

Innovation Management: Exploring the Energy between Management Innovation and Technological Innovation in the Context of Global Value Chains

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Abstract: The paper aims at building a conceptual framework that captures the intricate relationships between management innovation, technological innovation, and a firm's sustainable competitive advantages defined as the ability to upgrade within global value chains (GVCs). The conceptual framework address the drawbacks highlighted in the recent research studies about management innovation-performance relationship. While this research would offer an essential theoretical base to further develop an empirical study, it would also provide important practical insights. First, traditionally, startups build their business cases around proposing new technologies. While technological innovations offer a temporary competitive advantage, most startups often faile to develop fertilized management capabilities (management innovation) that sustain their initial success. Second, federal and provincial policies primarily promote high tech. Initiatives. While such initiatives gain political approval, there is no evidence to support the link between these high tech initiatives and SMEs' long-term success. On the contrary, as these startups grow, they lack managerial capabilities required to survive in the long run.

Keywords: Innovation management, technological innovation, management innovation, global value chains, Innovation system.

1 Introduction

There is a substantial body of knowledge about innovation, its sources, drivers, processes, antecedents, and outcomes. As with many complex organizational concepts, the literature provides multiple definitions and typologies of the concept of innovation (Damanpour, Walker, & Avellaneda, 2009).

The typology that is most relevant to this research is the distinction between technological innovation and non-technological innovation, called in in this study management innovation (MI). Whereas technological innovations refer to technology-based innovations (Damanpour, & Aravind 2012), which can be codified and commonly associated with a process or product (Yam, Lo, Tang & Lau, 2011), management innovations pertain to new management practices, processes, structures or techniques (Birkinshaw, J., Hamel & Mol, 2008). Research about technological innovations has dominated the innovation literature and informed our understanding of the nature of innovation (Birkinshaw, J., Hamel & Mol, 2008). However, over the last decade, there was a surge of research studies about other types of innovation including non-technological / management innovation (Khosravi, Newton, and Rezvani, 2019; Damanpour, & Aravind 2012).

What literature tells us is that innovation, when it is properly implemented, would most likely result in improved organizational performance. There are a plethora of research studies that link innovation to performance improvement whether it is a financial improvement and/capabilities enhancement (Azar and Ciabusch, 2017; Damanpour, Walker, & Avellaneda, 2009). These studies are largely based on the conventional understanding of innovation as a technological-based innovation (Damanpour, & Aravind 2012). Despite the vast amount of research studies about the innovation-performance

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relationship, there are few areas that surprisingly have received little attention. First, there are relatively little research studies that investigate the relationship between different types of innovation and the impact of such a relationship on performance (Volberda, Van Den Bosch & Heij, 2013; Damanpour, & Aravind 2012); more specifically, the relationship between technological innovation and management innovation has not been fully appreciated (Khosravi, Newton, and Rezvani, 2019). The second area is the role of context in investigating the relationship between management innovation and organizational performance (Khosravi, Newton, and Rezvani, 2019 and Azar and Ciabuschi, 2017). This can be attributed to the fact that management innovations tend to be more complex and less visible than technological innovations (Azar and Ciabuschi, 2017). Also, the consequences of management innovation go beyond financial measures to include organizational and innovative capabilities which is difficult to measure (Khosravi, Newton, and Rezvani, 2019; Walker et al., 2015).

This study contributes to the existing body of knowledge on management innovation by addressing the following questions: how does the relationship between management innovation and technological innovation influence organization performance? Is there synergy that can be assumed from advancing one type of innovation over another? We address the shortcomings highlighted in recent research studies about the management innovation – performance relationship's studies by incorporating the concept of the global value chain, which to the best of our knowledge, has not been used as a conceptual framework to analyze the complex relationship between management innovation and performance.

The next section provides a theoretical overview of management innovation and its relationship with technological innovation outlining the consequences of this relationship on organization performance. Then, we introduce the concept of global value chains. Finally, we propose the conceptual framework that connects management innovation with technological innovation in the context of GVCs.

