The Effects Of Business Process Orientation On Innovation

Jing Tang  
Department of Industrial Engineering and Management, Tokyo Institute of Technology, Tokyo, Japan, tang.j.aa@m.titech.ac.jp

L.G. Pee  
Department of Industrial Engineering and Management, Tokyo Institute of Technology, Tokyo, Japan, peelg.aa@m.titech.ac.jp

Junichi Iijima  
Department of Industrial Engineering and Management, Tokyo Institute of Technology, Tokyo, Japan, iijima.aa@m.titech.ac.jp

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THE EFFECTS OF BUSINESS PROCESS ORIENTATION ON INNOVATION

Jing Tang, Department of Industrial Engineering and Management, Tokyo Institute of Technology, Tokyo, Japan, tang.j.aa@m.titech.ac.jp
L.G. Pee, Department of Industrial Engineering and Management, Tokyo Institute of Technology, Tokyo, Japan, peelg.aa@m.titech.ac.jp
Junichi Iijima, Department of Industrial Engineering and Management, Tokyo Institute of Technology, Tokyo, Japan, iijima.aa@m.titech.ac.jp

Abstract

With the evolution of customer’s needs, innovation becomes a core competency of organizations to success in the intense global competition nowadays. Business process orientation (BPO), as “a state of mind” of the organization, emphasizes to employ a customer-and-process-oriented way to rethink and reengineer business. It is interesting and important to understand the role of process-oriented thinking and working in the innovation-driven economy. To better understand BPO, this study applies McCormack’s definition to consider BPO’s influences on innovation in both employee and organization levels in aspect of three main components. Results from questionnaire survey of Japanese companies show that BPO has positive association with employees’ innovative behavior, and then enhance company’s innovation performance sequentially. Meanwhile, employees’ innovation is a mediator in this link. Therefore, BPO supports innovation, but it cannot guarantee success. Motivating all employees to participate and do innovation is a key for generating innovative solutions for customer through being BPO. This paper contributes to the research by understanding the deeper link between BPO and innovation in Japan which is a highly relevant but understudied context. The findings also recommend companies to motivate employees’ innovative behavior as well as improving BPO to being innovative.

Keywords: Business Process Orientation, Employees’ Innovative Behavior, Company’s Innovation Performance.
1 INTRODUCTION

In this information- and knowledge-intensive era, more intense competitions caused by Internet-enabled globalization requires firms to establish hard-to-duplicate capabilities that distinguish themselves from competitors in the market. Innovation is considered as the firm’s “core competency” to offer superior customer value by innovating or renovating services (Kandampully 2002). Generally speaking, innovations occur mostly in firms where can provide the necessary resources for developing innovation (Fagerberg et al. 2005). Original developing, promoting, judging and distributing new ideas of new products or processes are still relied on the capability and enthusiasm of individuals (Jassen 2004; Scott & Bruce 1994). The process perspective of innovation also suggests that innovation in organizations is a “relay race” based on successful connection of individual and team innovations along continuous stages from idea initiation to innovation implementation (De Jong & Den Hartog 2007; King 2002). The organizational innovation comprises changes in the products and processes of an organization due to implementing new managerial and working concepts and practices (OECD 2005; Damanpour 1987), which its performance shows us how the organization can perform the capacity to use the resource effectively and efficiency to achieve the desired output.

This intense global competition and diverse customer needs, flared up by IT development, change the best practice of a company to becoming fast, flexible, and customer-centered. Innovation and reengineering business process become a trend in the recent decades for competitive advantage and long-term survival (Fagerberg et al. 2005; McCormack & Johnson 2001; Schilling 2008; Zaheer et al. 2010). Different with focusing on hierarchies or products, the new trend of business process management, business process orientation (BPO), places special emphasis on the effectiveness and efficiency of the horizontal “end-to-end” processes for both internal and external customers (Reijers 2006). Customer satisfaction has been located in the center of BPO (McCormack & Johnson 2001). BPO refers to “a state of mind” of organization to evolutionarily reconsider and reengineer its business processes, together with IT transformation, according to customer needs (Hammer 2007; McCormack 2001; McCormack 2007). It is widely accepted that shifting to BPO can help firms yield extraordinary performance improvements, as quality increase, satisfaction enhancement, procedures optimization and cross-functional connectedness increment, through rethinking and reengineering of their core businesses (Hammer 2007; Kohlbacher 2010; McCormack & Johnson 2001).

