BPM 대상 프로세스 선정 방법론 개발 및 적용에 관한 연구

A Study on Process Selection and Implementation for Business Process Management

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요 약

본 연구는 BPM을 구현하는데 있어서 대상 프로세스를 선정하는 방법론에 관한 연구이다. LG CNS 사의 BPM 구축방법론을 함께, 프로세스 선정 방법론인 enPAM을 제시하였다. 첫째, 대상 기업의 프로세스를 정의하는 방안들을 제시하였으며, 둘째, 대상 프로세스들에 대해 BPM 시스템을 구축하기 위한 프로세스 우선순위 평가지표로서, 크게 비즈니스 영향도, BPM 적용성, 실행가능성 세가지와 하부 기준들을 제시하였다. 마지막으로, 한 이통통신회사를 대상으로 enPAM의 구체적인 적용과정을 보여줌으로써, 본 방법론의 유용성을 제시하였다.

키워드 : BPM, 프로세스 정의, 프로세스 우선순위선정, 이통통신

I. Introduction

1.1 Research Background

BPM is one of the most important topics of business and IT after BPR. It aims at business process reorganization and systematic user support by automation, integration, and optimization of business processes. This prevalence has originated from today's systematic IT growth and the visualization needs of innovation activities like Activity Based Costing, 6-sigma, Balanced Score Card (BSC). Recently, many consulting companies and solution vendors have been suggesting various BPM methodologies. However, a generalized BPM methodology or practical implementation guidelines are still under way, especially for business process selection and modeling.

This is due to the following two primary reasons. First, most BPM solution vendors' methodologies cover only the system development area. They offer only formal steps for systematic and integrated system development, but lack steps for defining and selecting business processes. Each company has to select adequate business processes themselves in their own way for applying BPMS. Second, even though there are few methodologies which cover process selection or roll-out plan, those method-

ologies just suggest a vertical approach. Improving the efficiency of horizontal processes related with many business units in the company is one of the important objectives of BPM, but most methodologies still use a vertical approach - by department or business function unit. Hence a more robust BPM methodology is required to maximize BPM effects - process automation, integration, and optimization - by covering all aspects of the company from the horizontal perspective.

1.2 Research Scope and Method

In this paper, we focused on two big issues. The first issue is how to define the whole BPM methodology, from formulation of business strategies to design and implementation of the BPM system (BPMS). Second is how to define business processes and priorities among the processes. For guidance in making a plan for BPM project, we suggest the LG CNS BPM Methodology and enPAM (Entrue Process Assessment Model). In addition, we present a case applying enPAM to a mobile telecommunications service operator.

This paper is structured as follows. Section 2 reviews the related studies on BPM. Section 3 presents LG CNS BPM methodology and enPAM. Section 4 demonstrates enPAM's viability through a case study of a mobile telecommunication service operator. Then, we conclude this research with its contributions and the additional issues from the case study analysis.

Ⅱ. Literature Review

2.1 Management of the Business Process

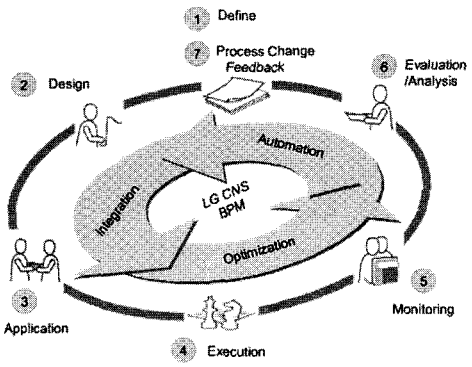
In the 1990's, the concept of managing the business process was fully triggered by *Reengineering the Corporation* by Michael Hammer and James Champy. They advocated that a business organization ought to reengineer their business process to find the root cause of inefficiency in order to achieve dramatic improvement from radical redesign of business processes (Hammer and Champy, 1993). Recently the business process view has become the most fundamental and indispensable factor for reducing cost.

After a decade, this need of managing processes has rebounded back into fashion under the title of Business Process Management (BPM). Many vendors now suggest the BPM concept based on EAI or Workflow technology. Most vendors, therefore, call BPMS an integrated application management system that provides process oriented views to end-users or system managers. This powerful application control function became possible by new technologies like XML, Web Service, and component based development (Smith and Fingar, 2003). By applying the process view for integrating many business applications, BPMS is aiming at more than automation of the business process. Lee and Dale (1998) suggested that BPM is intended to align the business process with strategic objectives and customers' needs, but requires a change in the company's emphasis from functional to process orientation. BPMS vendors suggest advantages such as cost savings, time reduction, trimming of labor costs, and process monitoring (Verner, 2004).

Previous research has proposed various definitions of BPM. Especially, Elzinga *et al.* (1995) and Zairi (1997) defined BPM as a structured, analytical approach to managing complicated and dynamical business processes. In contrast, Armistead *et al.* (1997) and DeToro and McCabe (1997) stressed the linkage and integration of processes across the

organization.

