

# Exploring Business Process Innovation towards Intelligent Supply Chains

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## INTRODUCTION

The concept of the Intelligent Supply Chains (ISC) is a relatively new idea which has been evolved along with increasing technological improvements in supply chains. For instance, sensor technologies and cloud computing are widely used in supply chains. Consequently, the supply chains are becoming smarter and more intelligent (Butner, 2010). Cheaper, faster and better are the important goals of supply chains management. Companies must improve their capabilities to make use of the advanced technologies in their business processes to achieve the goals. Hence, the result is business processes will be changed, improved or innovated. In globalization context, collaborative business process improvement emerged.

There are many theories offering approaches to support business improvement, such as Business Process Reengineering (BPR) and Business Process Improvement (BPI). However, they are not enough for today's companies to pursue cheaper cost, faster getting-to-market and better relationships with co-operators and customers. Nowadays, innovation is pervasive. More and more companies invest more to pursue innovation not only in their products, but also in process and services. Process innovation is one way that companies can get continuous competition.

Process innovation is one of the fundamental elements that enables one organization to learn and change (Bender & Cedeno, 2000). It is a prerequisite in business development; however an enterprise is not an isolated island. So we emphasize innovation not only in the internal processes but also externally. As we know that an enterprise is part of a value chain. So the collaboration of business process innovation across organizations becomes a problem. Furthermore,

business process innovation (BPI) is the prerequisite for developing intelligent supply chains (Chang & Wang, 2011). It is the highest importance for enterprises (Kirchmer, 2008). However presently, we have only fragmented knowledge on how to systematically innovate business processes for companies (Frishammar, Kurkkio, Abrahamsson, & Lichtenthaler, 2012). As IT is increasingly becoming an enabler of process innovation, not only the meaning exploration to BPI but also the approaches for BPI are essential to be explored. Especially when IT is regarded as a driver to BPI, the better understanding to BPI is necessary, and it is the priority of conducting IT resources to do BPI.

In this article, we propose that the meaning of BPI needs to be expanded to include the open innovation thinking in a supply chain context. Through literature review from 1990s, we find the issues and controversies focusing on the understanding difference to BPI, BPI and BPR concepts, and identify which aspects and perspectives should be considered further according to the development tendency of the supply chain. In conclusion, we define the BPI concept via embracing the essence of open innovation towards ISC, and involve IT as an enabler.

## BACKGROUND

Innovation occurs not only in products development but also in processes development. However the academic articles show that product innovation or product and process innovation has been strongly interested by scholars since 1990s, e.g. (Brown & Eisenhardt, 1995; Chryssochoidis, 2010; Johne & Snelson, 1988; Krishnan & Ulrich, 2001). Process innovation is the prerequisite for developing ISC while presently we have

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only fragmented knowledge on BPI (Frishammar, et al., 2012), even though more research are beginning to work in innovation on processes (Benner & Tushman, 2002; Lager, Hallberg, & Eriksson, 2010; Stadler, 2011).

Business Process Management (BPM) can provide a solid foundation to BPI (Snabe, Rosenberg, Møller, & Scavillo, 2008). It can provide an organization with a very powerful strategy execution engine. It has been found that most organizations will benefit from adopting BPM and there are three stages of value creation from the firstly productivity-related value, to the secondly visibility-based value, and then the finally innovation-related value (Snabe, et al., 2008). So BPM can lead to innovation of processes, which in turn can lead to superior operational performance. This is sometimes referred to as operational innovation (Hammer, 2004) and the benefits of BPM obtained through process innovation are substantial.

Many different IT systems are being used for daily works and businesses to support BPM in companies. And with the development of technological advances in enterprise information systems, the role of IT in companies is changing, especially in large and global companies. Over the last three decades, the role of IT in business, has changed from being about “quality” in 1980s to “reengineering” in 1990s, and “velocity” in 2000s (Attaran, 2004). IT is part of those companies and playing an important role not only in the daily operations, but also in companies’ development, such as process innovation. Nowadays companies are continuously carrying out process innovation to get more and more harmonious on their business and IT. As most of the business processes can be supported by the IT systems, BPI became one of the business innovation methods that many companies can gain advanced competitiveness. Through BPI, companies can gain more harmony on IT/business alignment for better using of IT resources, especially in global companies who are part of large and complex supply chains. As mentioned supply chains are becoming smarter and more intelligent because of the new information technology embedded in the business management. Hence it is very valuable and essential to investigate and make use of the IT for BPI, as well as the better understanding of BPI in ISC context.

## LITERATURE REVIEW ON THE DEFINITIONS OF BPI

### Issues and Controversies on the Meanings of BPI

The concept of ‘Process innovation’ was early put forward by Davenport in 1993 (Davenport, 1993). Process innovation has its origins in a variety of approaches to business improvement (Davenport, 1993) and business process management (vom Brocke & Rosemann, 2010). However nowadays, it is still a challenge to large enterprises. It is found that ‘Process Innovation’ or ‘Business Process Innovation’ is still being confused with some other concepts such as BPR (Al-Mashari & Zairi, 2000).

In organizational development, Business process improvement (BPI<sub>m</sub>) is usually thought as “a methodology that is designed to bring about step-function improvements in administrative and support processes using approaches such as process benchmarking, process redesign and process re-engineering” (Harrington, Esseling, & Van Nimwegen, 1997). These actions often follow a specific methodology or strategy to create successful results, such as Benchmarking, Business process improvement, Business process reengineering, and so on. In essence, BPI<sub>m</sub> attempts to reduce variation and/or waste in processes, so that the desired outcome can be achieved with better utilization of resources. Alternatively, BPI<sub>m</sub> is a “focused change in a business process achieved by analyzing the AS-IS (existing) process . . . and then developing a streamlined TO-BE (future) process in which automation [and other enhancements] may be added to result in a process that is better, faster, and cheaper” (Shtub & Karni, 2010). However, compared with BPI<sub>m</sub>, BPR is usually related with much more radical changes to business processes.

The concept of Business Process Engineering (BPR) was first presented by Hammer (1990) and Davenport and Short (1990) in their articles published simultaneously. Hammer and Champy defined BPR is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed (Hammer & Champy, 1993).

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