



Service innovation through dynamic knowledge management

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Abstract

Purpose – The purpose of this paper is to report the findings of a study on the management of intellectual capital in Fortune Motors. It intends to highlight how an automobile service firm apply dynamic knowledge management concept to create new service processes which resulted in breaking through the bottleneck of profit loss.

Design/methodology/approach – The study is based on an in-depth case study, semi-structured interviews and extensive access to the secondary data on the firm. A qualitative approach was used to analyze the data due to the complexity of contextual content.

Findings – The proposed model has been validated and found that dynamic capabilities could enhance knowledge management by linking external resources or stimuli and internal knowledge management practices. Empirical evidence has also been provided on how a firm can apply dynamic capabilities to substantiate service innovation.

Research limitations/implications – Further studies verifying the linkage between knowledge management and specific capabilities can be extended from this study.

Practical implications – The proposed model provides a guideline for practitioners in managing their valuable knowledge and enhancing the existing knowledge management practices.

Originality/value – This paper identifies a gap in the linkage between knowledge management and constant environmental changes that has been overlooked. To narrow down this research gap, a model of a cyclical flow has been proposed containing processes of integration/coordination, learning/experimentation and innovation and transformation.

Keywords Intellectual capital, Knowledge management, Innovation, Automotive industry, Taiwan

Paper type Case study

Introduction

It is widely accepted that knowledge is critical to organizational success. The accumulated knowledge of customers, relationships, processes, innovations, and human resources comprise organizational intellectual capital, which must be integrated into critical decisions. This knowledge is both learned and exploited for business enhancement and innovation. Under today's changing environment, the management of intellectual capital is dynamic and requires capabilities of continuous integration, modification, and innovation.



Intellectual capital is one specific aspect of the resource-based view (Reed *et al.*, 2006). Based on RBV, scholars identify intellectual capital as the main source of organizational competitive advantage (Nahapiet and Ghoshal, 1998) and others claim that intellectual capital affects business performance (Bontis, 1998; Bontis *et al.*, 2000; Mavridis, 2004). Although intellectual capital is a bundle of critical resources that can be used to create or produce a higher value asset (Edvinsson and Sullivan, 1996; Teece, 1998), a high stock of intellectual capital does not necessarily lead to high performance. A good example in case is the significant losses of IBM in 1992 and 1993 despite of its large inventory of intellectual capital (Teece *et al.*, 1997; Eisenhardt and Martin, 2000; Zollo and Winter, 2002). Moreover, RBV does not provide for managers with useful advice as to which firm-specific resources they should accumulate to gain an advantage in the fast changing environment (Priem and Butler, 2001).

Thus, Teece *et al.* (1997) propose the concept of dynamic capabilities to emphasize the development of management capabilities and the unique combination of organizational, functional and technological skills that address the changing environment and enable firms to sustain their competitive advantages. However, how dynamic capability enhances knowledge management in helping organization's performance improvement has attracted little attention. Based on a case study with in-depth interviews with managers, the present study aims at a deeper understanding of the alignment between dynamic capabilities and knowledge management approach. It also provide a real-life case on how Fortune Motors, an automobile service firm, made a breakthrough in its bottlenecks such as increased customer defection, uneven quality of technicians, and increased competition among franchising chains. The firm turned its performance around after linking dynamic capability with its knowledge management practices to create new service processes named "eCare". Through the case report, we offer the insight into knowledge management approach that enhances the integration, acquisition, and reconfiguration of both internal and external knowledge for the improvement of organizational performance.

The next section is a review of literature pertaining on knowledge management and the concept of dynamic capabilities. The paper goes on to give a description of the method used in the case study, which is followed by case analysis and research findings and discussions. The paper is concluded with a summary of the study, and some managerial implications are provided.

