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The Conceptual Framework of Business Process Management

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1 Introduction

It is generally known that today's era — the IT era — is characterized by the global spread of information networks using Information Technology and the Internet. In the IT era, corporate activities both inside and outside the corporation, are conducted in multiple areas simultaneously and surpass the hitherto existing limits of time and space. Because of this historical background and the complete environmental change to cut-throat competition, the leadership in commercial deals has shifted from suppliers to buyers. Consequently, the suppliers' appropriate response to buyers' and customers' demands becomes one of the primary means to achieve a competitive advantage. Hence, in order to respond to the power wielded by customers (buyers and end-users), the suppliers need to customize their products and services according to the customers' tastes and desires to cater to the likes of each customer.

It is necessary to (i) move the managerial point from the conventional vertical communication system usually found in organizations to a horizontal communication system and (ii) establish a Business Process Management (BPM) system that can speedily and flexibly manage its responses to such environmental changes. This paper will discuss a framework that incorporates the understanding, construction, management, and evaluation of the business process, both inside and outside the corporation such that the customers are satisfied in a competitive environment in the IT era.

2 Necessity and Possibility of Process Management in the IT Era

We live in a fast-paced world where things are constantly changing; therefore, it is increasingly difficult to predict what will happen in the near

future. Moreover, the development of information that allows one to circumnavigate the limits of time and space on global business transactions has been altering the corporate environment in various ways. This environmental change necessitates that companies swiftly match the input of environmental changes with corporate output. In particular, because of the traditional response which focuses on functions often results in an accumulation of information and materials due to the imbalance among functions and the barriers among the many functions, there is a need for a swift response to the environmental changes from the process management perspective. In the IT era, the necessity of and possibilities for process management are being propounded simultaneously by the following two demands (Monden *et al.*, 2007, pp. 235–248).

2.1 Demand from the management side

The leadership in commercial deals has shifted from vendors to customers due to the easy access to the Internet and cut-throat competition, and hence, a company needs to plan and offer its products or services in line with the customers' views. In other words, there is a need for horizontal organization management that considers the customer as the starting point. In addition, in Japan, the "Internal Control System (J-SOX Law)" enforced in April 2008 laid down several stipulations regarding operation flow which have to be met. These demands from the management side can be attained by a system that integrates material flow and information flow. Therefore, the construction of a BPM system that can manage the performance of the business process when the customer's view is deemed most valuable as an important means to cater to the demands from the management side.

2.2 Support from innovation in IT

In the 1990s, Business Process Reengineering (BPR) approaches that tried to achieve a drastic restructuring of the business process using IT, failed because they were unable to obtain the expected support from IT. In the later half of the 1990s, information management using Enterprise Resource Planning (ERP) originated as a result of the failure of these BPR approaches. However, ERP confined the operations into a concrete box, which was unable to support the changing operation flow. Hence, in the 2000s, (i) Service Oriented Architecture (SOA) technology that has

enabled the restructuring of the IT environment to allow it to respond more flexibly to the environmental changes and (ii) software (e.g., Savvion, ARIS, and VISIO) that has enabled to support the changing operation flow flexibly have been developed. These are effective tools for the construction of BPM system because these new abilities can be exercised to create the business process and assess real-time performance management virtually.

3 History of Business Process Management

As long as the term BPM refers to the management of the business process of horizontal organization, we can say that the origin of process management dates back to the Tailorist approaches. On the other hand, it is said that the trigger that led to the recognition of BPM in Europe and the US was the Total Quality Management (TQM) approach adopted in the 1980s (Jeston and Nelis, 2006, pp. xii–xvi). In the 1990s, European and American companies faced a stagnant market and cut-throat competition across the globe. This led to further development of the ideas of traditional process management, and new methods such as BPR and Six Sigma emerged. BPR was suggested by Hammar in 1990. His article “Don’t automate, obliterate” in the *Harvard Business Review* (July–August 1990) was the starting point from which BPR disseminated quickly. Although BPR aimed to drastically restructure the business process using IT, IT was unable to describe and support the complicated processes (Jeston and Nelis, 2006, pp. xii–xvi).