Most of innovations are not revolutionary, but evolutionary with customer’s needs. Because BPO changes organizations to always keep in mind and keep pace with the evolution of customer’s needs, which provides abundant information and sources for innovation. Next, BPO also implies continuous improvement of organizations, which can serve as a dynamic capability to innovate, via applying new methods and technologies for either doing new things or old things in a new way (Anand et al. 2009). Besides, innovations may be adopted in the business process and each individual involved will learn the new knowledge hidden behind the change and adapt in the new working parameters (Papargyris et al. 2002). So, do companies need change to be process-oriented from a functional mindset for effective innovation?

Accordingly, in this study, innovation has been assessed from two aspects: employees’ innovative behavior (EIB) and company’s innovation performance (CIP).

Extensive literature shows that BPO consists of a change in structure, focus, management, and culture of a company (Hammer 2007; Kohlbacher 2010; McCormack & Johnson 2001), which in turn effects the way and environment of employee’s work. From innovation perspective, it is interesting to study whether becoming BPO can motivate or support employees’ innovative behavior or not. When some researches address there is a nature gap between continuous improvement and innovation (Clark & Timms 2003; Griffith & Mullen 2009), some studies consider BPO potentially yield innovation, especially process innovation (Zaheer et al. 2010). It worths us to further discuss the link between BPO and company’s innovation performance empirically. Additionally, to answer the questions such as “is innovation a process or a culture?”, or “are core innovators the innovation team members or frontline employees?”, understanding the role of employees’ innovative behavior in the organizational innovation is important in effective innovation management, but only a limited number of study directly shows the relationship of them. With innovation being central to company’s long-term health and viability, the use of business process management to improve return on innovation investments can provide a large boost to a pursuit of growth and high performance. Currently, many traditional organizations have used the approach of business process management only on a project basis to manage process transformations and incremental improvement efforts. On the contrary,
leading companies are increasingly developing lasting business process management capabilities to deliver business value on an ongoing basis (Krichmer 2011).

It has been observed that most empirical research on BPO and innovation has mostly been conducted in western countries such as the U.S. (Scott & Bruce 1994; Scott & Bruce 1998; McCormack & Johnson 2001), Netherlands (De Jong & Den Hartog 2007; Pieterse et al. 2010), Germany (Vera & Kuntz 2007), and Spain (Martin et al. 2007). This study addresses the gap by collecting data from employees in Japanese companies to understand the relationship of BPO and innovation. According to Imai (1986), a process-oriented thinking is the major point of the “Kaizen strategy” in Japanese management that has helped many companies succeed. Japanese culture shows in their management practice as the concentration on community and human issues, and in corporate aims and strategy as the forming of harmony with the people which are the organization's most valuable asset. Whereas of the western viewpoint, the individual's needs are adjusted to fit the goal of the organization, and the great emphasis is placed on professionalism and specialization (Linecar & Preston 1993; Ishikawa 1989). The cultural differences make Japan to be more process-oriented, comparing with the U.S. as a results-oriented society. Moreover, as a leader in the global market of automobiles and electronics (Fagerberg 2005), Japanese companies are among the most innovative firms. It is therefore a suitable context for studying BPO, innovation, and their relationship. In general, Japanese companies view innovation as a collaboration of all employees, regardless of organizational levels, rather than a task for limited part of the organization (Forrester 2000). Because of that, it is interesting to move our focus onto this understudied context.

In sum, the research questions addressed in this study are:

**RQ1:** Does Business Process Orientation promote Employees’ Innovative Behavior?

**RQ2:** Do Business Process Orientation and Employees’ Innovative Behavior improve Company’s Innovation Performance?

Based on a survey of 127 Japanese companies, we found that company’s innovation depends on employees’ innovative behavior and no significant direct effect of BPO on company’s innovative performance. More interestingly, the result shows that employees’ innovative behavior mediates the effects of BPO components on company’s innovation performance. This study potentially contributes to research and practice in several ways. First, the study tries to find out the deeper understanding of link between BPO and innovation. Second, in line with McCormack’s measures of BPO, we examine the influence of BPO on the employees’ innovative behavior on aspect of three BPO key components. Third, this is probably the first empirical study to examine the BPO and employees’ innovative behavior in Japanese companies, which is a highly relevant but understudied context.

