

Routinization of IT Service Management (ITSM) : A Descriptive Case Study

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Abstract

In order to realize the benefits of ITSM, it is necessary to institutionalize ITSM into the organizational culture. Currently, efforts to routinize ITSM lack in practice, and research in this area is also lacking.

This study identifies the factors affecting the routinization of ITSM through literature review and interviews with experts, selects a company that has successfully routinized ITSM, and analyses the activities, methods, and procedures employed by the company on the factors in detail. The specific factors analyzed in the study include fulfillment of the customer requirements, top management support, communication, change management, training and education, quality of the ITSM system, and capability of the personnel.

Important points verified in this study is that in order to realize organizational performance from ITSM, just the adoption of ITSM is not enough, but the routinization of ITSM through continuous and systematic management and improvement with the support of top management are required.

Since this study is a descriptive case study, results of the study cannot be generalized. However, the study will provide practical information that can be referenced by the organizations attempting to routinize ITSM. In addition, results of the study will provide a basis of future research in ITSM.

Keywords : IT Service Management (ITSM), ITSM Routinization, Descriptive Case Study

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1. Introduction

With the recent advent and growth of the new technology and services, such as cloud computing, social network service, and smart phone, attention to and importance of IT management in business are increasing as well. While traditional IT management focused on IT infrastructure and was technology-oriented, the recent focus of IT management is on business and is customer-oriented. In this respect, businesses are striving to provide the higher quality of services to customers, and adopting and utilizing IT Service Management (ITSM). The ultimate goal of ITSM is to provide customer-oriented services at a reasonable cost.

In Korea, the concept of ITSM was introduced around mid 2000. In the initial period, large IT service providers and banks dominated the adoption of ITSM, but recently, the adoption is being diffused to mid-sized companies. According to a study [Kim, 2011], the domestic ITSM market in 2011 is expected to grow more than 5% from the previous year, and the sector shows a steady growing trend. Now, ITSM is not an option taken by a few advanced companies, but it has become an indispensable system for all organizations.

However, of the organizations that have adopted ITSM, there are few that actively perform the activities to routinize their ITSM. A major reason for adopting ITSM is to provide customers with value by supplying low cost, high quality, and customer-oriented services [Lee, 2008]. This goal cannot be achieved by just establishing ITSM processes and implementing

the system. In order to realize the benefits of ITSM, it is necessary to institutionalize ITSM into the organizational culture. Currently, efforts to routinize ITSM lack in practice, and research in this area is also lacking, even though some research has been performed on the aspects of adoption and implementation of ITSM.

The goal of this study is to identify and analyze the factors affecting the successful routinization of ITSM. To achieve the research goal, this study first identifies the factors affecting the routinization of ITSM through literature review and interviews with experts. Then it selects a company that has successfully routinized ITSM, and analyses the activities, methods, and procedures employed by the company on the factors in detail.

This study belongs to a descriptive case study, and suggests the idiographic results that can be applied to a specific situation rather than nomothetic statement that can be generalized to any organizations. Therefore, even though results of the study cannot be generalized, the study will provide practical information that can be referenced by the organizations attempting to routinize ITSM. In addition, results of the study will provide a basis of future research in ITSM.

This paper is organized as follows : In Chapter 2, the existing literature on the concept of ITSM, concept of routinization, and the factors affecting the routinization of ITSM is reviewed. In Chapter 3, the factors affecting the routinization of ITSM are identified, and the detail items to be analyzed are described. Chapter 4 explains an overview of the case company and

results of the analyses. Finally, Chapter 5 summarizes the implications and limitations of the study and future research directions.

2. Literature Review

2.1 Concept of ITSM

ITSM is defined in various ways. itSMF (IT Service Management Forum), which is a global forum formed to advance the ITSM practices, defines ITSM as 'collection of all activities related to overall IT life cycle to develop and operate high quality IT services' [Loews, 2002]. Gartner defines it as 'a collection of process, organizational capability, and technology necessary to provide the reasonable and expectable IT service' [Gartner Group, 2002]. In another study [Kim et al., 2005], the objective of ITSM is 'to maximize business value of IT service portfolio to achieve required performance in a given cost structure'.

A common definition of ITSM does not exist. However, taking all the definitions into consideration, ITSM, in a narrow sense, means the approach to manage operations of IT systematically based on business, enterprise, and service perspectives beyond traditional technology focused perspective. In a broad sense, the scope of ITSM includes not only operations of IS, but all aspects of IT such as planning, development and monitoring of IT [Hwang, 2006].

