the purpose of building long term relationship with customers, managing customer complaints and improving as well as sustaining customer satisfactions.	Youn, <i>et al.</i> , (2013), Li, <i>et al.</i> , (2006), Mentzer, <i>et al.</i> , (2000), Li, <i>et al.</i> , (2005)
Quality and level of information (QI)	The extent to which accurate, adequate, timely, and credible information exchange with suppliers. The effect of the mutual exchange of information depends on how information is shared, timing and the partner who will benefit from this information. Companies must consider the information as a strategic resource and disseminate it to the members of the supply chain at minimum delay.	Mc Adam and McCormack (2001), Li, <i>et al.</i> , (2005), Childhouse (2003), Li, <i>et al.</i> , (2005), Holmberg, (2000).
Lean practice (LP)	Is related with continuous pursuit of improving processes and the practice of eliminating waste (cost, time, <i>etc.</i>) in the production system including set-up times, small lot sizes, and pull production.	Li, <i>et al.</i> , (2006), Agus (2011)
Postponement (PP)	Refers to the practice of delaying operation/s or activities (making, sourcing, delivering, <i>etc.</i>) to match later point in the supply chain.	vanHoek (2001), Li, <i>et al.</i> , (2005), Choi, <i>et al.</i> , (2012)

3. Business Process Management (BPM)

Improving organizational business processes has been high on companies' and researchers' agendas for years [14, 21, 33]. The main challenge remains how to implement process principles into an organization's operation. Therefore, several approaches such as TQM, BPR and others have been proposed to increase business process efficiency and effectiveness. One of these approaches is business process management (BPM), which seems to be the most comprehensive, well-known, and widely used practice [29] because it incorporates many aspects of the earlier approaches with new additional values [33].

For a successful implementation of BPM, *process alignment* and *people involvement* are the two key concepts to be included [14, 22]. The concept of process alignment captures how well the organization manages the fit between its process and its institutional elements [14]. In other words, process alignment refers all sets of organizational efforts needed to make processes the platform for organizational structure, for strategic planning and for information technology [12]. Hung (2006) [14], also claims that when we say process alignment, it consists of horizontal structural alignment, strategic alignment, and information technology (IT) alignment.

How an organization involves its people at all level is critically important for its success and so it does for the successful implementation and exercise of BPM. In this study, we see people involvement at two different levels, involvement at executive level by top and medium level management and at operational level by ordinary employees. Therefore, people involvement has two components as executive commitment and employee empowerment [14]. For clarification each BPM components are described Table 2.

Table 2. BPM Practices: Process Alignment and People Involvement

Construct	Description	Literature
<i>Process alignment</i>		
Horizontal structure alignment (HA)	Refers to the extent to which the organizational structure provides a framework of responsibility, reporting relationships, grouping of tasks. It also refers how the organizational structure gives a linkage and coordination among organizational elements as a coherent whole.	Schmiedel, <i>et al.</i> , (2014), Daft (1998), Hung (2006)
IT alignment (IT)	IT alignment does not only mean the hardware and software application used but also the corresponding information management systems that enable or support the process activities.	Skrinjar and Trkman (2013), Niehaves, <i>et al.</i> , (2013), Wong (2013), Wong, <i>et al.</i> , (2013), Hung (2006), Rosemann (2006).
Strategic Alignment (SA)	Refers to the close linkage between business processes and organizational priorities which is very important for the translation of business process change action into process performance improvements.	Skrinjar and Trkman (2013), Niehaves, <i>et al.</i> , (2013), Hung (2006), Rosemann (2006), Wong, <i>et al.</i> , (2013)
<i>People involvement</i>		
Executive commitment (EC)	Refers to the necessary commitment and determination of senior level management in supporting the adoption and implementation of different change programs.	Tichy and Cohen (1997), Hung (2006), Niehaves, <i>et al.</i> , (2013), Wong, <i>et al.</i> , (2013), Schmiedel, <i>et al.</i> , (2014).
Employees Empowerment (EE)	The process of increasing the participation and autonomy of individuals in decision making and to play other roles. It connects individuals with others and helps them to create personal worth and self-fulfillment. Moreover, it is helps to motivate, encourages, and improves the creativity of individuals.	Schmiedel, <i>et al.</i> , (2014), Niehaves, <i>et al.</i> , (2013), Wong, <i>et al.</i> , (2013), Hung (2006).