Drawing upon the lessons learned from the failure of BPR, ERP was introduced in the later half of the 1990s. It appeared as though ERP had already solved the process management problem related to IT; however, ERP was unable to support process improvement because it suffered from many shortcomings including non-flexibility, despite of the fact that it was sold with the catchphrase “best practice”. In other words, after ERP was set up, the flexibility of the process was lost and could be likened to dry concrete, even though initially (before installation), ERP was as flexible as wet cement (Smith and Finger, 2007, p. 73).

There are two opinions regarding the origin of BPM. One is that it originated in the 1990s (Jeston and Nelis, 2006, pp. xii–xvi) and the other is that it emerged after the year 2000 (Jeston and Nelis, 2006; Smith and Finger, 2007). However, it seems that the difference between these two opinions arises from (i) the time frame of the emergence of IT that

supports process management and (ii) the history of process management. The latter viewpoint emphasizes IT innovation that supplements the lack of flexibility in ERP. This viewpoint treats BPM according to the development of the Business Process Management System (BPMS), i.e., as a total management system of business process that supports a flexible unity between business process and IT. However, a consensus regarding the content of BPM has yet to be reached and BPM has been reduced to a three-letter acronym used to refer to process management. This paper will discuss a new framework of BPM that is based on its historical progress.

4 The Concept of Process

A process is a series of interlinked activities that achieve a specific objective (Daly and Freeman, 1997, p. 16). Davenport (1993, p. 5), however, defines the process as follows: “A process is simply a structured, measured set of activities designed to produce a specified output for a particular customer or market”. Therefore, we can say that the definition of process differs with each person. This is the reason why each writer defines the process differently, on the basis of the measurement unit, categorization, and extent of the process.

This study regards the process as “a flow composed of various mutually-dependent groups of activities toward the creation of customer value, the input and the output of which are clearly distinguished, and which have a hierarchical structure depending on the levels of the subject matters of management”. In addition, it is necessary for the process to satisfy the following three key elements as explained in *Statements on Management Accounting* (2000, p. 8).

Transformation: By means of one or more changes, it provides output from a group of interrelated work activities that is of greater value than the inputs.

Feedback control: Involves some regulatory means by which the transformation activities are modified or collected to maintain certain attributes of the output.

Repeatability: Implies that a process is executed many times in the same manner.

5 Process Classification Framework (PCF) of the American Productivity & Quality Center (APQC)

Under the Open Standard Benchmarking Collaborative (OSBC), the American Productivity and Quality Center (APQC) has constructed a Process Classification Framework (PCF), as shown in Figure 1, and made it public. Further, APQC announces a revised version every year. APQC explains that the operations of each organization can be understood by PCF from a horizontal process view and not a vertical, functional process view. In PCF, the process hierarchy is classified into four steps — the category, process group, process, and activity. Further, the process hierarchy is coded. For example, “4.0 Deliver Products and Services” in Figure 1 is deployed as illustrated in Figure 2.

6 Process Management Unit and Operation Flow

In process management, the process initiated by the event will be described as a management unit on the basis of the partitions of the connected function and activity. In other words, it is necessary to solve the issue of how to