2.2 Concept of Routinization

Since ITSM can be regarded as an innovation adopted by organizations, the concept of routine-

zation can be referenced by technology innovation theory. Kwon and Zumd [1987], which is one of the most referenced theories, proposes six stages of technology adoption : initiation, adoption, adaptation, acceptance, routinization, and infusion. Initiation is a process in which organizational problems/opportunities are scanned, and information are collected and evaluated. Adoption is a process of negotiations to obtain organizational support and resource commitment for IT implementation. Adaptation is a process in which IT application is developed and installed; both the organizational procedures and IT are modified to achieve a better fit. Acceptance is a process of encouraging employees to commit to using the IT application. Routinization is a process of routinized usage of the IT application. Lastly, infusion is a process of integrating the IT application into the organization's work processes to fully utilize its potentials. A later study, Wang et al. [2009] simplified the process into three stages: initiation, adoption/adaptation, and acceptance/routinization/infusion. In this study routinization is the third stage of Lee and Wang's model and means the stage that involves operating ITSM and inducing employees to use the system as a part of their work process.

2.3 Factors Affecting the Routinization of ITSM

Since the topic of routinization of ITSM has been studied very rarely, studies on the adoption and implementation of ITSM are reviewed, and the factors affecting the adoption and implementation of ITSM are identified.

<Table 1> Factors Affecting the Adoption and Implementation of ITSM

Category	Factors	reference
External	integration of customer and market; relationship with vendor/consultant; fulfilment of customer requirements	Yoon and Hwang [2007], Tan et al. [2009] Im and Hwang [2010]
Organizational	integration of strategy and goal; top management support; organizational role and responsibility; communication; evaluation and compensation	Kim et al. [2005], Cater-steel and Tan [2005] Zhen and Xin-yu [2007], Pollard and Cater-steel [2009] Park and Hwang [2009], Im and Hwang [2010] Oh and Cho [2010]
Managerial	management process standardization; process management; change management; training and education	Kim et al. [2005], Cater-steel and Tan [2005], Nam and Kim [2007], Cater-steel et al. [2006], Gu and Nam [2007], Johnson et al. [2007] Cater-steel and McBride [2007], An et al. [2007], itSMF Australia 2007 Conference [2007] An et al. [2008], Im and Hwang [2010]
Technical	IT resource monitoring; strategic dashboard; interoperability with existing systems; system quality	Kim et al. [2005], Gu and Nam [2007], An et al. [2007], Zhen and Xin-yu [2007], Oh and Cho [2010], Wan and Wan [2011]
Individual	belt level and capability; productivity	Cater-steel and Tan [2005] itSMF Australia 2007 Conference [2007] Galup et al. [2009], Park and Hwang [2009]

The identified factors can be classified into external, organizational, managerial, technical, and individual categories, and summarized in <Table 1>.

3. Research Method and the Case Company

3.1 Research Method

This study adopts a case study strategy, and the reasons for selecting the strategy is as follows : Currently, the number of organizations that have adopted ITSM is less than 100, and the research on the routinization of ITSM has been performed scarcely [16]. In these circumstances, therefore, the research topic is not mature enough to perform an explanatory study through hypothesis testing, and even if hypoth-

esis testing is attempted, the sample size is not enough [2007]. Accordingly, it is decided to perform a case study, which is easier to understand the phenomena in detail rather than a hypothesis-deductive analysis.

In this context, this study reviews and analyzes the deliverables, reports, and other related documents that have been produced by the case company in the process of implementing ITSM, and performs a series of in-depth interview to ensure triangulation of evidence. Interview with an ITSM expert of the case company is performed three times during a 2-month period. In the first interview, the factors and detail items identified through literature review are verified from the practical point of view and final factors and items are determined through the advice of an expert. In the second interview, the relevant documents related to the factors

are collected and the additional questions are asked. In the final interview, the contents summarized by the research team are presented and the contents are modified if necessary.