2 Management Innovations

Innovation, as a concept, has been extensively researched, and its definitions, typologies, processes, sources, antecedents, and outcomes are often vigorously debated. Overall, the literature about innovation has distinguished between two different research paradigms (Volberda, Van Den Bosch, and Heij, 2013). The old industrial innovation paradigm which is informed by Schumpeter's early work, who had coined the terms product and process innovations (Walker, Chen, and Aravind, Deepa, 2017; Schumpeter, 1943; Fagerberg, 2005). While the premise of product and process innovation is commonly associated with technological imperatives, it does not entirely disregard other forms of non-technological innovations; nevertheless, it emphasizes the logic of the rational perspective of developing and adopting innovations in an organization. The rational perspective argues that innovation is an invention that adds economic value and makes sense from internal, i.e. organizational, or external, i.e. environmental, perspectives. The new paradigm of innovation research has rapidly evolved around the concept of non-technological innovations that are associated with the way of work in an organization rather than a specific product or service. Researchers used different terms to refer to non-technological innovations (Zhang, Khan, Lee, S., and Salik, 2019), including organizational innovation, administrative innovation, and management innovation (Damanpour & Aravind, 2012). Volberda, Van Den Bosch, and Heij, (2013) argued that although these terms overlap "administrative innovation, organizational innovation, and management innovation are not identical". They posited that "the concept of management innovation is more encompassing." Further, the concept of business model innovations also seems to overlap with the concept of management innovation. In this study, we adopt Hamel (2006)'s definition of management innovation that is "a marked departure from traditional management principles, processes and practices or a departure from customary organizational forms that significantly alters the way the work of management is performed".

Birkinshaw et al. (2008) discussed two levels of management innovation: the operational level and the philosophical level. They argued that operational level is more researchable as it deals with specific tools and techniques that can be tracked and analyzed. Birkinshaw et al. (2008) were the first to introduce a framework that discusses how management innovation is developed in organizations. Over the past few years, there have been several published literature reviews about the concept management innovation including the works of Damanpour and Aravind (2012), Khosravi et al., (2019) and Volberda et al. (2013). Despite the recent surge of research studies, all the recent literature reviews highlighted the need for more research on the topic of management innovations.

To make the prima facie case for the necessity of the theoretical discussions presented in this paper, we propose the following constructs. First, the relationship between MI and technological innovation is still relatively under-researched. This relationship was normally conceptualized around the notion of socio-technical system theory, whereby technological innovations are associated with the technical core or technical system of an organization and management innovations are associated with social core or social system of the organization (Walker et al., 2015). The social-technical system theory argues that both systems need to coexist for an organization to perform. Hollen, Van Den Bosch, & Volberda (2013) proposed three possible trajectories of that relationship: 1) management innovation precedes technological innovation, 2) technological innovation precedes management innovation, and 3) simultaneous interactions between technological innovation and management innovation. The mainstream research supports the proposition that management innovation is a necessary precondition for technological innovations (for example, Azar and Ciabuschi, 2017; Camisón, and Villar-López,

2012). Other researchers (for example, Hollen et al., 2013) argue that both types of innovations need to be combined over time in an intertwined way in order to achieve sustainable competitive advantages. On the other end of the spectrum, startups which build their initial success on adopting technological innovations are a case in point that suggests that technological innovation precedes management innovations in those startups.

Second, the relationship between management innovation and performance has not been fully explored (Walker, Chen, and Aravind, 2017; Azar and Ciabuschi, 2017). Khosravi et al. (2019) identified three types of outcome including financial performance, organizational capabilities and innovative capabilities. They argued that while management innovation drives organizational long-term success “ empirical studies regarding management innovation – outcomes relationship remains scarce”. Most of the studies focused on financial performance while missing aspects of competitive positioning, including effectiveness and efficiency. Unlike technological innovations, the consequences of management innovations on performance go beyond the financial performance to organizational capabilities which can be difficult to quantify (Damanpour, & Aravind, 2012). Thus, the extant literature does not seem to offer a framework to holistically assess the impact of management innovation on organizational overall competitive advantages and positioning (Azar and Ciabuschi, 2017).

Third, while many research studies highlighted various environmental factors, the full effects of context have not been fully captured. The role of context is important when investigating the complex and multidimensional innovation-performance relationship.