When BPR was the dominant business paradigm, real-time monitoring was difficult because the business processes were dynamically changing. Many BPM solutions have various functions to detect changes of processes and orchestrate all of the processes. Some of them are offering simple end-user workflow control functions, and others have functions of controlling the current status and tuning performance. However, none of them are solely enough to fully-satisfy BPM needs (Sinur and Thompson, 2003).



〈Figure 2.1〉 LG CNS BPM Definition

In this paper, we assume that the BPM concept includes all stages of process selection, design, development, and validation, and that all processes should be matched with a business goal and achieve customer satisfaction by real-time control by users - executives, managers, and field supervisors. Moreover, as the failure of past process management came from the failure of change management after process reengineering and redesign, a new approach for BPM must support change management in a systematic way. <Figure 2.1> shows the BPM definition of LG CNS. In our definition, BPM is composed of seven tasks, and it starts from defining business processes. The second step is to design processes newly, and the third is construction of the BPM application system. After BPM execution and process monitoring, a feedback step is followed by the process evaluation and analysis step. These tasks should be repeated in a continuous manner. Hence an expanded process management definition became a series of continuous activities to automate and optimize processes between inside and outside of the company.

2.2 Selecting the Target Process

Managing the business process means offering a process-oriented view to an organization's employees. Past studies on BPR have suggested some process methodologies composed of serial steps.

Davenport (1992) described it with four steps, Hammer and Champy (1993) suggested eight steps including understanding and measurement of the existing processes, selection of core target processes, designing and building a prototype of a new process and setting priorities. These main steps can be applied to BPM as well, to define a company's structure and set rules for future processes (Verner, 2004).

In addition, there are many studies on process selection. Davenport (1992) suggested considering each process's (1) strategic importance, (2) needs to improve, (3) difficulty of improvement, and (4) process scope. Hammer and Champy (1993) took three points, (1) many conflicts/high frequency/excessive non-structured communication, (2) competition outperforming, and (3) continuous incremental improvements. Lee (1993) suggested the most fundamental and most interactive processes that many departments should consider first. There was research by Park (1995) that used AHP (Analytic

Hierarchy Process) analysis to decide the precedence of target business processes. All these methods have a common root i.e. finding the core processes of the company.

In the field of BPM, selecting core business processes is a critical issue. Lee and Dale (1998) proposed that critical processes should be selected and BPM activity needs to be more clearly focused. However, since the comprehensive flow charting method is not offered yet, process description and defining key cross functional business processes are essential (Lee and Dale, 1998). Furthermore, an important area to be considered is how to apply BPM methodologies flexibly to execute each step of process management and how to select target processes. However there is no standardized methodology yet, BPM also has the same problem as BPR methodologies does. Thus this offers another possible area for research.

Ⅲ. Introduction to the Methodology

3.1 LG CNS BPM Methodology

LG CNS define BPM as a continuous set of activities that intends to increase the value of the company by automating, synthesizing, optimizing business processes between organizations through a closed-loop process. Solutions for supporting this activity include Business Process Modeling, Workflow, EAI (Enterprise Application Integration), BRE (Business Rule Engine), BPA (Business Process Analysis), and BAM (Business Activity Monitoring).

BPM solution vendors suggest their own BPM methodology for implementing BPM efficiently. However, most BPM solution vendors only offer the methodologies composed of implementation related steps. In BPM projects, the methodology for the identification of target processes and for the prioritization of the target processes is required. In addition, the plan for performance measurement and monitoring should be included.

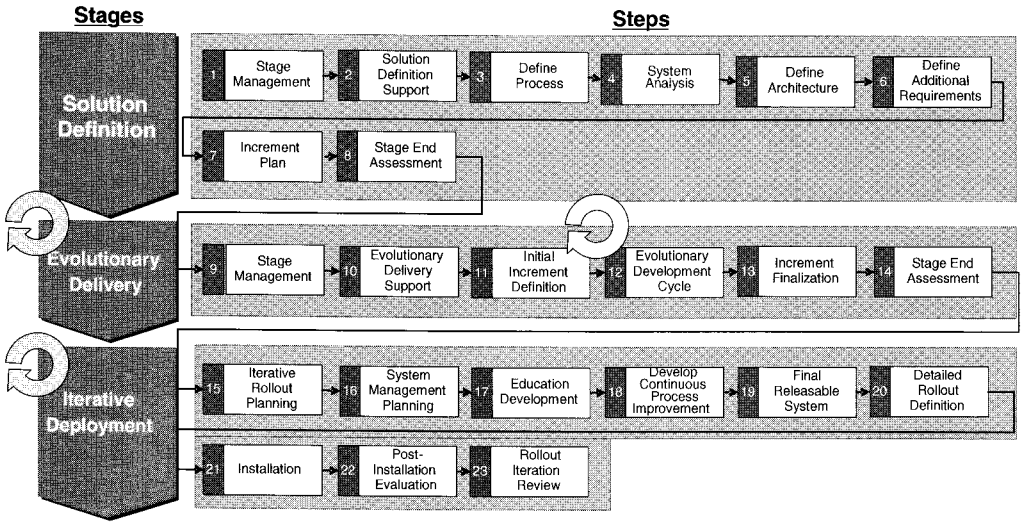
Based on these needs, LG CNS suggested the LG CNS BPM methodology by accepting the merits of BPM related methodologies such as the IPR (Information Planning for Reengineering) methodology, workflow methodology, and EAI methodology. The LG CNS BPM methodology is based on PPC (Platinum Process Continuum), the standard methodology framework of LG CNS.