## 2 CONCEPTUAL BACKGROUND

### 2.1 Business Process Orientation (BPO)

A business process is a specific group of activities and subordinate tasks which results in the performance of a service that is of value (McCormack 2001). Focusing on the core business processes rather than functions (Hammer 1996; Hammer & Stanton 1999; Gardner 2004). It is a shift from vertical management system to horizontal management system (Reijers 2006; Ostroff 1999), which means to restructure an organization to better satisfy customers more efficiently, less costly, and eventually achieve better firm performance. That is why we can consider business process orientation as an important ingredient for successful reengineering and redesign efforts (Hammer & Champy 1993; Davenport 1993). As the Internet enables worldwide globalization, intense competition makes the only way to compete in the “digital economics” to focus outward on the customer and value-added processes (McCormack 2007). McCormack and Johnson (2001) illustrate firm “survival in the Internet economy will depend both on the effectiveness of internal processes and their integration with supply chain customers”. Nowadays, not only the process-oriented reengineering is widely used by firms all over the world, but also many new business-process-oriented e-corporations which are supported by information technology across-the-board are now forming (McCormack 2007). The effects of process orientation on organizational key performance most often reported are speed improvements, increasing of customer satisfaction, improvement of quality, reduction of cost, and improvement of financial performance, respectively (Kohlbacher 2010). BPO, as the best reflection of this opinion, is defined as a process-oriented thinking and management of organization emphasizing process outputs and customers satisfaction (McCormack 2007; Hinterhuber 1995).
Based on McCormack (1999, 2001, 2007), a process-driven organization can be characterized by five major components: (1) process-based view of the business, (2) process-matched flat structures, (3) process-oriented jobs, (4) process management and measurement systems, and (5) embodied customer-focused and continuous improvement-oriented values and beliefs. The process-based view, as the fundamental guide, emphasizes the value of process defining and process thinking. With clearer understanding of business processes, business process redesign for innovation is likely to be more effective (Zaheer et al. 2010). Process-matched flat structures illustrate structured relationships among elements, activities and workflow boundaries. Process-oriented jobs mean that employees’ jobs are assigned basing main business processes, and it requires frontline employees or teams to take full responsibility to processes and customers of processes directly. Process management and measurement systems focus on the establishment of standard business flow measuring and rewarding methods. Process values and beliefs accentuate to create a “business process culture” with culture-consistent structures and systems. Within this culture, empowered employees appear to be more focused on customer value creation and continuous improvement of both results (products and services) and processes. The above-mentioned description shows the consensus view of the components of a business process oriented organization as an organization that emphasizes process, a process oriented way of thinking, outcomes and customers as opposed to hierarchies. In this study, we selected process view, process jobs, and process management and measurement to be our focus as same as the mention of key BPO elements in other studies (McCormack 1999; McCormack 2001; McCormack 2007; McCormack & Johnson 2001; Gemmel et al. 2008; Skrinjar et al. 2006; Skrinjar et al. 2008). To be precise, a firm with high BPO degree does not just focus on the outcomes of business process, but also the effectiveness of weaving related organizational resources, especially human capital, into key business processes.

2.2 Employees’ Innovative Behavior (EIB)

Organizational innovation requires not only the attempt of some appointed “innovators”, but also the innovation effort of most employees at daily work (Huhtala & Parzefall 2007). The organizational-level outcomes depend on the brainpower of employees and the systematic coordination of their innovative behavior for the new processes, products, and services development and improvement across functions or even organizations. Enhancing the creativity and innovation among employees is treated to be one imperative step for organizations to generate hard-to-imitate competitive advantage (Amabile 1988; Amabile 1997; Oldham & Cummings 1996; Teece 2010; Martins & Terblanche 2003). Many practitioners and scholars have investigated the potential simulative of innovative behaviors, and identified many individual and organizational antecedents from different perspectives, such as proactivity, self-confidence, problem-solving style, leadership, work group relationship, job autonomy, organizational knowledge structure, and organizational support (De Jong & Den Hartog 2007; Dorenbosch et al. 2005; Ong et al. 2003; Scott & Bruce 1994; Unsworth & Parker 2003). However, despite the innovative behavior among employees is widely accepted as a critical fundament of organizational innovation, little empirical evidence has been provided to verify the existence and significance of the relationship between the employees’ innovative behavior and organizational innovation. In this study, innovative behavior is defined as employees’ behavior “directed towards the initiation and intentional introduction (within a work role, group, or organization) of new and useful ideas, processes, products, or procedures” (De Jong & Den Hartog 2007).

2.3 Company’s Innovation Performance (CIP)

Innovation is interpreted as the first practical realization or commercialization of some possible ideas (Fragherberg et al. 2005). In order to create new economic values in this constantly-changing environment, the existence of accesses to many relevant information, capabilities and resources is a prerequisite for the transformation from an invention to an innovation. Hence, the measure of innovation at the organizational level relates to individuals, team-level assessments, and organizations from the smallest to the largest (Davila et al. 2005).