4. Competitive Advantage

Competitive advantage is the extent to which an organization is able to create a defensible position over its competitors [19]. It is a collection of capabilities that allows an organization to differentiate itself from its competitors in the industry. These capabilities includes as price/cost of product and production, product quality, delivery dependability, and innovation and introduction of new products and production methods to its customers [15, 18, 19]. A proper SCM practice has a positive impact on firm's competitive advantage as it has been investigated by many researchers [15, 19].

5. Organizational Performance

There seems no consensus neither on the definition of organizational performance nor on how it should be measured. However, organizational performance primarily refers to how well an organization achieves its financial and market oriented goals. Hence, many researchers argue that the primary measures of organizational performance are its achievements in terms of financial earnings (ROI, profit margin, cash cycle and others) and market performance (market share, market share growth, etc) (Li *et al.*, 2006). It is also notable that proper SCM practice can lead to some non financial performances mainly operational improvements such as, quicker inventory turnover, reduced lead times for both purchased materials and finished goods, and production process flexibility among others.

After a comprehensive review of prior research, we have proposed the theoretical framework illustrated in Figure 1. The framework proposes that both BPM and SCM practices will have direct effect on organizational performance. Both practices will also have an indirect effect on firm performance through competitive advantage.

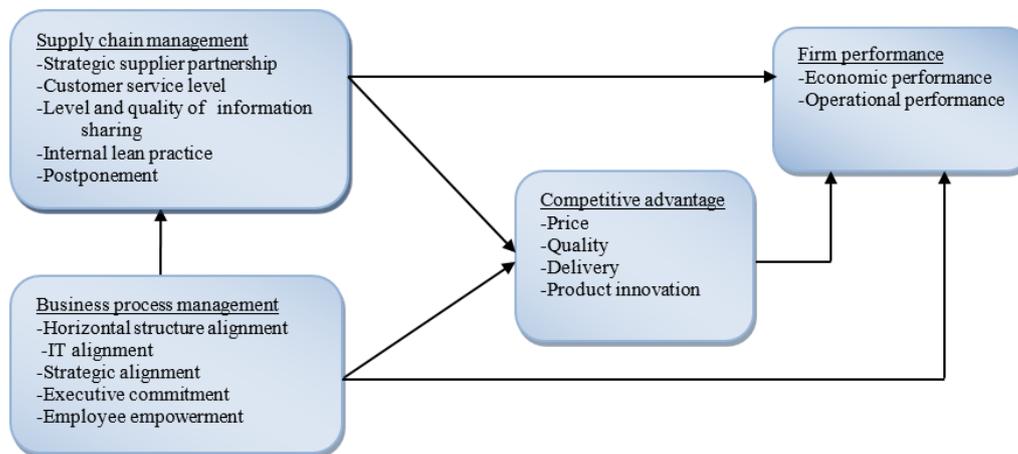


Figure 1. The Proposed Conceptual Framework

6. Research Hypotheses

6.1. The Impact of SCM Practices on Firm Performance and Competitive Advantage

Several researchers have investigated the relationship between SCM practices and firm performance [15, 19, 26, 38]. In order to increase the flexibility and efficiency of a firm, it needs to implement the SCM practices. SCM practices have a positive impact on organizational performance [15, 19, 26]. Major SCM practices are expected to improve an organization's competitive advantage through price/cost, quality, delivery dependability, time to market, and product innovation among others. Prior studies have indicated that the various components of SCM practices (such as strategic supplier partnership) have an impact on various aspects of competitive advantage [15, 19, 26, 38, 41].