3 Global Value Chain

The Global Value Chain (GVC) approach provides an analytical framework that captures the movements of goods, services, capitals, ideas, and knowledge (know-how) within global networks. The GVC approach has gained importance as a means to engage in the discussion of international trade, global-local dynamics, understanding value creation processes, the formation of geographical specialization, and reflecting on regional and national policies (OCED, 2013; OECD, WTO-OMC, & World Bank, 2014). The GVC approach identifies linear value-adding steps between the key actors in a sector (Gereffi & Fernandez-Stark, 2011). It examines the specific characteristics and dynamics relevant to each step in a global value chain, including outsourcing and on/offshoring practices, which facilitate the analysis of governance structures present in these chains. The GVC approach focuses on several dimensions; among others, two key analytical dimensions have received the most attention: 1) the governance structure that explains the power asymmetry within GVCs (Gereffi et al., 2005; Gereffi & Frederick, 2009; Gereffi & Fernandez-Stark, 2011) and 2) the upgrading process through which a firm would climb up the value chain (Gereffi & Fernandez-Stark, 2011). For example, moving from being a raw material supplier to an assembly manufacturer to an original equipment manufacturer (OEM) to an original brand name manufacturer (OBM) to an original design manufacturer (ODM).

Because of the formation of GVCs, SMEs no longer need to possess huge infrastructure to engage in global value chains. Existing literature provides few insights into integration at the organizational level. The available research focuses on the extent to which a region or an economy is integrated into GVCs.

The GVC literature defined five different types of governance structure: 1) markets, 2) modular, 3) relational, 4) captive, and 5) hierarchy (Gereffi et al., 2005; Gereffi and Fredreick, 2009; Gereffi & Fernandez-Stark, 2011). As for the upgrading process, the VGC literature defined a number of possible upgrading trajectories including product, process, functional and inter-sectoral upgrading trajectory (Pietrobelli and Rabellotti, 2011; Gereffi & Fernandez-Stark, 2011; Elola et al., 2012).

4 The Conceptual Framework

Within the context of GVCs, success is measured by the ability of a firm to integrate into GVCs. Integration into GVCs consists of participation in GVCs and upgrading in GVCs. Participation refers to company capacity to systemically utilize its resources to produce goods or services that are valued by GVCs' players. Participation is normally evident by directly exporting goods or services; outsourcing; indirectly exporting goods and services, i.e., through other firms; and purchasing inputs directly from suppliers abroad. Upgrading refers to a firm's ability, once successfully plugged into GVCs, to learn, acquire, and develop the knowledge and expertise needed to climb to a higher value-adding position. Upgrading in GVCs is normally evidenced by the introduction of a new or substantially improved product or service, which has helped the company move to a higher value-adding position. For example, moving from being a raw material supplier to an assembly manufacturer to an original equipment manufacturer (OEM) to an original brand name manufacturer (OBM) to an original design manufacturer (ODM). Upgrading capabilities have long been considered synonymous with firm-level innovative capabilities (Pietrobelli and Rabellotti, 2011; Morrison, Pietrobelli, & Rabellotti, 2008),

Analyzing the relationship between technological innovation and management innovation, and the consequence of this

relationship on performance in the context of GVCs would arguably address some of the shortcomings that were highlighted in recent research studies about the management innovation-performance relationship's studies. First, the context of GVCs can be well-captured through the different governance structures within a GVC. That provides, more or less, a controlled context in which the study can be conducted. Second, the accumulative influences of performance improvement of an organization on the context can also be investigated through observing the changing roles of organization with GVCs and their impacts on forming the corporate governance of the GVC in which they operate. Third, performance improvement that goes beyond the so-called financial measures can be measured by a firm's ability to participate and upgrade in GVCs. Performance improvement in GVCs is assessed through the ability of an organization to participate and upgrade in GVCs. The conceptual relationship between technological innovation, management innovation, and performance in the context of GVCs could be thought of as a matrix as shown below:

Table 1: Conceptual relationship between technological innovation, management innovation and performance in the context of GVCs.