Generally, two kinds of innovation have been classified by Schumpeter in 1911 based on the innovation objects: product innovation and process innovation (Schumpeter 1934). The product innovation is to introduce new or improved goods or services to the market, and the process innovation is to adopt new or improved methods to produce goods and services. According to Boer
and During (2001), the primary impetuses of process innovation are the reduction in lead time and operational cost, as well as the increase in manufacturing flexibility. The principal impetuses of product innovation are the new revealed customer requirements and the market expansion strategy. Product quality is focusing on meeting the tolerances in the result of manufacture; on the contrary, process quality focuses on each activity and forces the activities to reach maximum tolerances irrespective of the result. The differences between them tend to be variable among industries and levels of consideration. For instance, in some services industries and the level of the whole economy, their distinction maybe blurs. Both introduction of new products and application of new practices are important for organization to satisfy the diversified customer needs in today’s globalized economic environment, nevertheless, while the introduction of new product is commonly assumed to have a clear-and-positive effect on the growth of income and employment, process innovation can have a more indistinct effect from the cost-cutting nature (Fragerberg et al. 2005). In addition, since the product innovation mostly provides the aspect of intensity of innovation (e.g. the number of patents) and the process innovation can observe whether a firm has performed the innovation or not (Polder et al. 2010), it is necessary to consider the impact from both of them. As a result, company’s innovation performance, in this paper, comprises both the results of an organization’s product innovation and process innovation.

3 RESEARCH MODEL AND HYPOTHESES

In some previous case studies about BPO (Kohlbacher 2010; Hung 2006), encouraging employee motivation to break new ground is always a key practitioner-setting achievement of the process-oriented organization (Kohlbacher 2010). However, there is almost no quantitative research before considering the connection between BPO and employees’ innovative behavior. Choi and Liker (1995) consider the more effective and expedient to involve employees’ work in quality control, the more employees doing and thinking the continuous improvement. They believed that process orientation could disseminate employees’ enthusiasm for continuous improvement through informal communication. One possible reason is that BPO values innovative approach, and provides a strong faith of employees’ contribution to quality improvement through process-based job assignment (Choi & Liker 1995; Kohli & Devaraj 2004). Interestingly, literature about change management also stresses the importance of giving attention to processes and procedures as a means to ensure employees’ cooperation during change (Van Knippenberg et al. 2006). In line with McCormack’s definition of BPO, this study considers the effects of BPO on employee’s innovative behavior from three aspects: process view, process jobs, and process management and measurement.

In-depth process view implies clear process definition and documentation in an organization (McCormack 1999; McCormack 2001; McCormack 2007; McCormack & Johnson, 2001). It supports to build a consensus of business within organizations. As rethinking processes grounds on mapping, understanding, and analyzing processes of organization, process view supports the efficiency of employees’ innovation (Xu et al. 2004). Moreover, innovation asks for the cooperation from different domain (Teece 1992; Bockle 2005). Employees, who understand their process roles and the role of others, are more willing to share their knowledge and thought. This is because the employee who understand their role in the bigger image are often more motivated to complete their tasks.

In process-oriented organizations, employees working in process-oriented jobs have to deal with various potential problems of their in-charged process in the daily work (McCormack & Johnson 2001). Multidimensional jobs provide more rich experiences and knowledge to employees for innovation. Meanwhile, employees also need to continuously absorbing and learning new knowledge. In which, learning transfers climate and motivates innovation (Ismail 2005; Bates & Khasawneh 2005).

BPO requires employees to take all-around responsibility of assigned processes, and then rewards them based on performance of these processes (McCormack 1999; McCormack 2001; Davenport 1993; McCormack & Johnson 2001; Skrinjar et al. 2008). So, process-oriented measurement improves the measurability of employees’ innovative behavior, comparing with traditional position-based salary. According to Coelho and Augusto (2010), the extent that organizations can identify the results of frontline employees’ efforts contributes a meaningful and worthwhile feeling about jobs, and at the consequence fosters employee creativity. Process-oriented flat infrastructure increases empowerment of employees, which is important in speed, enthusiasm, and
innovation (Amabile 1997; Coelho & Augusto, 2010). In process-oriented organizations, employees are able to make the improvement and innovation decision through their group works (Axtell et al. 2000), instead of waiting for the practitioners’ permission.

Thus, we consider BPO makes employees respond more positively to the change, and conduct more innovative behavior via the following hypothesis:

- **H1a**: Process view is positively associated with employees’ innovative behavior.
- **H1b**: Process jobs are positively associated with employees’ innovative behavior.
- **H1c**: Process management and measurement is positively associated with employees’ innovative behavior.