The BPM methodology of LG CNS consists of 23 steps in 3 stages as shown in <Figure 3.1>, which covers all cycles of a BPM project from strategy planning to system development, monitoring and performance analysis (LG CNS, 2004).

To demonstrate the whole procedure of the BPM implementation project, we adopted the LG CNS Object Oriented (OO) methodology for the system development area, but it can be replaced with Client/Server Development (CSD) or Component Based Development (CBD) process according to the properties of implementation projects.

In following section, enPAM, the process selection method in the process definition step will be discussed. enPAM is a guideline for process selection when implementing a BPM project. Through objective criteria, we can reduce the risk that can be occurred by erroneous process selection and we can maximize the implementation effect by selecting proper business processes for BPM.

By evaluating the priorities of the processes through enPAM, we can select a business process for a pilot BPM implementation project, and establish roll-out plan for all processes.

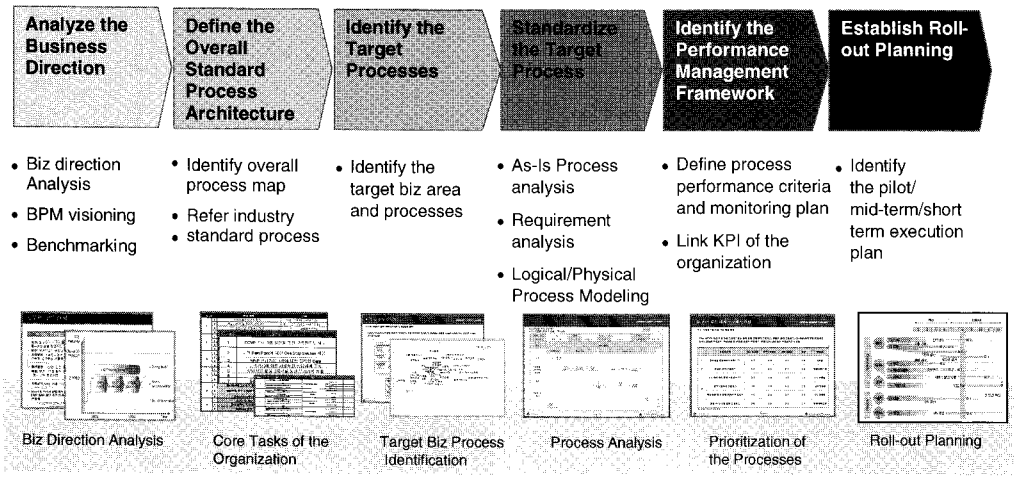


〈Figure 3.1〉 The LG CNS BPM Methodology

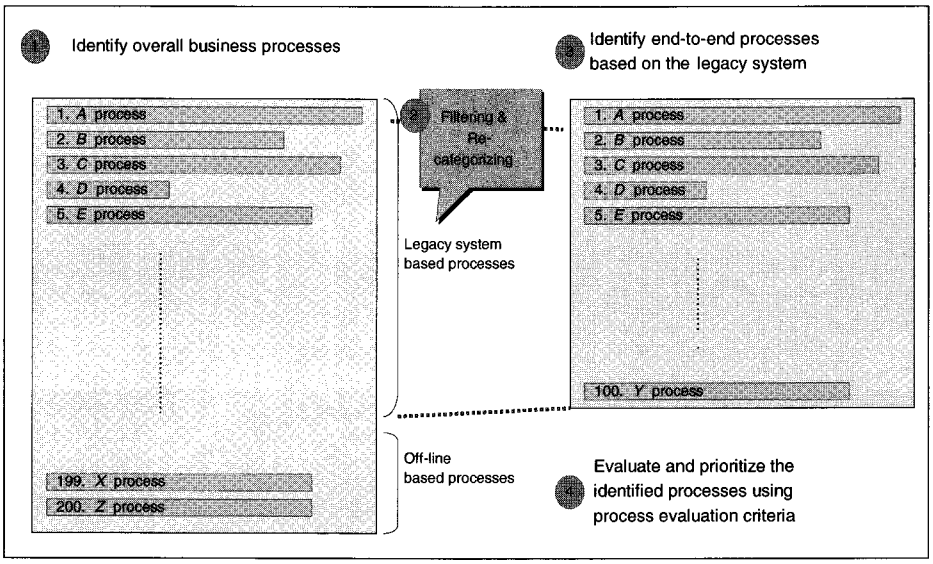
3.2 The target process selection methodology for BPM: enPAM

The 'Process Definition' step consists of six high level tasks, from business direction analysis to roll-out plan as shown in <Figure 3.2>.