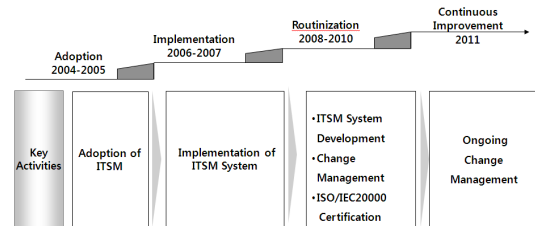
3.2 The Case Company

This study selects a company that is regarded as successfully routinized ITSM as a case. The case company is one of the largest Korean SI companies, and shows successful performance after continuous routinization efforts since the adoption of ITSM in 2004. One of the special reasons for choosing the company as a case is that one of the authors of this paper has worked for the company in the ITSM area, and consequently, data accessibility is high. From this perspective, this study has an element of an action research.

The case company is an IT solution firm providing the integrated IT services ranging from development of IS to operations of IS. Major business areas of the company include outsourcing, solution based business, solution distribution, and systems integration.

Progress made by the company on the implementation of ITSM is summarized in <Figure 1>. Firstly, the company made a decision to adopt ITSM in 2004, and completed the development and implementation of ITSM in 2007. Since then, the company has performed various efforts to routinize ITSM by attempting to improve the operational level of ITSM through 6 Sigma technique. During the process, the company has successfully obtained the international certifications such as ISO/IEC 20000 and CMMI

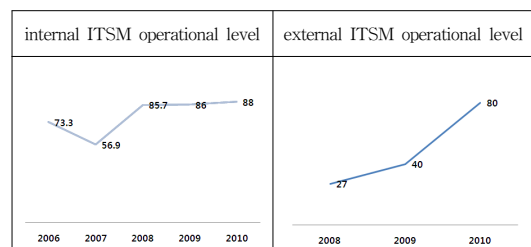
Level 5. In addition, the ITSM system developed in-house obtained the Korean national quality certification (Good Software). Since 2011, the company continues to improve ITSM to deliver more business value from IT services.



<Figure 1> Progress Made by the Case Company on the Implementation of ITSM

One indicator showing that the company has succeeded in the routinization of ITSM is the level of ITSM operations. The company has been assessing the level of ITSM operations annually. As can be seen in <Figure 2>, the score for internal ITSM operations had increased by 15 points from 73.3 in 2006 to 88 in 2010. The ITSM operations score for external customers increased dramatically (from 27 in 2008 to 80 in 2010).

Taking the progress made and the level of operations into consideration, there seem to be enough evidence to regard the company as a success case that has routinized ITSM.



<Figure 2> ITSM Operations Score of Company A

3.3 Factors and Detail Items to be Analyzed

Of the factors identified through literature review, 7 factors are selected to be analyzed in the study after combining the overlapping and similar factors and consultation with the expert. The specific factors to be analyzed include fulfillment of the customer requirements, top management support, communication, change management, training and education, quality of the ITSM system, and capability of the personnel.

<Table 2> summarizes the factors to be analyzed, definition of the factor, and detail items to be analyzed.

4. Results of the Analyses

4.1 Fulfillment of the Customer Requirements

4.1.1 Customer Requirements Management Scheme

The company operates an independent VOC (Voice of Customer) unit and a consolidated service desk to systematically manage the customer requirements. The customer requirements are handed over to the VOC unit directly without any intermediate processes to respond quickly. VOCs are managed to reflect customers' complaint, feedback and opinions through the customer interview, questionnaire, and happy call system.

<Table 2> Factors to be Analyzed in the Study

Factor		Definition	Detail Items
External	fulfillment of the customer requirements	satisfaction of the customer needs and reflection of the feedback (complaints)	<ul style="list-style-type: none"> customer requirements management scheme types of customer requirements methods of receiving and responding to the customer requirements time to receive and process the customer requirements
Organizational	top management support	support activities performed by the top management to routinize ITSM	<ul style="list-style-type: none"> support activities performed by the top management
	communication	interest and involvement of the employees in the routinization of ITSM	<ul style="list-style-type: none"> major means of communication key communication activities
Managerial	change management	activities and performance of change management for the routinization of ITSM	<ul style="list-style-type: none"> key change management activities degree of improvement achieved through change management
	training and education	ITSM related training and education for the IT personnel	<ul style="list-style-type: none"> training and education program training and education results
Technical	quality of the ITSM system	quality of the ITSM system and improvement efforts	<ul style="list-style-type: none"> quality of the ITSM system activities performed to improve the quality of ITSM system
Individual	capability of the personnel	level and capability of the ITSM personnel	<ul style="list-style-type: none"> 6 sigma belt level of the ITSM personnel productivity of the ITSM personnel

Interviews with the customers are conducted every quarter to understand the needs of customers. Survey is performed every year, and complaints and opinions of the customers collected by the survey are acted upon. Happy calls are made after the completion of the customer requirements to understand proactively whether the customer is satisfied with the measures taken. The following questions are asked to the customers : Do the requests have been processed well?, Is there any inconvenience the service staff has caused?, Do the requests have been handled at the wanted time, and Are there anything to be improved in the future?