Extensive studies exhibit, by the means of adopting BPO to their organizations, companies generate better organizational performance than before in many dimensions. The most reported positive effects of BPO are process/product quality increase, process/product cost cutting, customer satisfaction improvement, and time reduction (McCormack & Johnson 2001; Skrinjar et al. 2006; Skrinjar et al. 2008). Continuous consideration of process improvement serves as a mechanism to improve the performance of business processes. Whereas there is a limited number of researches studied the effect of BPO to product innovation, Hammer (2007) states that BPO helps companies come up with the process innovation. There are several reasons for us to consider the link between BPO and company’s innovation performance. First, as the information and resource are now more widely dispersed than before, collaboration across multiple functional and organizational boundaries has become commonplace (Fagerberg 2005; Masaru 2006). BPO is positive with interdepartmental connectedness and negative with inter-functional conflict, because of the high frequent cross-functional interact and cooperation at daily work in the process oriented organizations (McCormack 2001), therefore BPO provides a good culture to support organizational innovation collaboration. Second, since the commercialization of new ideas has assumed great important in the innovation process, a largely of related studies argue that a successful innovation needs to maximized fit to customer’s expressed or hidden demands in the context of constant change market. Moreover, Laforet and Tann (2006) emphasize that customer focus is one of the drivers of manufacturing SMEs innovativeness. BPO implies not a change to simple process focus but a change to customer-centered process focus (McCormack & Johnson 2001). Along with evolution of customer needs, concentration, interaction with customers, the tight relationship with customer stemmed from BPO should be able to help organizations capture the real customer needs for innovation. Third, BPO aims to creatively rethink and reengineer processes with IT application (Eardley et al. 2008), according to customer’s expressed and latent needs. These IT supported new practices are highly potential to bring a big change into organizations. Thus, we assume that the engagement of BPO could be treated as an enabler for companies to do innovation.

- **H2**: Business process orientation is positively associated with company’s innovation performance.

As employee knowledge is one of company’s core resources and capabilities, employee’s innovative behavior is the foundation of companies to pursue high performance (Jassen 2004; Scott & Bruce 1994). Innovation refers to the breaking of habitual actions and traditional routines (Ford 1996; Gersick & Hackman 1990; Drazin et al. 1999). Organizational innovation calls for employees to point out problems, generate new ideas, develop new solutions, and support implementation of innovations at work. Nevertheless, there is no framework or comprehensive planning for innovation, so employee’s own motivation is required (Kesting, 2007). For example, Turgoose suggests (2000) that the acceptance rate of creative ideas suggested by employees positively influences company’s performance. Organizational innovation is the systematic outcome of the collaboration of innovative behavior among employees (Huang & Wang 2011), as well as the availability of necessary information and resources (Cohen & Levinthal 1990; Damanpour 1991). For instance, in the case of effective product innovation, shop-floor employees need to closely contact with customers, discover and report their unsatisfied or latent needs (Shipton et al. 2006). Sometimes it also challenges their professional talent. For effective process innovation, in designing phase, it strongly depends on the innovative capabilities of process teams. In implementation phase, employee’s commitment and support plays a key role in the infrastructure transformation. Therefore, we consider the employees innovative behavior is positive related to company’s innovation performance.

- **H3**: Employees’ innovative behavior is positively associated with company’s innovation performance.
As discussed in preceding paragraphs, employees’ innovative behavior is likely to follow process view, process jobs, and process management and measurement, as these three components of BPO give commitments and good environments for employees to innovate. By comparing to managers, frontline employees are able to see and point out more problems and opportunities directly and immediately during their daily contacts with customers, and engagements in business processes at work (Cadwallader et al. 2010; Wise 1996). The importance of employees cannot be overlooked in the organizational innovation. Especially, in process-oriented organizations, employees or teams have full responsibility as the owner of the specific processes. Under these conditions, without employees involvement in organizational innovation, it is difficult for organizations to discover changes of customer needs, judge effectiveness of innovation options, and launch new IT applications. Therefore, we consider that employees’ innovative behavior plays a vital role to link BPO and company’s innovation performance. Employees’ engagement in innovation at their daily work is the key for organization’s transforming from efficiency focus to innovation focus during developing BPO. Thus, we expect that employees’ innovative behavior mediates the relationship between three components of BPO with company’s innovation performance:

H3a: The relationship between process view and company’s innovation performance is mediated by employee’s innovative behavior.

H3b: The relationship between process jobs and company’s innovation performance is mediated by employee’s innovative behavior.

H3c: The relationship between process management and measurement and company’s innovation performance is mediated by employees’ innovative behavior.

The research model and hypotheses are shown in Figure 1.