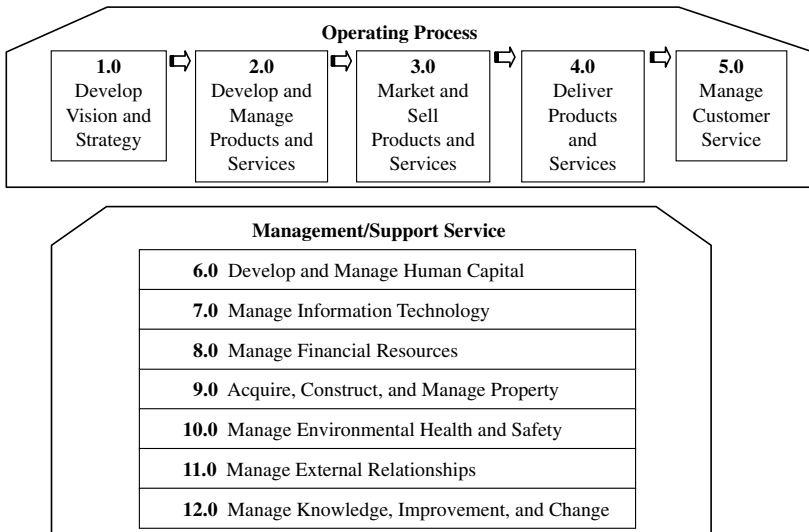


Fig. 1 Process Classification Framework.

Source: Ver.5.0.3, April 2008.

(<http://www.apqc.org/portal/apqc/site/?path=/research/bmm/osbc/index.html>)

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- 4.0 Deliver Products and Services (Category)
 - 4.1 Plan for and acquire necessary resources: Supply Chain Planning (Process Group)
 - 4.1.1 Develop production and materials strategies (Process)
 - 4.1.1.1 Define manufacturing goals (Activity)
 - 4.1.1.2 Define labor and materials policies (Activity)
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Fig. 2 Example of PCF.

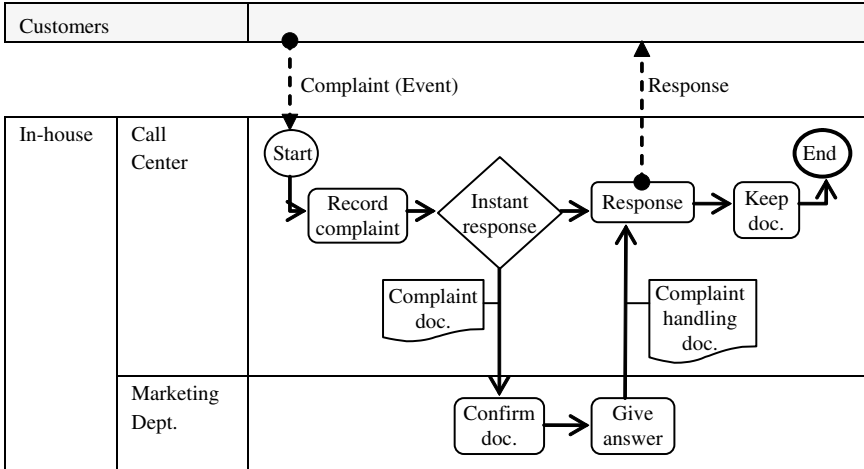


Fig. 3 Example of a Trouble-shooting Process.

Source: Takeyasu K. *et al.*, 2007, p. 3; modified by author.
 Note: “doc.” refers to document.

describe and define the process as a management unit. The process management unit is an inter-departmental specific process wherein the output is repeatedly delivered from the flow of activities connected to two or more departments. The event is the occurrence that *starts* the process. Therefore, the event differs from the function that uses *time*. Further, as shown in Figure 3, the event is related to a point in time. The process *controls* the functions, in the sense that it is the process that uses a function or the connected functions as a set of activities (Seidelmeier, 2004, pp. 70–71).

Davenport (1993, p. 28) explains the basis for the decision about the length of the process as follows:

The objective of process identification is the key to making these definitions and determining their implications. If the objective is

incremental improvement, it is sufficient to work with many narrowly defined processes, as the risk of failure is relatively low. But when the objective is radical process change, a process must be defined as broadly as possible.

Davenport (1993, p. 31) also adds that process definition is more of an art than science.

7 Structure of BPM

BPM is “the control and management of transactions between organizations both inside and outside corporations by viewing the transaction flows as processes, which is enabled by breaking up the traditional walls between organizations, sharing information and resources among them, and combining and connecting their transactions”. This paper divides BPM into two: a *process chain management* inside the corporation that surpasses the functional and departmental barriers and a *process net strategy* outside the corporation that surpasses the barriers among corporations.