Contents of the call with the customers are

collected, collated and communicated to the Operations Team, and the root cause analyses are performed to find the improvement options and opportunities.

4.1.2 Types of the Customer Requirements

The company classifies the customer requirements received in the Service Desk by categories, manages the frequency and trends of the requirements systematically, and attempts to respond to the recurring requirements proactively rather than reactively. Categories of the customer requirements include business system, infrastructure, and PC. <Table 3> shows the detailed requirements for each type of customer requests.

<Table 3> Types of the Customer Requests

Category	Type	Detail requirement
Business System	Business System of the Customer Company	program change
		program Development
		data entry, revision, and deletion
		simple inquiry and request
		document and report
		password/ID/IP/right/firewall
		data inquiry/request
		training/meeting/on-site support
	other	
Infrastructure	Network	infrastructure change
	Server	service open request
	Others	document inquiry and request
		password/ID/IP/right/firewall
		data inquiry/request
	training/meeting/on-site support	
PC	PC	PC incident
	Printer	S/W installation
	Scanner	virus and malware resolution
	Other	network setting
		PC replacement
		inquiry on use of PC
	other	

4.1.3 Methods of Receiving and Responding to the Customer Requirements

The company receives and responds to the customer requirements via the consolidated Service Desk. The customers may send the requirements in various ways, including telephone call, ITSM system, and mail/messenger system. The ways to respond to the customer requests by the type of reception are summarized in <Table 4>.

4.1.4 Time to Receive and Process the Customer Requirements

The company has established a consolidated Service Desk and reduced the times to receive and process the customer requests dramatically

(see <Table 5>). Before operating the Service Desk, the average time taken to receive the customer request was 14.3 hours and the average time to process the request after receiving it was 14.2 hours. However, the times have been reduced to 0.3 hours and 3.8 hours, respectively, and the improvement rates show 98% and 73%, respectively. The total time to receive and process the customer requests has been decreased from 28.5 hours to 4.15 hours (improvement rate of 85%) by employing the customer request management system.

4.1.5 Top Management Support

The CEO of the company has provided considerable interest and support for the routiniza-

<Table 4> Ways to Receive and Respond to the Customer Requests

Method	Response
Telephone Call	① telephone call → ② respond by automatic introduction message → ③ validate and record basic information → ④ validate and record requests → ⑤ confirm whether the request has been resolved → ⑥ register resolution results → ⑦ verify degree of satisfaction → ⑧ report results
Request by ITSM System	① request by ITSM system → ② receive the request on the ITSM system → ③ validate and record basic information → ④ validate and record requests → ⑤ confirm whether the request has been resolved → ⑥ register resolution results → ⑦ verify degree of satisfaction → ⑧ report results
Request by mail/messenger	① request by mail/messenger → register the contents of the request on the ITSM system → ③ validate and record basic information → ④ validate and record requests → ⑤ confirm whether the request has been resolved → ⑥ register resolution results → ⑦ verify degree of satisfaction → ⑧ report results

<Table 5> Performance Comparison Before/After the Establishment of the Service Desk

	Before establishing the Service Desk		After establishing the Service Desk
average time to receive the customer requests	14.3 hour	→	0.3 hour
average time to process the customer requests	14.2 hour	→	3.8 hour
total time	28.5 hour	→	4.15 hour

tion of ITSM in the following aspects :

First, since the adoption of ITSM, the CEO receives the report on the utilization of ITSM system on a weekly basis. In addition, the CEO reviews the results of the assessment of the levels of ITSM operations which is performed 4 times a year. These supervision and directions given by the CEO have played a major role in encouraging the organization units and employees to utilize ITSM actively.