Literature review

Knowledge management

Knowledge management refers to the exploration and exploitation of the collective knowledge in an organization to help an organization to compete (Alavi and Leidner, 2001). Knowledge management is purported to enhance organizational quality and organizational performance (King and Zeithaml, 2003; Ahn and Chang, 2004). The knowledge management approach was asserted to be useful for managing uncertainty and have significantly reduced finished product and part delivery in manufacturing enterprises (Koh *et al.*, 2006). The theoretical foundation of knowledge management has emerged from a wide variety of disciplines such as organizational theorists, artificial intelligence theorists, and scientists. Some scholars have considered the roles imputed to information technology for knowledge management and others have analyzed various management techniques that are applicable to knowledge

management (Baskerville and Dulipovici, 2006). An effective management of knowledge allows a proper sharing of knowledge between the organization and its business partners and suppliers (Choy *et al.*, 2006).

According to Grover and Davanport (2001), the study of KM can be divided into two streams from the standpoint of management and organization. The first stream concerns the theorization of performance differences. Within this stream, there are debates between transaction cost economics and resources-based theory. The transaction cost theorists claim that knowledge is a critical resource that enables a firm to create a unique advantage for governing economic activities through a differentiated way. In contrast, the theorist of the resource-based view argue that the success of a firm is not only based on the economics of contracts it implements but also on the possession of scarce resources that are rare, valuable, and inimitable (Barney, 1991). The second stream of KM, More empirically based, concerns knowledge flows between organizational units and between organizations. In this stream, various issues related to KM have been investigated, such as strategy, structure, culture, IT infrastructure, KM outcomes, and KM processes that include individual and organizational levels. Wiig (1999), for instance, proposes a three-pillar model of knowledge management that explains the process of knowledge creation, manifestation, use and transfer.

Knowledge management and dynamic capability

A number of researchers have suggested a linkage between knowledge management and dynamic capabilities. Verona and Ravasi (2003) state that dynamic capabilities are critical to knowledge creation, knowledge acquisition, knowledge integration and knowledge reconfiguration, because these knowledge management processes are underpinned by the organizational dynamic capabilities. Eisenhardt and Martin (2000) note that dynamic capabilities enable organization to exploit existing knowledge and explore new knowledge to form a competitive advantage. Literature pertaining to knowledge management focuses more on the building of formal systems which enhances internal learning. In today's business environment, organizations are facing rapid environmental changes and challenges. KM can be critical to organizational success only if it is linked to a dynamic environment. Thus, the concept of dynamic capabilities that focuses on the exploration and exploitation of internal and external resources plays an important role in enhancing the usefulness of KM.

The concept of dynamic capabilities enhances existing studies on knowledge management with the consideration of today's ever-changing business environment. Eisenhardt and Martin (2000) define dynamic capabilities as the process of integrating, reconfiguring, obtaining, and releasing specific resources to match and even create market change. Teece *et al.* (1997) define dynamic capability as a firm's ability to integrate, build, and reconfigure internal and external organizational competences in a dynamic environment.

Dynamic capabilities are also studied from the perspective of organizational learning. Zollo and Winter (2002), for instance, assert that a dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness. This implies that dynamic capabilities are crucial to sustain competitiveness and that learning is a primary vehicle for upgrading capabilities; for it includes the process within an organization that maintains or improves

performance based on experience. Though the definitions of dynamic capabilities seem to vary among different scholars, there are common key features. First, dynamic capabilities are broad knowledge based; dynamic capabilities refer to the ability to combine knowledge from different core functions, technologies or activities. Second, dynamic capabilities enable a firm to recognize the value of new, external knowledge and assimilate and apply it to commercial ends. Third, the creation of dynamic capabilities requires continuous learning; a firm can broaden its mindsets through identifying and supporting new ideas (Volberda, 1998).

Based on foreword-mentioned literature, we propose that knowledge management can be enhanced through dynamic capabilities of a recursive flow of integration, learning, and transformation (Figure 1).

Method

The case study examines a KM system developed and implemented by Fortune Motors, an automobile service firm operating in Taiwan. The eCare system embodies the principles and concepts of the dynamic capability, and these principles are applied into practice through a wide range of knowledge management activities. Owing to the complexity of contextual content of this case, an explanatory approach was used to give a descriptive account of the processes involved in the implementation of the KM system. According to Yin (1993), explanatory cases are suitable for doing causal studies in complex and multivariate cases. The utilization outcomes were explained by three rival theories: a knowledge-driven theory, a problem-solving theory, and a social-interaction theory.