In the 'Identify the Target Processes' phase, there are three alternatives: the method of identifying the overall processes, method of identifying core cross-functional business processes, and method of identifying core business team or department. We can select one among the three alternatives considering the environment of the target organization and the project cost and time.



〈Figure 3.2〉 The Process Definition Step



〈Figure 3.3〉 The Method of Identifying the Overall Range of Processes

The characteristics, strengths, and weaknesses of each alternative are as follows.

1) Method of identifying the overall processes

This is the method of determining the priorities of the target BPM processes after identifying all business processes as shown in <Figure 3.3>.

The strength of this method is high reliability of the evaluation by identification of the overall range of business processes. Thus, there is no need to identify the target business area. In contrast, much time and cost are needed to identify and define all processes. Therefore, this method is usually used in case that there is previously defined processes before PI (Process Innovation[1]) and BPM implementation.

2) The Method of identifying core cross-functional business processes

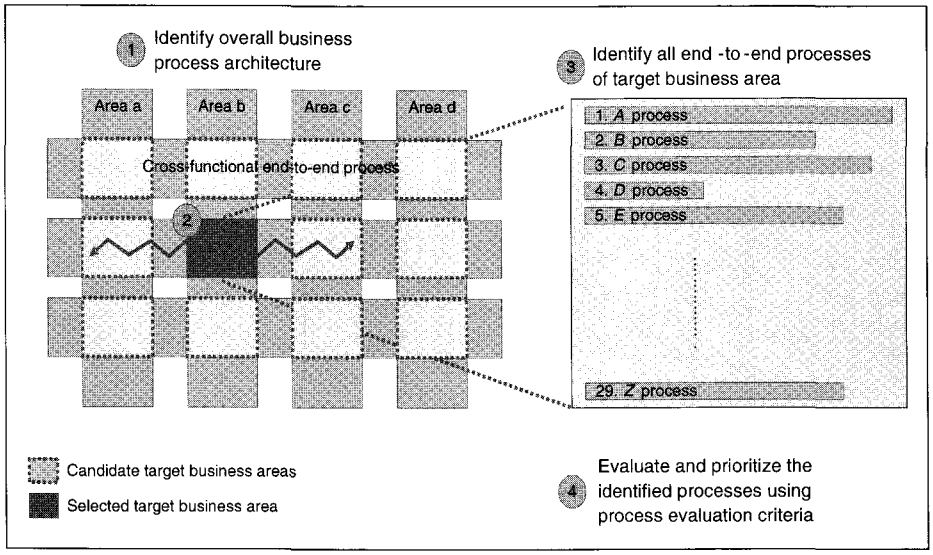
This method identifies and prioritizes the all cross-functional processes in the target business areas after selecting the target core business areas referring to the predefined overall business process architecture as shown in <Figure 3.4>.

The strength of this method is the reduction of time and cost by analyzing and evaluating the processes in the target business areas instead of the overall range of business processes. But it is necessary to define whole business process architecture previously. Accordingly, this method is appropriate when there is a previously defined overall business process architecture or industry standard reference process such as eTOM (Telemanagement Forum, 2004a), or SCOR (Supply-Chain Council, 2005).

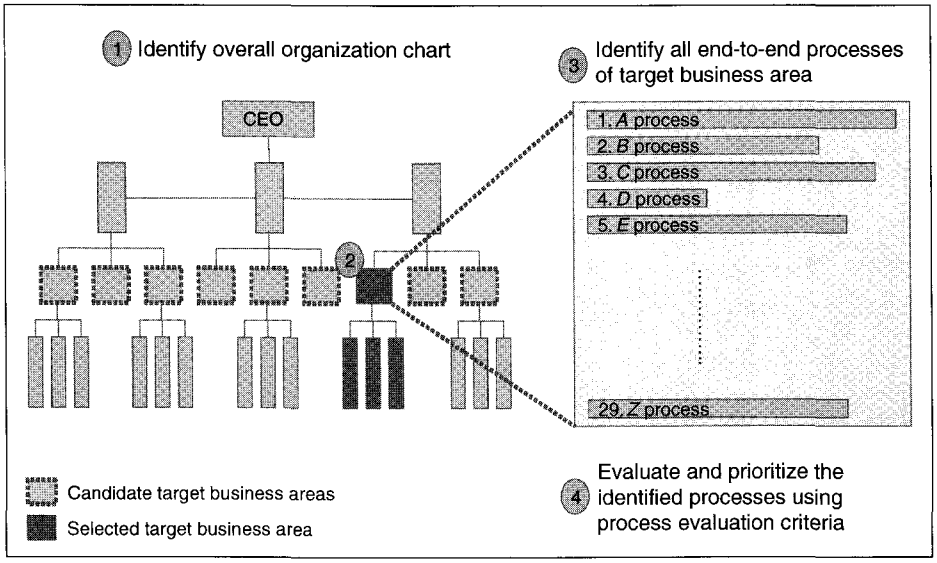
3) The method of identifying core departments

This method identifies and evaluates all the cross-functional processes in the target team or depart-

1) It represents process management activities that optimize the process.