Second, the CEO has paid much attention to and provided support for the human resource development, which is an indispensable element in the routinization of ITSM. In order to develop and retain the ITSM experts, for example, the CEO has mandated all employees to receive the ITSM related training and to obtain the related professional certificate. Furthermore, the results of training and certification are integrated into human resource management system to be considered in determining the promotion and evaluation of the employees. All these efforts seem to play a major role in improving capability of the personnel, which is one of the most important aspect in the routinization of ITSM

Third, it is necessary to satisfy the customers' opinions and resolve complaints of the customers to facilitate routinizing ITSM, In this respect, the CEO has made the newly established VOC unit directly report to him so that he can listen the voice of the field directly.

4.2 Communication

4.2.1 Major Means of Communication

The company is utilizing a groupware to pursue

smooth communications among employees. However, the most important communication means related to ITSM is the 'ITSM operations committee'. To facilitate the integrated communications related to ITSM, the company uses not only the technology based communications, such as a groupware, but also a committee composed of the ITSM related personnel and users is established and operated. The objective of the committee is to achieve the best level of ITSM operations in the industry. In order to achieve the goal, the committee meets once a month to collect process improvement requests and other operational issues, and to improve them continuously.

4.2.2 Key Communication Activities

In the company, key communication activities are performed through the 'ITSM operations committee'. The committee performs the following key activities : First, it shares the assessment results of ITSM operational level, and requests necessary improvement through ITSM operational level management. Second, it contributes to enhancing the level of ITSM operations by collecting and disseminating the best practices of each operational unit. Finally, it provides a forum to discuss issues occurring between the data center and the operation teams.

4.3 Change Management

4.3.1 Key change Management Activities

The company has adopted the 6 Sigma technique as a key mechanism for effective change management. Under the 6 Sigma scheme, the company has performed continuous efforts to

find the root causes of IT service incidents, to define them as 6 Sigma projects, and to improve them. Through these efforts, the problem management capability has been improved, and it has been able to eliminate the recurring incidents and/or unknown errors.

In addition, the company has developed a tool to diagnose the ITSM operational level and systematically manages the level of ITSM operations. Using the diagnostic tool, the self assessment and expert review are performed 4 times a year to check the degree of ITSM process conformance. Each operation unit measures and evaluates the current status of each diagnosed item quantitatively, and performs the necessary improvement activities.

The company has worked to convert the knowledge on ITSM operations into the formal job manuals. All employees are required to prepare and manage the job manuals, are encouraged to use them, and are provided with incentives based on the extent of contribution in preparation of the manuals. Since the job manuals are prepared by the personnel who actually performs the work, and verified on the enterprise wise basis, the manuals are prepared in a practical and usable form, and the degree of utilization and ease of use have increased significantly. And through the job manual management system, all personnel can retrieve and utilize the manuals easily, and the internal knowledge on ITSM operations can be systematically accumulated and shared, which have contributed to the effective and systematic provision of IT services. Furthermore, thanks to the systematic management of knowledge and ma-

nuals, the problem of personnel turnover, which is often encountered in IT service organizations, can be responded effectively.

4.3.2 Degree of Improvement Achieved through Change Management

The areas improved by the change management are diverse. However, in this section, the four areas, including problem management, incident management, job manual management, and customer satisfaction, will be reviewed.

Firstly, in case of the problem and incident management, while the number of problems managed has increased significantly, the number of enterprise level incident has decreased (see, <Table 6>). As explained earlier, the reduction of errors is mainly due to the improvement of problem management capability through 6 Sigma.

Secondly, the number of job manuals produced has been increased significantly. As explained above, by institutionalizing the job manual management, not only the quantity of manuals has been increased, but many other benefits are also realized. That is, more usable manuals are produced, internal knowledge is effectively accumulated and easily shared, and it becomes possible to respond effectively to the employee turnover.

Finally, customer satisfaction has been improved, too. Thanks to the various change management efforts, including Happy Call, and regular survey and interviews, the service quality has been enhanced by resolving the customers complaints and reflecting customer feedback actively, and as a result the customer satisfaction has been increased.

〈Table 6〉 Performance Comparison Before/After the Routinization

	Before Routinization		After Routinization
Number of Problems Managed	3	→	28
Number of Enterprise level incidents	42		30
Number of Job Manuals	87		389
Customer Satisfaction	76.8 points		83.3 points

4.4 Training and Education

4.4.1 Training and Education Program

The company has established and operated a training and education program designed for all personnel involved in IT outsourcing business to familiarize and fully understand the concepts and practices of ITSM.