Innovation Type	Participation	Participation
Technological Innovation	√	X
Management Innovation	√	X
Technological and Management Innovation	√	√

Three scenarios can be drawn from the above diagram constituting future research hypothesizes. First, when organizations develop or acquire technological innovations without rethinking their management practices. In this case, these organizations would enjoy temporary competitive advantages that result from their technological innovations, which would enable them to break into GVCs. Nevertheless, due to their inability to maintain and manage their technological edge, their competitive advantage would fade, and eventually, they would lose their competitive position in the GVCs. Captive and hierarchical types of governance would evolve, reflecting a high level of power asymmetry in GVCs and the tendency of lead firms to adopt a vertical integration strategy. Accordingly, clusters are less likely to emerge in such situations. This is the case of startup companies which fail to develop fertilized management capabilities (management innovation) which would enable them to build on their initial success.

The second scenario is when organizations develop management innovations without investing in a new product or service technology. As per Azar and Giabuschi (2017) and Khosravi et al. (2019), management innovations would result in enhanced organizational capabilities which, probably, would be reflected in improved effectiveness and efficiency. Thus organizations would most likely be able to maintain competitive parity with their peers, and, therefore, maintain their position in GVCs. However, breakthrough performance improvement is less likely in the short-term. Captive and hierarchical governances (Gereffe et al., 2005) are most likely to emerge where lead firms would have considerable power over other firms. That reflects the existing situations where US multinational firms have dominated the existing Canadian supply chains. However, in the longer term, these management capabilities developed in these firms would help reduce the cost of technology adoption knowledge transfer and learning. Hence these firms would gradually build move up in the GVC and influence the overall context in the GVC to move away from hierarchical and captive structure toward more modular and relationship structures (Pietrobelle and Rabellottie, 2011). It is important to note also that the role of lead firms in that context which can play an important role in helping local firms improve their capabilities and adopting technologies that align with the technologies adopted in these lead firms (Ernst & Kim, 2002; Bessant et al., 2012).

In the third scenario, organizations not only have successfully introduced technological and management innovations but also built synergy between them. It is postulated that these organizations would be able to fully integrate into GVCs; i.e participate and update in both directions, upstream and downstream, investing in knowledge-based capital (KBC). Relational type of governance (Gereffe et al., 2005) would most likely evolve, promoting learning, networks, and clusters (Tsekouras & Papaioannou, 2002; Bessant et al., 2012). Research has shown that knowledge transfer is commonly associated with innovations. Pietrobelle and Rabellottie (2011) discussed two important examples that reflect such dynamics. The first is the Taiwanese computer industry, where a number of local players were able to develop sufficient upgrading capabilities to become OBM (Kishimoto,2004). The second is the emerging of the metalworking cluster in Espirito Santo in Brazil (Villaschi et al., 2007). Further, the synergy between both types of innovation would enhance organizational resilience to adapt to rapidly changing technologies. Walker et al. (2017) argued that management innovations follow the logic of creative accumulation, whereas technological innovations follow the process of creative destruction.

5 Conclusion and further research

This paper presents a conceptual framework to analyze the relationship between management innovation and technological innovation and the consequences of this relationship on performance. The paper is based on well-identified gaps in the literature: 1) the relationship between management innovation and technological innovation has not been fully explored, and 2) management innovation – performance relationship is not fully appreciated. The study incorporates the concept of global value chains to address the shortcomings highlighted in the existing research studies that investigated management innovation-performance relationship. To the best of our knowledge, the concept GVC has not been used as a framework to analyze innovation-performance relationship.

The presented framework suggests three possible scenarios which capture the three trajectories of the relationship between management innovation and technological innovation in the context of GVC. We argue that the proposed framework offers an essential theoretical base to further develop an empirical study as each of the above scenarios reflect a theoretical hypothesis.

For the empirical study, we propose an inquiry process that embodies the Sequential Exploratory Strategy of mixed methods approach (Creswell, 2009) incorporating case study analysis and quantitative analysis. For the case study analysis, we propose to employ the replication logic of the multiple case study research strategy (Yin, 2003), whereby three Canadian SMEs will be selected, each of which represents one of the above three proposed scenarios. The purpose of the case study analysis is to refine the theoretical proposition and the key research variables that will be used in the quantitative stage. In quantitative stage, the research will analyze the data generated from the Survey of Innovation and Business Strategy conducted in 2009 and 2011 (Statistics Canada, 2014).

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