4 RESEARCH METHOD

4.1 Survey Instrument Development

The proposed model was assessed with data collected in a survey. For the measurement of business process orientation, we use the 12 questions developed by McCormack (2001, 2007). Among them, four questions are related to process view (e.g., “Business is viewed as a series of linked processes.”), three questions are related to process jobs (e.g., “Jobs are usually multidimensional and not just simple tasks.”), and five questions are related to process management and measurement (e.g., “Process performance is measured in your organization.”). As reported by McCormack (1999, 2007), the result of his component factor analysis showed problems with several measures along with the components of process-matched flat structures, and process values and beliefs specifically. Along these lines, we decided to exclude those factors, and apply three-factor model, which is used by Gemmel et al. (2008), Skrinjar et al. (2006), and Skrinjar et al. (2008).

The questions related to employees’ innovative behavior were adapted from prior studies applying the theory of planned behavior, is well-conceived and has been used to understand a wide range of behaviors (Bock et al. 2005; Fishbein & Ajzen 1981; Lin & Lee 2004; Price & Muelle 1986; Robinson & Shaver 1973). Employees’ innovative behavior was measured with four questions related to frequency of innovation, time spent on innovation, activeness in innovation, and participation in innovation projects. Examples include “…innovate actively” and “…spend significant time
Table 1. Demographic Profile

In this study, in order to provide a comprehensive evaluation, company’s Innovation Performance takes into account both product innovation and process innovation. Following the previous studies (Boer & During 2001; Tracey & Tan 2001), product innovation was measured with four questions related to function, quality, cost, and reliability/security of new product/service innovation performance comparing to the competitive firms, and process innovation was assessed with three questions related to quality, effectiveness, and speed perspectives of process innovation performance comparing to the competitive ones.

All survey questions were measured on five-point Likert scales anchored by “strongly disagree” (1) and “strongly agree” (5). Many prior studies treat firm size as an important factor to influence company’s innovation performance. A global focus is generally shows that, large firms, with advantages of stronger cash flow, higher economies of scale, and wider knowledge base is considered to be more innovative (Cohen & Klepper 1996; Rogers 2004). However, some SMEs with higher flexibility are also very innovative, especially in high-tech industrial branch (Rogers 2004). In this research, firm size and industry were two control variables. Firm size was measured by the number of employees. Industry was measured as a categorical variable indicated by respondents as either from manufacturing or non-manufacturing sectors.

4.2 Data Collection

A survey was conducted in Japan with the support of the Japanese Innovation Management College in late 2010. The questionnaire was sent to 1,819 firms listed in the database of NTT DATA Corporation. We received 127 completed responses and the response rate is around 7 percent. The demographic profile of the respondents is shown in Table 1. Most of responses are from large organizations with more than 1000 employees (64.6%). Most respondents work in the manufacturing sector (70%). Among the respondents, 74.8% are from the corporate development department, 48.8% are section heads, and 32.3% are core staffs who are manager candidates.
DATA ANALYSIS

The IBM SPSS Statistics version 19, Smart PLS (Partial Least Square) version 2.0 and the Bootstrap resampling method with 100 resamples were used to test the research model by structure equation modeling (SEM).

5.1 Test of Measurement Model

Assessment of measurement model includes three-dimensional evaluations: reliability, convergent validity, and discriminant validity. All scales show high internal consistency and reliability. The Cronbach’s alpha estimates for BPO, process view, process jobs, process management and measurement, employees’ innovative behavior, and company’s innovation performance shown in Table 2 were all above the recommend threshold of 0.70. In structural equation modeling (SEM), composite reliability (CR) is also used to value the reliability of constructs, and the suggested threshold of it is 0.70. In Table 2, all CRs of constructs are above 0.88. In addition, the loadings of each item to constructs are significant at 0.01 level.

Convergent validity is assessed by average variance extracted (AVE) and factor analysis. In Table 2, all AVEs are above the recommended acceptable value of 0.50. The principal component factor analysis with Equamax rotation (see Appendix) in SPSS supports our proposed evaluation of constructs. Five corresponding variables are extracted, and BPO consists of three of them: process view, process jobs, and process management and measurement. Next, an acceptable individual reliability of items is shown by the item loadings to their related constructs being above 0.70. In our study, the loadings of each item to related constructs in the sample are all above the recommended benchmark of 0.70.

The discriminant validity demonstrates the difference of construct measures in the research model. Results of comparing square root of AVEs and constructs correlation coefficients support the adequate discriminant validity of our questionnaire. In construct correlation part of Table 2, bold numbers in the diagonal are the square roots of AVE, while off-diagonal numbers are Pearson correlation coefficients among constructs. In Table 2, as process view, process jobs, and process management and measurement are three components of BPO, if ignoring the column of BPO, all of constructs correlation coefficients is bigger than the corresponding square roots of AVE, which means all these constructs are more correlated with their own measuring items than with any other constructs.