〈Figure 3.4〉 The Method of Identifying Core Cross-functional Business Processes



〈Figure 3.5〉 The Methods of Identifying Core Departments

ment after selecting the target core business team or department referring to the organization chart as follows <Figure 3.5>.

In this method, we can evaluate and prioritize the processes in a shorter time than in the above two methods by using an organization chart. However, because most evaluation criteria are adequate not for assessment of teams or organizations, but for process assessment, this approach has limitations in applying the defined criteria. Thus this

method is appropriate when we evaluate processes with using only 'business impact' related evaluation criteria.

In case of B mobile telecommunication service operator, we found out that we can utilize eTOM (Enhanced Telecom Operations Map), the standard business process framework of telecommunication industry, so we used the second method.

The prioritization of the target BPM processes within process definition step is evaluated by using the enPAM (Entrue Process Assessment Model). The framework of enPAM is as shown in <Figure 3.6>.

The overall process is as follows.

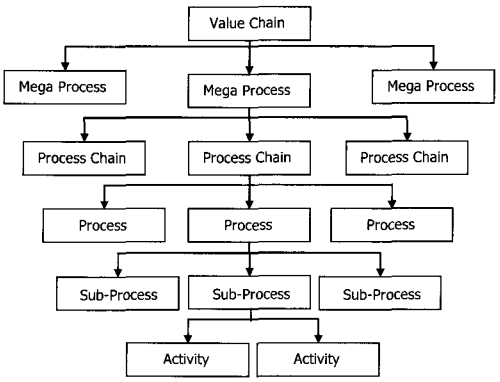
① Define the process hierarchy (See <Figure 3.7>): Define overall value chain composed of mega processes in target organization and define process chains which are core process on each mega process.

② Exclude the process chains that are inadequate for BPM implementation by the filtering criteria.

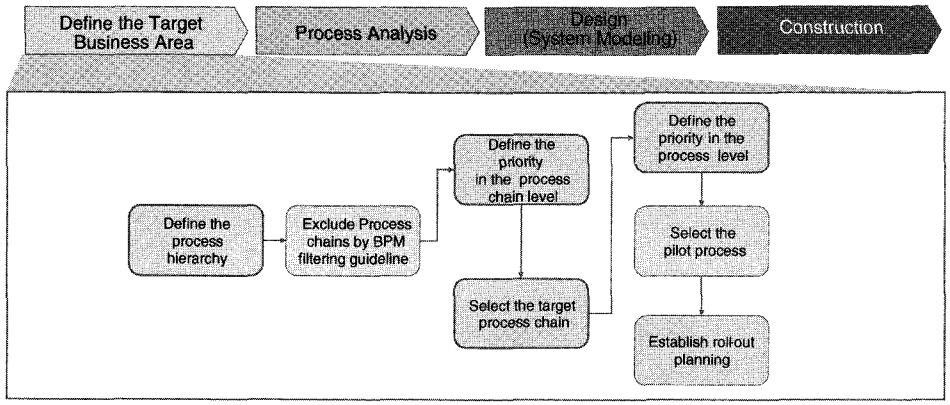
③ Select the target process chain in process chain levels: Through the prioritization of the process chains, select the target process chain.

④ Select pilot process and establish systematic roll-out plan: Evaluate the priority of processes within target process chains. Then establish the systematic roll-out plan, based on the evaluation results of these steps and the evaluation results of the priority about process chains in step 3).

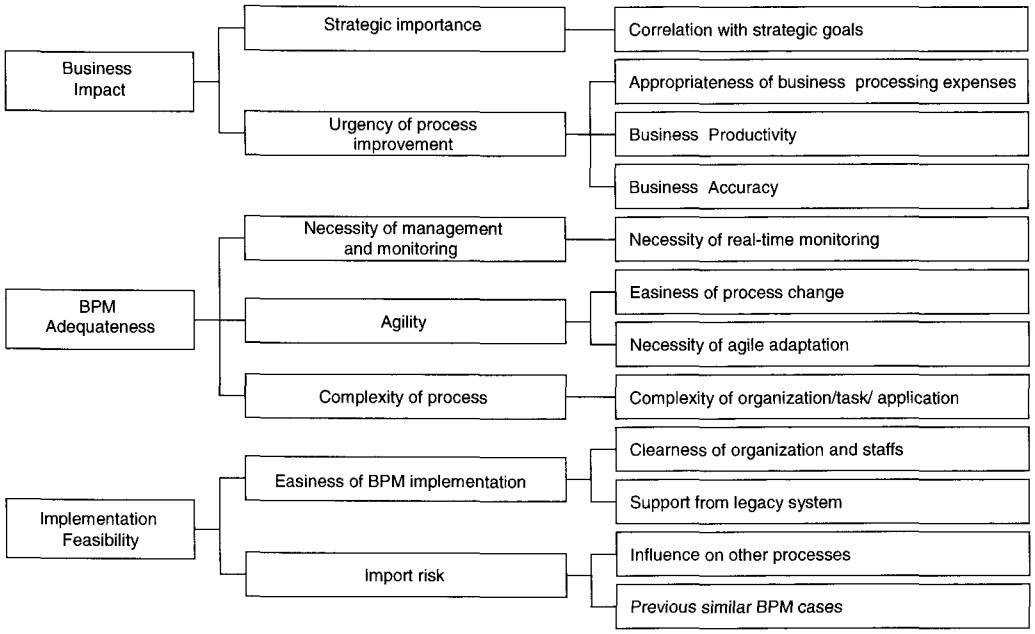
The process hierarchy suggested here are shown <Figure 3.7>. In the process hierarchy, Value Chain refers to a series of the highest processes including the overall life cycle of the product or service. Mega Process means special business areas such as marketing, R&D, procurement and production.