Strategic supplier partnership: In early studies, Mohr and Speckman (1994) [24] have discussed partnership attributes, communication behaviors, and conflict resolution techniques as important factors for partnership success. Since then, much of the research that has been conducted on this topic has been conceptual and broader in many ways. Recently, several empirical studies have been conducted as well [28]. Goffin, et al., (2006) [9] have examined the specific attributes of close supplier-manufacturer relationships in terms of potential benefits to be attained through such partnerships. Strategic partnership plays an essential role in increasing long-term benefits for the supply chain based on successful supply chain relationships and reducing risk [17, 23]. Strategic partnership also

involves trust, cultural compatibility, top management support, and effective information sharing [19]. Therefore, it is one of the essential practices of SCM to build firms competitive advantage and improve performance [41].

Customer service level: Li et al (2006) [19] considered improving and maintaining customer service level as one of the basic SCM practices to enhance firm's long term marketing performance as well as to build the competitive advantage of the organization. Good relationship with entire supply chain member is necessary with customers in particular due to the growth of mass customization and personalized services because of their inherent advantages in building a sustainable competitive advantage [41].

Level of information sharing: Information sharing and information quality level defines the information exchange efficiency in a partnership. It is crucial in the development of successful partnership with suppliers. Suppliers and customers can collaborate to improve and develop the various elements of the supply chain, such as quality and cost [15]. Information quality is related with accuracy, timeliness, sufficiency and the credibility of the shared information. All business entities that are elements of the supply chain can help to reduce the supply and demand uncertainty by sharing quality information.

Internal lean practice: The term lean production is associated with the Toyota Production System where it is integrated with just-in-time tactics in order to improve quality and delivery time. An internal lean practice that aim at reducing or eliminating non - value - added activities throughout a product's entire value stream, within an organization and along its supply chain network [1, 11]. Researchers also suggest that the implementation of these practices is associated with higher operational performance, such as a reduction in customer lead time, manufacturing cycle time or manufacturing costs, and an improvement in labor productivity and quality [1, 11, 16].

Postponement: Postponement also known as "*delayed differentiation*" is an organizational concept whereby some of the activities in the supply chain are not performed until order arrives from customers. Companies can then finalize the output in accordance with customer preferences and even customize their products to meet the customer expectation which leads to better customer service level [1, 6, 37]. Meanwhile, firms can avoid building up inventories of finished goods in anticipation of future orders. Moreover, transportation between warehouses and factories can be avoided by shipping products directly to the customer rather than keeping them in stock [6].

The above arguments lead to the following hypotheses

H₁: Firms with high level of SCM practice will have high level of market, financial and operational performance.

H₂: Firms with high level of SCM practice will have high levels of competitive advantage

6.2 The Impact of BPM Practices on Firm Performance and Competitive Advantage

Business process management (BPM) provides a broad range of facilities to enact and manage operational business processes. Increasingly, more and more organizations use BPM techniques and tools to promote business effectiveness and efficiency [14].

Process Alignment

Process alignment helps us to capture how well the organization manages the fit between its business processes and other institutional elements. It is an organizational effort to make processes the platform for organizational structure, for strategic planning and its IT capabilities.

Horizontal structural alignment: Much has been written about the role of processes in structuring organizations and, in particular, the development of horizontal organizations structured purely around processes [2, 14]. Unlike early organizational theories which stressed that organizational charts should be designed vertically, recently, scholars have emphasized the importance of a pure horizontal structure which should be designed around core business process and increase interaction among employees [14].

IT alignment: IT has been a powerful enabler for managing business processes and for transforming business [40]. The origins of IT in the BPM concept can be traced from the late 1960s where the tradition of using computers and software application. The role of IT in BPM is tremendous and very broad. According Trkman (2010)[36], IT is more likely to have a positive impact on the performance of individuals and the overall organization and this can be realized if the capabilities of IT match the capabilities of individual users and organizational goals.