7.1 Process chain management

In an organization that focuses on functions, the business operation is managed based on the function, and managers naturally consume and manage resources according to the functional budget and emphasize the strict adaptation of standards. Consequently, because employees are eager to observe the functional standards and save resources, the relationships among business process, suppliers, and customers are not optimized (Department of Defense, 1994). Gradually, there emerges an expectation that process chain management will remove the barriers among the functions as shown in Figure 4, to optimize the whole value chain by completing link A, and integrate the main process with the support process by completing link B. IT innovation enhances the possibility of this action.

On the other hand, it is said that in today’s competitive environment, a large company does not defeat a smaller one but a fast company defeats a slower one.

However, under the uncertain environment that cannot respond to with a speed alone, there is a demand for a process management system that

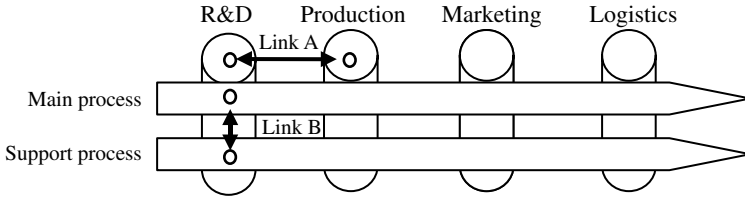


Fig. 4 Value-chain Optimization of Business Process.

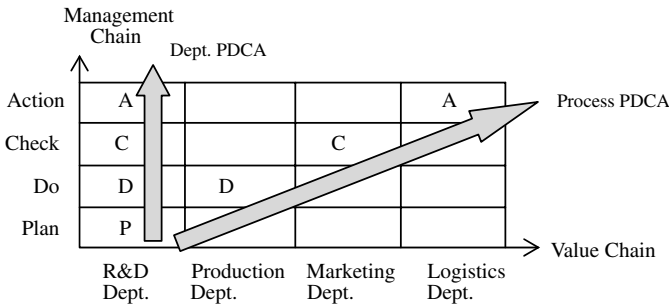


Fig. 5 Value-chain and Process PDCA.

Note: “Dept.” refers to department.

can manage the process promptly and flexibly according to the changes in the market environment. For such a process management system, it is necessary to achieve a balance between the *value chain* (to manage the process in a horizontal organization) and *management chain* (to manage the horizontal organization using the Plan-Do-Check-Action (PDCA) cycle).

In other words, the process PDCA cycle, rather than the departmental PDCA cycle that occurs within the department, is preferable for the systematic, integrated, continuous improvement of the whole process — this is shown in Figure 5. That is, the management system is expected to perform the process PDCA cycle for all the processes across all departments. As a result, the process PDCA cycle in process chain management is important, as it can improve productivity and corporate value.

In a Balanced Scorecard (BSC), the strategic goal is deployed up to the performance-evaluating indicators of operations. However, the perceptions of the manager or the process manager concerning the performance

measurements are different when the measurement criterion of the operations is not linked with the strategy or when the criterion is not integrated through the management units of the function and the process, and so forth. As a result, it is easy to execute a strategy that is not accepted by the workers in the field. Kittredge (2004) insists that such problems can be solved if the performance indicators conform to the measurement indicators of the strategically and tactically important processes chosen by the process managers are reflected in the BSC and these indicators are deployed on the BSC.

In BSC, the lead indicators are the performance drivers and lag indicators are the outcomes. The *lag indicator* only identifies the present position, and illustrates the change in the indicator. However, the *lead indicator* identifies the destination and requires an early decision. Therefore, we can say that the lead indicator is preferable in process management when it comes to the real-time management of the performance.