〈Figure 3.7〉 The process hierarchy



〈Figure 3.6〉 The framework of enPAM



〈Figure 3.8〉 The BPM Process Evaluation Model

The Process Chain refers to the main function of the mega process. In case of the 'marketing' mega process, market survey, the possible process chains are sales planning and demand planning. The Process refers to a series of business activities. Depending on the complexity of the process being analyzed, there may be one or more sub-processes. The Activity refers to unit function within process or sub-process.

In enPAM, the business impact, BPM adequateness and implementation feasibility are measured as the evaluation criteria. To assign weights to the criteria, one can survey with questionnaires, or use the AHP (Analytical Hierarchical Process) method to related business managers. The overall evaluation criteria are shown in <Figure 3.8>.

The evaluation criteria are changed according to the business characteristics of the individual organization. The concrete evaluation details are as follows.

1) Business Impact

This is the relative importance of the business process for the growth of the company. There are two measurement criteria that need to be considered.

① Strategic importance: Select the process that has the high correlation with the strategic goals of the company.

② Urgency of process improvement: Select the process that needs improvement urgently regardless of the feasibility of the IT solution.

2) BPM Adequateness

This means the suitability for the BPM implementation. Accordingly, as the adequateness of BPM implementation gets bigger, the reasons for BPM implementation become clearer.

① Necessity of management and monitoring: Select the process that always needs monitoring for strict management and control.

② Agility: Select the business process that often needs changes or has various exceptional situations which need prompt change management, in priority.

③ Complexity of process: Select the complex process that is connected to many departments, and related to various application systems, in priority.

3) Implementation Feasibility

This means the process that is actually easy and has little risk when implementing BPM. As the implementation feasibility gets higher, the reason of BPM implementation becomes clearer.

① Easiness of BPM implementation: Select the process that has clear ownership of the business process and enough systematic support, in priority.

② Import risk: Select the business process that have little influence on other business processes due to the changes of the target process, in priority.

The score of each process is calculated by assigning weights of each evaluation criteria through AHP. If the evaluation is higher, the BPM priority of target process is higher. The BPM project will be systematically promoted by established roll out plan through discussion with customers based on the evaluation results.

Ⅳ. A Case on the Application of enPAM

4.1 BPMS implementation project case

To provide high quality customer care services, B mobile telecommunication service operator (below Company 'B'), one of the top 3 Korea mobile telecommunication companies, launched a project to make customer support systems. One of the ways to advance the existing customer support systems is to introduce BPMS on targeted areas of customer care. The objective of the BPMS is for managing enterprise business processes with high visibility to cope with speedy internal and external organization environment change.

Before implementing BPMS, Company 'B' selected proper business processes to be implemented successfully. Thus, Company 'B' carefully selected several customer support business processes with a methodology of process selection, enPAM, and implemented BPMS on the selected processes.

4.1.1 Introduction of BPMS

It is essential to introduce the BPMS in Company 'B' with the following three demands raised by the characteristics of business process management.

First, Company 'B' needs an integrated management tool for managing end-to-end business processes. Despite the fact that end-to-end business processes should be operated and managed integrally, most end-to-end business processes of Company 'B' were separately operated and managed. Thus, miscommunications sometimes happened.

Second, Company 'B' needs to improve business productivity by constructing BPMS. Company 'B' provides a wide range of services including voice and data communications based on a variety of systems. Moreover businesses of Company 'B' are complicatedly linked with many different organizations and IT systems. In this complexity, business operators have to complete tasks using several systems spending much time, confronting high possibility of business mistakes. Therefore it is necessary that the business process be executed automati-

cally based on process automation and the process rule engine.

Third, Company 'B' needs a support system for speedy coping with internal and external telecommunication market change. Therefore Company 'B' needs a IT support facilitating agile and easy business control on dynamic process change.

4.2 Application of enPAM

Five IT consultants and a system expert took part in process selection for Pilot BPMS implementation with enPAM for four weeks. This project is driven on three stages. As the first stage, we defined the enterprise business process architecture of Company 'B' and select the core business process area well-suited for BPMS. The second stage was to extract 25 business processes in the selected business process area and to rank the business processes by predefined evaluation criteria. In the final stage the result of process assessment was shared with related business managers who have ownership of the business processes, and then the business managers directly confirmed several target business processes for implementation of BPMS.