Strategic alignment: For the realization of long term organizational goals and to improve the performance of the firm in many directions, BPM must be linked to the organization's strategy [36]. Hung (2006) [14] discussed the strategic theory which states that the focus on organizational strategies to fit with parts of work in the organization. A sustainable world class performance is a miracle to happen if there is a mismatch between the firm's strategic objectives and actual market requirements.

People Involvement

The involvement of human resource at every level in the management of business processes is essential for achievement of the greater performance. People involvement in BPM has two major components, i.e. executive commitment and employees' empowerment also sometimes called *employees involvement* which refers to participation of employees in decision making [14, 39].

Executive commitment: The so called BPM governance model is where executives work together to solve business problems through BPM and collaborate on setting strategic goals for BPM. According to Wong et al. (2013)[39], firms who adopt such model are more likely to sustain and optimize operational performance and improve their competitiveness. Moreover, leadership is a key element in organizational success and results in greater productivity and competitive performance (Hong, 2006).

Employees' empowerment: Hung (2006) [14] noted that empowerment means building a shared vision of where the organization needs to go and crafting organizational strategies by creating an organizational culture and climate that enables employees at every level to take part actively and creatively in building organizational vision. This can generate greater value to the organization in building its competitive advantages. The link between employees' empowerment and organizational performance is also supported by Wong et al. (2013)[39]. Therefore, the above arguments lead to the following hypotheses.

H₃: Firms with high level of BPM practice will have high level of organizational performance.

H₄: Firms with high level of BPM practice will have high level of competitive advantage.

6.3 Relationship between Competitive Advantage and Firm Performance

Competitive advantage "comprises capabilities that allow an organization to differentiate itself from its competitors and is an outcome of critical management decisions [19]. Competitive capabilities "are the attributes of an organization that attract customers; they are potential points of differentiation between an organization and its competitors. Price/ cost, quality, delivery reliability and product innovativeness are the major firms' competitive dimensions which have been found having a significant impact

of firms' overall performance [14, 18, 19, 42]. This argument has led us to develop the following hypothesis.

H₅: Firms with higher level of competitive advantage will have high level of organizational performance

6.4 Relationship between SCM and BPM Practices

Most researchers' attention in this field has focused on the link between the practice of SCM and other process improvement mechanisms such as TQM, JIT, lean production and others. However, less attention has been given in assessing the relationship between SCM and BPM [3].

The short-term objectives of SCM are primarily increasing the productivity and reducing inventory and cycle time, while the main long-term goals include increasing market share and profit for all members of the supply chain [19]. On the other hand, the underlying objective of BPM is primarily to improve operations performance and adapt to changing customer needs and requirements, while the holistic strategic goal is to strengthen overall business performance [39]. The centrality of the environment in models and theories of BPM is evident in the writings of Hung (2006)[14], Trkman (2010) [36] and Niehaves et al. (2010) [27]. They postulate that the organization is an open system that must interact with its environments to survive and develop.

Therefore it is imperative to design SCM to allow an interface between the internal business process and its environment in order for the system exchanging effectively with its environment while allowing the system to have sufficient freedom to function. Bae and Seo (2007) [3] also note that SCM practices need to be supported by implementing BPM practices such as IT and Strategic business process integrations. Therefore, the above argument leads us to develop the following hypothesis.

H₆: Firms with high level of BPM practice will have a better SCM practice

7. Conclusion

To conclude, this research attempted to develop an integrated framework to investigate the two important business practices of the 21st century firms, i.e. SCM and BPM. We have reviewed the literature comprehensively. Then we have constructed 6 hypotheses to be tested using real world firms' data. **H₁**: Firms with high level of SCM practice will have high level of market, financial and operational performance. **H₂**: Firms with high level of SCM practice will have high levels of competitive advantage. **H₃**: Firms with high level of BPM practice will have high level of organizational performance. **H₄**: Firms with high level of BPM practice will have high level of competitive advantage. **H₅**: Firms with higher level of competitive advantage will have high level of organizational performance. **H₆**: Firms with high level of BPM practice will have a better SCM practice. In future research we will show the empirical test results if both SCM and BPM are essential practices for the improvement of firms' overall performance measures

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