The training program is divided into the basic training program and the advanced program (see <Table 7>). The basic training program targets new employees, and consists of 5-day course (2-day foundation course and 3-day exam preparation course). On completion of the program, the trainees should take the ITIL Foundation Exam (Exam fee is supported by the company). The advanced education program targets the process managers, and the duration of the program is one week, covering overall ITSM process and detail content related to the operations of ITSM. Similarly, the trainees should take the ITIL Exam and receive merits at the promotion if he/she passes the exam.

4.4.2 Training and Education Results

The company has been continuously exerting efforts to improve capabilities of the employees by stressing the importance of education and training through leadership of top management. As a result, by 2009, 585 employees completed the basic training program and 1,084 did the advanced program. In addition, 83% of all employees involved in IT service outsourcing area obtained ITIL certificates.

4.5 Quality of ITSM System

4.5.1 Quality of ITSM system

The company adopted an ITSM package developed by a vendor in 2004 when they first adopted ITSM. Many first generation ITSM organizations that have adopted the vendor's package have found themselves encountered with such problems as not being able to respond flexibly to the various business environmental change and customer requests [2005]. The company has encountered and identified the similar problems :

〈Table 7〉 Training and Education Program of Company A

	Basic Training	Advanced Training
Goal of the program	Increase awareness on ITSM	Develop ITSM process manager
Target Trainee	All ITO related personnel and new employees	process managers
Contents of program	Foundation training on all ITSM process	Detail training on specific process
Duration of the program	foundation 2 days exam preparation 3 days	1 week

Firstly, the utilization rate of ITSM system by customers and operators was quite low. One problem is that low information linkage and unnecessary duplicate inputs have caused delay of work. Additional problem include too many not so useful menu and input items, too many work steps to complete a process, and incorrect data in report, etc.

Secondly, since the ITSM package has applied the global best practices in terms of ITSM process literally, activities to perform are so complex and there are so many work steps that the work efficiency becomes reduced and the conformance of ITSM process and system utilization are negatively affected.

In order to resolve these problems, the company made a decision to develop an ITSM system in-house in 2007. The project began in mid 2008 and completed at the end of the year, and the company was able to secure a quality ITSM system. Recently, part of the ITIL V3 processes was incorporated into the system, and the company is not only using it internally, but also selling it outside. So far, the company has sold to more than 20 organizations in Korea.

In sum, the quality of ITSM system in the initial stage was not excellent. After the significant improvement efforts, the quality of the current system seems to be satisfactory.

4.5.2 Activities Performed to Improve Quality of ITSM System

As explained before, the company decided to develop an ITSM system in-house to resolve the problems of the existing system. About 30 internal staff and experts have participated in the project, and a system that satisfies requirements of customers and operators was completed at the end of 2008.

Improvements made by the resulting system are summarized in <Table 8>.

4.6 Level and Capability of ITSM Personnel

4.6.1 6 sigma belt level of ITSM personnel

In order for 6 Sigma technique that has been adopted by the company as a major means of change management to be successful, the employees of the company should be well equipped with the technique. The degree of employee

<Table 8> Quality of ITSM System Element

	Improvement results
Satisfaction of requirements of users and operators	<ul style="list-style-type: none"> • requirements and complaints of customers and operators are reflected in the system by the systematic collection and management of them
Ease of use, Flexibility and Linkage with other systems	<ul style="list-style-type: none"> • user input system is simple • procedures can be modified according to the customers request • users can receive SMS and monitor status of service real time • redundant activities are eliminated, sign off and work procedures are simplified • input time is reduced by minimizing management items • useful reports can be downloaded and utilized on a real time basis • time required to prepared reports is dramatically reduced
Other	<ul style="list-style-type: none"> • reflect requirements of ISO/IEC 20000 standard to ITSM system to obtain the certification

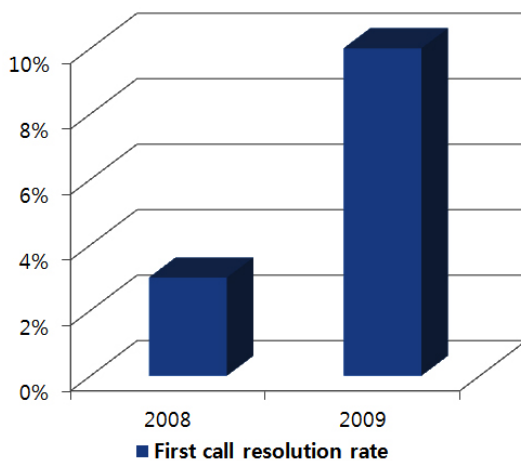
readiness can be measured by the number of employees possessing the 6 Sigma belts.