In general, the effect of the change in the process on the consumption of resources in the process can be easily identified; however, estimating the reverse is not that easy. If performance management and process management harmonize in the manner mentioned above, the process can be managed by using the performance chain as shown in Figure 6. In other words, important performance drivers that yield the desired outcome in BSC can be systemically linked with the strategic goal if they are chosen from each of the process outputs. In addition, in BSC, we can also determine the direction of the process management.

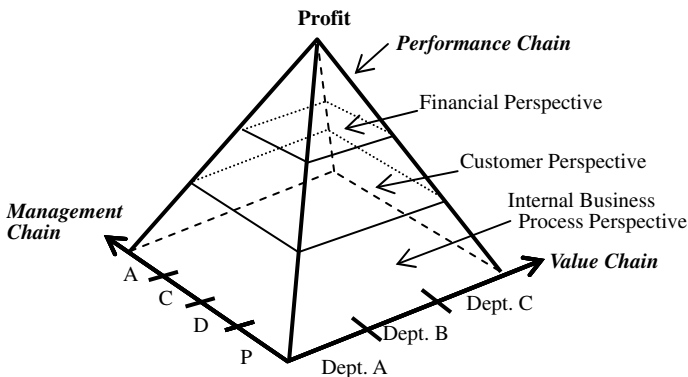


Fig. 6 Integration of the Three Chains.

As a result, at the process level, the targets determined using a top-down approach match the management indicators chosen using the bottom-up approach, and the application of PDCA cycle on BSC becomes possible, such that an integrated management system, as depicted in Figure 6, can be constructed.

7.2 Process net strategy

The competitive environment has already shifted from competition among companies to competition among process networks that aim to construct a syndicate. In such an environment, the selection, concentration, and collaboration strategies of the process, such as inter-firm process-level alliances, shared services, and outsourcing part of the business process, are adopted because of the expectation that these steps will yield competitive advantage. It is said that the strategic process net construction can be divided into the four following strategies (Yamada and Uchida, 1999).

1. Choose and manage only the function that becomes the key of the competitive advantage within the existing value chain and outsource with the rest to realize lower costs.
2. Aim toward creating an oligopoly in particular processes by focusing on special processes within the existing value chain that add significant value, and supplying the same to multiple companies.
3. Streamline the value chain by cutting the unnecessary processes, and focus on customer-satisfaction.
4. Add value by adding new functions when the customers' needs exceed the capability of the existing value chain.

In other words, the process net strategy is a decision-making approach whereby the processes are selected and concentrated on the basis of the corporate strategy as well as considering the plausible changes in the environment. This approach is adopted both inside and outside the company/country.

Using a strategy that secures the functional advantage in the value chain under a competitive environment, the company is confronted with a decision-making problem — of whether to buy the functional advantage or develop it. In general, in an industry where environmental changes are not that intense, it is preferable for the company to choose the strategy of developing the functional advantage so as to always sustain the mainspring

of long-term growth. However, when long-term growth is somewhat elusive, this strategy has a negative effect in that it increases costs. Consequently, the strategy of buying the functional advantage needs to be constructed by the *collaboration of the business process* such as the selection, the concentration, and the collaboration of the business process.

7.2.1 Business process collaboration

In today's competitive environment, which is characterized by increasing uncertainty and severity, it is necessary to decrease the risk generated by environmental changes and adopt strategic means to maintain and expand one's competitive advantage. In other words, it is necessary to invest limited managerial resources to identify and foster a process that may become a core competence, and to utilize resources outside the corporation, if necessary, for processes other than core competence. This approach is deemed feasible because using other corporations' assets, rather than creating or buying new assets necessary to respond to environmental changes, can decrease the economic risk, and also because this improves corporate flexibility and enables the company to respond to environmental changes in a short amount of time. However, this approach does necessitate that an intra-corporate process network that smoothly connects processes across multiple corporations and that exchanges real-time information regarding the same is built. As this problem is, to a great extent, solvable using the Internet, and in particular, the Web services architecture, such business process networks are possible. Therefore, in the information era, it is said that the company that shares information attains more success than the company that manages information. Figure 7 depicts a case wherein the product is procured from an Electronics Manufacturing Services (EMS) company, i.e., outsourcing, and the data processing is delegated to a special company, i.e., shared service.