5.2 Test of Structural Model

Results of our structural model analysis are shown in Figure 2. First, according to R-squared values, about 30.9 percent of the total variability of employee’s innovation behavior and about 12.2 percent of the total variability of company’s innovation performance can be explained by the constructs used in our model. Both of them meets the recommended minimum limit 0.10, so the nomological validity is satisfactory (Santosa et al. 2004). Second, we verify whether the signs of hypothesized paths show the same direction as our hypotheses. At this point, hypotheses 1a, 1b, 1c and 3 are confirmed by the data as there is a positive sign between BPO (process view, process

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach’s Alpha</th>
<th>AVE</th>
<th>CR</th>
<th>Construct Correlation</th>
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<td>.51</td>
<td>.92</td>
<td>.71</td>
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<tr>
<td>Process View (PV)</td>
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<td>Employees’ Innovative Behavior (EIB)</td>
<td>.89</td>
<td>.75</td>
<td>.92</td>
<td>.87</td>
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<tr>
<td>Company’s Innovation Performance (CIP)</td>
<td>.91</td>
<td>.54</td>
<td>.92</td>
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Table 2. Psychometric Properties of Constructs and Construct Correlations
jobs, process management and measurement) and employee’s innovation behavior, and between employees’ innovative behavior and company’s innovation performance. Hypothesis 2 is not supported because the sign between BPO and company’s innovation behavior is not positive as our assumption. Third, we check the significance of path coefficients. Referring to the corresponding t-value obtained from Bootstrap procedure in Smart PLS, it can be seen in Figure 2 the path coefficients related hypotheses 1b, 1c and 3 are statistically significant at 0.01 level, but the relationship between process view and employees’ innovative behavior and between BPO and company’s innovation behavior is not statistically significant even at 0.05 level. Considering the above two aspects, we accept hypotheses 1b, 1c and 3, but reject hypotheses 1a and 2. Therefore in organizations with in-depth process-oriented job assignment and outcome measurement, employees are more active to innovate at work, which initiate, support and promote the overall product and process innovation of organizations.

### 5.3 Test of Mediation Effects

To test mediation effects of employees’ innovative behavior, in addition, the Sobel mediation test and its variants (Aroian test statistic & Goodman test) are used. All mediation test statistics are shown in Table 3. Most of them are significant at 0.05 level. The result supports hypotheses 3b and 3c, so employees’ innovative behavior mediated the impacts of BPO, especially process jobs and process management and measurement, on company’s innovation performance.

### 6 DISCUSSION AND IMPLICATIONS

Previous PLS analysis supports hypotheses 1b, 1c, and 3 (3b and 3c) in our research model. BPO has a positive direct association with employee’s innovative behavior as expected, and a positive indirect association with company’s innovation performance through motivating employees to engage innovative behavior. This finding shows the importance of becoming process-oriented and customer-centered to successful organizational innovation. Additionally, because of the effects of BPO depend on employee’s innovative behavior, it is also suggested that the effects of BPO may be highly culture and human based. As innovation refers to “newness”, organizational innovation requires employees to
break their habitual actions and traditional routines within organizations. Without the intention and attempts to be innovating, BPO of the company may still inefficiently focus on the efficiency improvement of some rigid processes without continuously looking at customers. In other words, to provide new or better solutions for customer’s expressed and latent needs in the competitive environment, employee’s commitment and engagement of innovation play a decisive role in process-oriented reengineering and corresponding operation. Employees own not only the capability to execute, but also to generate idea. So when employees are able to keep in mind what the company, processes, and customers look like during doing and diffusing innovation at work, the innovation of this company is tending to be more efficient and effective towards market and customer demands.

Contrary to expectation, hypotheses 1a, 2 and 3a are not supported by the results. In our study, BPO has no significantly direct positive association with company’s innovation performance, as well as the non-significant effect of process view on employee’s innovative behavior. This finding of BPO implies two possible assumptions. First, there may be a time lag between BPO and its effects on company’s innovation performance. In the real implication, BPO is still not easy to pin down within the rigid hierarchical structure (McCormack 2001). It needs time for traditional Japanese companies to change from hierarchical to horizontal. Meanwhile, innovation also always takes time and other resources (money, human, etc.) to achieve the goal (Hilles et al. 2009). Second, BPO in Japan may still focus on productivity improvements more than innovation. As the successful of Kaizen principles to provide operational excellence of Japanese companies in past decades, generally, the tendency toward small-step improvements along with process efficiency are more common than the breakthrough innovation tendency in Japan (Berger 1997). The highly risk-averse culture of Japan also needs us to rethink innovation in Japan nowadays. Next, we discuss the finding of process view. The nonsignificant effect of process view can be interpreted as that process view, as clear process definition and documentation, is only a basic component of BPO to provide foundation to process jobs and process management and measurement (McCormack 2001). However, according to our response, for all three items of process view, the averages are lower than 3, which is a little lower than the averages of items related to other two BPO components. It means companies mainly tend to emphasize process jobs and process management rather than process view. Among most of companies, process understanding is limited in only high-level managers and process engineers, without announcing to employees who are real process executor. In the beginning of 2012, we conducted a related questionnaire research in one of Japan's largest telecom engineering service providers, and found that only about 20 percent of responses can fully understand the business process of their company. Without knowledge about which processes and which part of processes they are joining, it is difficult to change employees from an executor to a thinker.