In the company, the ratio of employees with 6 Sigma belts is quite high. Of all about the 900 employees in the company, 90% of them possess the Green Belt, and 70% have the Black Belt. The high ratios are attributed to the active support of top management, and the policy requiring the Black Belt as a condition in promoting to the manager position.

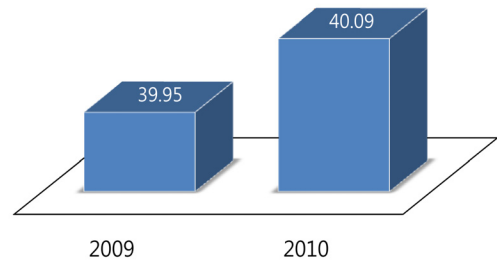
4.6.2 Productivity of ITSM personnel

Productivity of the ITSM personnel, in terms of the first call resolution rate (FCRR) and the number of service requests processed by an employee, is reviewed below.

FCRR had improved about 10% in 2009 compared with the previous year (see <Figure 3>). The number of service requests processed by an employee has been also improved (see <Figure 4>). As such, productivity of the ITSM personnel in the company shows an increasing trend year by year.



<Figure 3> Improvement of First Call Resolution Rate



■ number of service requests processed by an employee

<Figure 4> Number of Service Requests Processed by an Employee

5. Conclusions

This study selected the factors affecting the routinization of ITSM through literature review and consultation with the expert, and analyzed the activities, techniques, procedures, and contents conducted by the company, which can be regarded as a successful case, for each factor in detail. Major factors analyzed include fulfillment of the customer requirements, top management support, communication, change management, training and education, quality of the ITSM system, and capability of the personnel. The results of the analyses show that the company has successfully routinized ITSM by performing various activities on the factors, and by introducing a variety of policies and systems.

Important points verified again in this study is that in order to realize organizational performance from ITSM, just the adoption of ITSM is not enough, but the routinization of ITSM through continuous and systematic management and improvement with the support of top management are required. The examples of activities and techniques for the routinization of

ITSM suggested in this study are expected to provide useful information that can be utilized by organizations pursuing the routinization of ITSM. However, since the study is a descriptive case study, the results cannot be generalized to all organizations. Therefore, it would be necessary for the organizations attempting to utilize the information to choose carefully the contents appropriate and applicable to their organization.

Future research topics in this area may include a research that provides systematic and objective measurements of the variables analyzed in the study (routinization, and affecting factors), and the quantitative survey study to provide the research results that can be generalized.

References

- [1] An, J. M., Lee, S., and Kim, H., "The Impact of IT Service Process Maturity on IT Outsourcing Performance", *Information Systems Review*, Vol. 9, No. 2, 2007, pp. 189-207.
- [2] An, J. M., Hahm, Y., and Kim, H., "An Exploratory Case Study on the Implementation of IT Infrastructure Library (ITIL) Service Management System", *Journal of Information Technology Applications and Management*, Vol. 15, No. 4, 2008, pp. 1-20.
- [3] Cater-steele, A. and McBride, N., "IT service management improvement+An actor network perspective", *Proceedings of European Conference of Information Systems*, St Gallen, Switzerland, June 2007, pp. 7-9.
- [4] Cater-steele, A. and Tan, W. G., "Implementation of IT Infrastructure Library (ITIL) in Australia : Progress and Success Factors", *Proceedings of the IT Governance International Conference*. Auckland, New Zealand, November 2005, p. 14(16).
- [5] Cater-steele, A., Toleman, M., and Tan, W., "Transforming IT Service Management-the ITIL Impact", *Proceedings of the the 17th Australasian Conference on Information Systems*, 2006.
- [6] Galup, S. D., Dattero, R., Quan, J. J., and Conger, S., "An overview of IT service management", *Communications of the ACM-Security in the Browser*, Vol. 52, No. 5, 2009, pp. 124-127.
- [7] Gartner Group, *Data Center and IT Service Management Best Practices*, Gartner Group Research, 2002.
- [8] Gu, C. and Nam, K., "An Empirical Study of the Determinants of Service Level Management and its Performance", *The Journal of Information Systems*, Vol. 16, No. 3, 2007, pp. 69-90.
- [9] Hwang, K. T., *Evaluation of the Maturity Level of IT Service Management*, National IT Industry Promotion Agency, 2006.
- [10] Im, S. B. and Hwang, K. T., "A Comparative Case Study on Improvement of ITSM using 6 Sigma Technique", *Information System Review*, Vol. 12, No. 2, 2010, pp. 121-144.
- [11] itSMF Australia 2007 Conference, "Summary of ITSM Standards and Frameworks Survey Responses", USQ and itSMF Australia, 2007.