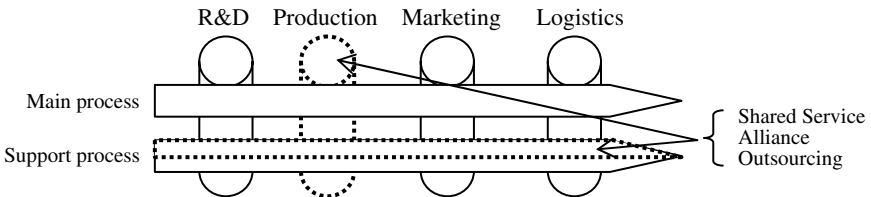


Fig. 7 Business Process Collaboration.

7.2.2 *Patterns of business process collaboration*

Alliance, outsourcing, and shared service, and so forth are considered as the main examples of business process collaboration. However, it is not easy to define business process collaboration because the abovementioned features and their ranges can be changed. Therefore, the study proposes that the collaboration is considered to have taken place when the company performs the following activities in the business process network across companies.

Outsourcing: Some particular processes except the processes that the company performs are delegated to another company (or other companies).

Shared service: Similar processes that the companies perform are concentrated together.

Alliance: Some processes that the company performs are supplemented by the cooperating company.

In the IT industry, the system of cheaply procuring components from third parties and assembling them in-house is being generalized. However, there also exist companies that have adopted a reverse strategy and have extended their profits. In the case of Japan, an excellent example would be Matsushita Electric Industrial Co., Ltd., which consistently records high profits as a result of adopting the strategy of “in-house production using vertical integration”, where the company consistently handles everything from the components to finished goods. The plasma television production line of the Matsushita Electric Industrial Co., Ltd. is a good example. The following are the advantages of in-house procurement. It is said that the inner procurement rates of the components used in Matsushita’s plasma televisions have increased by 50% (Nihon Keizai Shinbun, 2006).

1. In-house production stabilizes the product price by preventing the outsourcing of key components that have a valuable function.
2. Mass production of components results in an increase in the sales volume via external sales of components and this results in a cost reduction of both the components and the product.
3. Incorporating design changes and new technologies in the product while maintaining sales of the product in the global market are easy.

On the other hand, Apple Co., the maker of *iPhone*, while causing a sensation in 2007, adopted a strategy that differs from that adopted by Matsushita. The company uses the capability of component suppliers, spread all over the world, to think what about the customers want and what the maker must do. Apple's case is comparable to the strategy of vertical integration adopted by the Japanese company Matsushita (Nihon Keizai Shinbun, 2007).

8 Conclusion

While many new process management techniques have been proposed recently, BPM is the general term used to refer to these. However, process-oriented management is not a new concept in business management; in fact, process-oriented management was simply not feasible until now. Today, cooperation and integration among business processes, which hitherto were impossible, have become possible because data processing and telecommunication have evolved a great deal due to advancements in IT. On the other hand, process management is also required to effectively respond to the changes in the highly competitive environment not only with respect to customer satisfaction but also with time, flexibility, and cost.

Though many companies have attempted process restructuring (e.g., BPR), few have achieved their objectives. It seems that this might be the case because these companies did not establish a process management mechanism to improve the efficiency of the entire process and ensure the stability of the reformed processes, which are the problems of BPR that were mentioned in this study. Hence, while many new process management techniques to overcome such problems are being proposed today, it is not easy to create a systematical method of process management to improve the efficiency and stability of the restructured process.

In the current environment, where the changes are intense and unforeseeable and any past success or experience has lost its meaning, BPM, which allows the synchronization of the company's output with the changes in the environment, will be an effectual tool to obtain competitive advantage.

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