This study potentially contributes to research and practice in several ways. First, this is probably the first empirical study focused on the link between BPO and company’s innovation performance. Although it is practically accepted that in-depth BPO will lead to improved organizational performance, but this study finds becoming business process oriented still cannot be treated as a direct path for organizations to do innovation. Their link is significantly mediated by employees’ innovative behavior. Second, based on McCormack’s definition and measurement (McCormack & Johnson, 2001), considering and comparing the difference of process view, process jobs, and process management and measurement, deepen our understanding of the effect of the influence of BPO on employees’ innovative behavior. Third, this study is probably the first study to empirically examine the BPO using McCormack’s BPO definitions and measures (McCormack & Johnson 2001) in Japanese firms, which is a highly relevant but understudied context.

This research also gives some implementations to managers. First, a higher level of BPO enables employees to conduct more innovation-related behavior as renovating business processes or products, and adopting new practices or information technologies, which is also a crucial stimulus for better company’s innovation performance sequentially. Managers should improve in-depth BPO, especially process jobs and process management and measurement, in the company to provide innovative solutions for customers. It requires to continuously thinking of customers and innovation during process-oriented design, reengineering, and operation. Besides, a clear definition, documentation and mapping of existed processes are also important. It is not only the foundation for process-oriented job assignment and process management and measurement, but also help to make a shared view among shareholders to rethink processes. Because an employee is both a process executor and an innovation thinker, it is also important for managers to educate employees about generating business processes to improve their general understanding. Further, employees’ innovative behavior is important for the link between BPO and company’s innovation performance. It is quite
important to motivate employees to innovate. For example, possible methods include improving external knowledge absorption, manager’s commitment to innovation, and corresponded innovation training.

The findings in this study should be interpreted in view of its limitations. First, since this study is just an exploratory study in Japan with 127 samples, it is too early to draw a general conclusion to deny the relationship between BPO and company’s innovation performance, and between process view and employees’ innovative behavior. More works will need to be done in future to assess them in the context of different industries and countries. Second, most of the respondents are from the manufacturing sector. More studies of other sectors are needed to assess the proposed model. Third, this study focuses on Japanese companies, so there may be some geographical or cultural specificity, and the findings may not generalize to other settings. It may be interesting to assess the proposed model in other countries, especially those with different culture compared to Japan, like China, Finland, and Australia. Fourth, only perceptive measures have been used in our research. Self-reports may contain some presentational biases (Gaes et al. 1978). Hence, future research may consider using objective measurement of these factors. Additionally, one more point needs us to pay attention. According to previous discussion, this research finds employees’ innovative behavior is quite important for companies to innovate. So for researchers, it is interesting to study the comparative importance of employee’s innovation with other potential variables, such as communication and cooperation to assess that innovation is human based or not.

7 CONCLUSIONS

Innovation is becoming a typical representative strategy in this information and knowledge intensive era. Even though BPO with the ability to eliminate inefficiencies and supplement innovation is widely accepted and proved as a great business performance contributor, but based on our research, being process oriented is short for its capability to make firms becoming innovative straightway. In other words, BPO supports innovation, nevertheless it cannot guarantee to be the full-of-rose-covered road to success since BPO is just the first leg that will be followed by the second leg, the employees’ innovative behavior, in our relay race team to reach a goal line of company’s innovation performance. Motivating all employees, the core resource of the organization, to participate, introduce, generate, together with implement innovation, is the key for companies to establish innovative solutions for customers through being BPO. Furthermore, besides concentrating on process jobs and process measures, this study also suggests to rethink the process view of BPO in future research. According to Grant’s Research (Grant et al. 2008), supporting employees to make sense of four questions: “what is the company doing?”, “what am I doing?”, “who is the company?”, and “who am I?”, is able to increase their affective commitment to the companies. Rather than process standardization, tutoring employees to really understand of general processes is more important to enhance their commitment in BPO, and then to innovation.

References


### Appendix

**Factor Analysis of Reflective Constructs**

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