- [12] Johnson, M. W., Hately, A., Miller, B. A., and Orr, R., "Evolving standards for IT service management", *IBM Systems Journal*, Vol. 46, No. 3, 2007, pp. 583-597.
- [13] Kim, D. O., Han, H., and Hwang, J., "A Study on the Development of Customer Oriented ITSM Model", *Entrue Journal of Information Technology*, Vol. 4, No. 1, 2005, pp. 51-65.
- [14] Kim, H. S., "A case study on realization of ITSM performance applying the change management framework of ITSM", *Korea Society of IT Services Journal*, Vol. 10, No. 3, 2011, pp. 251-264.
- [15] Kwon, T. H. and Zmud, R. W., "Unifying the fragmented models of Information Systems Implementation", *Critical Issues in Information Systems Research*, 1987, pp. 227-251.
- [16] Lee, J. O., Shin, S. H., Kim, H. K., and Hwang, K. T., "A Study on Research Framework and Reserarch Trend in IT Service Management (ITSM) Area", *Information Policy*, Vol. 19, No. 1, 2012, pp. 25-46.
- [17] Lee, S. E., *A Study on the Improvement of ITSM Implementation Performance*, National IT Industry Promotion Agency, 2008.
- [18] Loews, A., "Stability in a Changing World : Why We Need Services Management", it-SMF, 2002.
- [19] Nam, K. and Kim, J., "A Study of SLA's Maturity Level on Performance", *Journal of Information Technology Applications and Management*, Vol. 14, No. 1, 2007, pp. 1-20.
- [20] Oh, H. and Cho, C., "A Study on IT Service Management Based on ITIL with Consideration of IT Governance Structures : Focused on A Case Study of Manufacturing Company", *Journal of the Korea Safety Management and Science*, Vol. 12, No. 1, 2010, pp. 149-159.
- [21] Park, K. and Hwang, K. T., "A Study on the Implementation of ITSM using 6 Sigma Technique : A Descriptive Case Study", *Journal of Information Technology Applications and Management*, Vol. 16, No. 2, 2009, pp. 121-133.
- [22] Pollard, C. and Cater-steele, A., "Justifications, strategies and critical success factors in successful ITIL implemetations in U.S. and Australian companies : Exploratory study", *Information Systems Management*, Vol. 26, No. 2, 2009, pp. 164-175.
- [23] Tan, W. G., Cater-steele, A., and Toleman, M., "Implementing IT service management : a case study focussing on critical success factors", *Journal of Computer Information Systems*, Vol. 50, No. 2, 2009, pp. 1-12.
- [24] Wan, J. and Wan, D., "Analysis on the Mindbugs in Information Technology Service Management Project Implementation", *Technology and Investment*, Vol. 2, 2011, pp. 184-192.
- [25] Wang, M. W., Lee, O., and Lim, K. H., "Knowledge Management Systems Diffusion in Chinese Enterprises : A Multi-Stage Approach with the Technology-Organization- Environment Framework", *Journal of Global Information Management*, Jan-Mar. 2009, Vol. 17, Issue 1, pp. 70-84.

- [26] Yoon, K. S. and Hwang, K. T., "Case Study on Implementation of ITSM using 6 Sigma Technique : Focused on Service Desk", *Journal of Information Technology Applications and Management*, Vol. 14, No. 3, 2007, pp. 1-14.
- [27] Zhen, W. and Xin-yu, Z., "An ITIL-based IT Service Management Model for Chinese Universities", *Proceedings of the Fifth International Conference on Software Engineering Research, Management and Applications*, 2007, pp. 493-497.

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