4.2.1 Selection of a target business process area

We referenced BPM Overview (Telemanagement Forum, 2004b) to extract a proper business process area from enterprise business process areas of Company 'B'. According to the BPM overview, the best three conditions of the business process for BPM are the short lifecycle of business process with high reiteration, high level of demand on automatic transaction, and high level of business process standardization. In conclusion, we found that the key business process area for BPMS is the Operation Process Area. The Operation Process area and the Enterprise Management (2) Area are evaluated as the target business process areas for BPMS. In addition, company 'B' preferred to apply BPMS to core and direct businesses, then Operation Process area has been finally selected as the first priority for BPM implementation.

〈Table 4.1〉 Result of Process Areas Assessment on BPM adequateness[2)]

Process Areas		Assessment Criteria On BPM Adequaeness			Total
		Life Cycle	Level Of Demand On Autoation Transaction	Level Of Demand On Process Standardization	
Operation Process Area (Fulfillment/Assurance/Billing)		High	High	High	High
Enterprise Management Area	(1)	Low	Low	Low	Low
	(2)	High	High	High	High
Infra. Lifecycle Management And Product Lifecycle Management Area		Middle	Middle	Middle	Middle
Strategy Commitment Area		Low	Low	Low	Low

2) Enterprise Management (1) Area represents strategy & enterprise planning process, enterprise risk management process, enterprise effectiveness management process, and knowledge & research management process. Enterprise Management (2) Area represents finance & asset management process, human resource management process, stakeholder communications & image process.

<Table 4.1> summarizes an assessment of five process areas through Process Area Assessment on BPM adequateness.

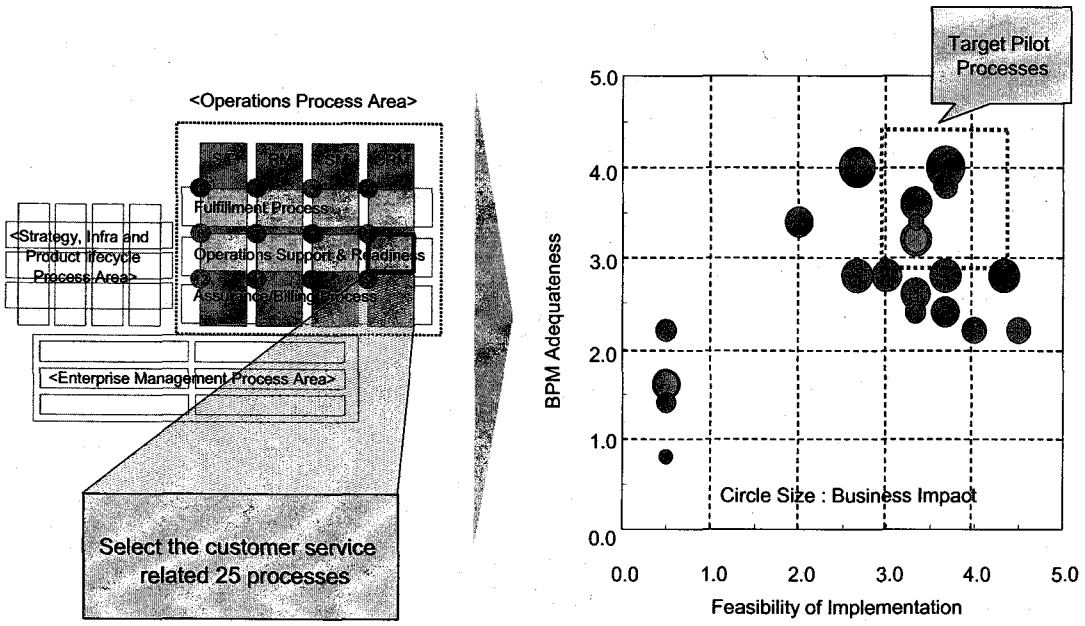
As the second filtering job, we evaluated sub-process areas (process chains) under the Operation Process Area with the strategic goals of Company 'B'. Each goal from departments in Company 'B' has been matched to each sub-process area. As a result, Customer Interface Area and Customer Relationship Management Area have been selected.

4.2.2 Assessment of 25 collected business processes

After extracting 25 end-to-end business processes from the Customer Interface Area and Customer Relationship Management Area, we have assessed the processes with the business manager and operators through an interview and a survey. The interview is for colleting information of businesses and analyzing a feature of the business process. The survey is for getting quantitative values in terms of business impact, BPM adequateness, and feasibility of BPM implementation. <Figure 4.1> shows results of the processes evaluation about three aspects.

4.2.3 Confirmation of target business processes

Company 'B' does not place any particular weight on each category because Company 'B' supposes all categories are equally important. Thus, a result of business process evaluation without any weight on each item has been shared with business managers of each team. Then the managers have decided several target business processes for BPM implementation. The selected process are Call Quality Management Process, Used Phone Management Process, Customer Voice Management Process, Fraudulent use of another Customer's Private Control Process, and Repair Agency Management Process.



〈Figure 4.1〉 Result of Process Assessment

V. Conclusion

5.1 Implications

We found out that it is very meaningful to select proper business processes for BPMS implementation. First of all, we could expect low risk of system implementation and high business performance through a prior investigation of whether each business process is right for BPM implementation or not. In addition, through collaboration with business managers and operators and IT supporters, the business managers and operators and IT supporters can get to know the definition and characteristics of BPM, as well as its usefulness and the expected payoff. Through the project, they naturally get ownership of BPM implementation. Hence, precise business requirements for implementation could be obtained by business manager who have full knowledge and strong ownership of BPM. In addition, the IT managers would have a better understanding of the relationship between existing legacy systems and BPMS. Therefore IT supporters have a long-term and broader view of future IT infrastructure. Finally, when evaluating business processes, we found out BPM solution functions suited for each business process such as EAI-oriented, BAM-oriented, and Workflow-oriented. The insight on the BPM functions would be helpful to select the appropriate BPM solution vendors. Consequently, the selection of appropriate processes would confirm the success of the implementation of BPM.

Although many companies are interested in introducing BPMS, there was no formal guideline of how to start and continue BPM project. Given this situation, the enPAM methodology can provide a meaningful guide to drive BPM Project. enPAM provides not only a selection method of target business processes but also a framework of how to drive the BPM project through roll-out plan. This framework would be practical and could be accepted by other organizations in different industries through adapting and validating the framework.

5.2 Supplements and Limitations

enPAM needs to add some assessment criteria. The first item to be added is whether or not it needs a function of business allotment. This item is included in BPM adequateness category. Some businesses need continuous improvement activities through the function of business re-allotment. But it's not necessary to allot business in a case where some workers in a business process deal with only one task every day without any other tasks. The second item is about the change cycle of business process. CIO Insight (2002) says that quick change cycle of business processes is a risk factor for BPM implementation. If a business process change happens very often even in the middle of implementing BPM, we have to rework process definition, modeling, and development. The fast change cycle of business processes would delay the project. In addition, after implementation, current technique of BPMS agility to meet with process change is not easy to follow such a fast business process change. Thus, agility related items should be added to the Import Risk category in Implementation Feasibility.

Besides, we found a limitation in the case that some questions of each assessment item were not expressed concretely. We carefully made the questions on process assessment to make sure that each question could lead to answers we want to get. However, when interviewees read the questions written by a general way in real project, some inter-

viewees interpreted the same question differently using their own criteria. Thus it is necessary to make questions of the assessment using figures and specific examples to analyze business processes exactly.

5.3 Future Research Issues

Although we propose a comprehensive design methodology for selecting a proper target business process for BPM implementation, more work is still needed to extend the results for a more rigorous and practical method.

The first thing is verifying the real impact of enPAM. When evaluated business processes with enPAM, we suppose selected business processes would have high business impact, high BPM success, and high feasibility of implementation. Thus, after confirming a target business process and implementing BPMS, we should find out how much an imbedded business process in the BPMS improves the performance. Second, as mentioned in the limitations section, a number of issues related to BPMS implementation are rising in recent BPM implementation projects. To prevent potential problems of BPMS implementation, we need criteria related to implementation feasibility that considers the present technical issues of BPM.

Finally, after implementation, BPMS would be a performance management tool which measures and analyzes automatically performance data about when workers start and complete their tasks. Which tasks have been done, and how much has been done? However, there is little knowledge how to improve the processes continuously. Thus, we need to upgrade our BPM methodology for process optimization, furthermore to ensure that enPAM includes a methodology of selection target areas and processes suitable for process performance management.

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A Study on Process Selection and Implementation for Business Process Management

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Abstract

This paper is about how to drive a Business Process Management (BPM) implementation project from selecting a target process to BPM deployment. For guidance of BPM implementation, LG CNS BPM Methodology and enPAM (Entrue Process Assessment Model) were used. This paper focuses on the methodology of process selection and presents a case study from the telecommunication industry. The enPAM consists of three major criteria in determining process priority for BPM system deployment: business impact, BPM adequateness and implementation feasibility. These three criteria can be easily modified for other telecommunication business just as we did to suit this telecom case. Moreover, it could provide useful ideas to companies that consider introducing a BPM solution for process management. Although we propose a comprehensive design methodology for selecting a proper target business process for BPM implementation, more work is still needed to extend the results for rigorous and practical method.

Keywords: Business Process Management, Process Definition, Process Prioritization, Mobile Telecommunication

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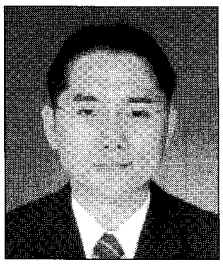

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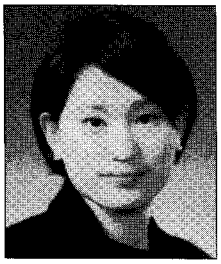

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