Knowledge-driven theory means that ideas and discoveries from basic research eventually become commercial products. Problem-solving theory follows the same path, but originates not with a researcher, but with an external source identifying a problem. The social-interaction theory claims that researchers and users belong to overlapping professional networks and are in frequent communication (Yin and Moore, 1987).

We base the case study on in-depth interviews, along with the secondary data accessed from the firm. The main fieldwork was conducted with semi-structured interviews of the most knowledgeable managers and informants at the Fortune Motors’

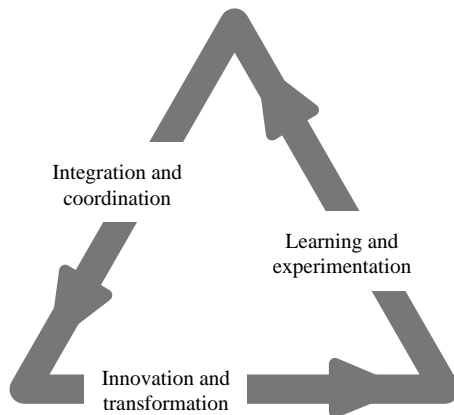


Figure 1.
A cyclical flow of dynamic
capabilities of knowledge
management

corporate headquarter. To provide a holistic organizational perspective, the authors formally interviewed eight managers. The range of interviewees covered different actors involved in the development and implementation process of the eCare system. Documentary evidence permitted cross-checking of much of the interview materials. It was possible to control the reliability of the managers' recollections on technical and other details by comparing them with internal documents. The use of externally oriented articles provided yet another method to triangulate the validity of the interview data. In sum, the document and interview data were transcribed, analyzed and triangulated with iterative verification with interviewees until structured findings were formed.

Given the nature and contextual conditions of the eCare system, the report of the case is qualitative. As Yin (1994) pointed out that generalization of results, from either single or multiple designs, is made to theory and not to populations. We therefore took on this case as a base to verify the validity of the proposed model, and thereby providing some managerial implications to managers in a real-life situation.

Case analysis

Case background

The main reason we chose the eCare system of Fortune Motors as the primary case study was that this company had accumulated 30 years of experience in knowledge management. Besides, the service industry of automobile firms is operating in a dynamic environment under intense competitive pressure due to the saturation of the car market, which allows Fortune Motors to apply dynamic capability concepts into its knowledge management system.

Ever since its founding in 1975, Fortune Motors has been competing in the automobile maintenance industry in terms of methods, technology, quality, warranty period, and price. It has more than 3,500 employees in Taiwan and current capital reserves have reached NT\$3.2 billion. The company has one of the largest car dealership networks in Taiwan, with about 90 franchises nationwide, and there are at least three technicians in each franchise. At least, 900,000 car owners come to their shops for maintenance and repair each year. At the end 2002, the company started to sense that service inconsistencies were preventing continuous realization of lifelong customer value. There were several managerial bottlenecks confronting the management of the company. The first challenge was the increased customer defection. Fortune has abundant experience in maintenance and repair services. However, due to the fact that the whole process is not effectively integrated, Fortune had formed diseconomies of resource usage, inefficiency of operational process, and dissatisfied customers. With regard to customer retention, Fortune did not have good information on customer perceptions of lifetime value, and so it lost many opportunities for sales. The second bottleneck was the uneven quality of technicians. This was due to the fact that technicians were responsible for overall maintenance rather a specific part of the maintenance job, and there were no standard working procedures for junior technicians to learn from and follow. This meant that not all technicians were equipped with the skills and competencies that were essential to the job. Thus, Fortune Motors encountered a high-rework rate in its shop floor. The third bottleneck was competition from other franchise chains has been intensified. Every repair shop was similar to the others with respect to overall function, and the service

area coverage was largely overlapping, contributing to the formation of cutthroat competition in acquiring customers. At the same time, it caused higher idleness ratio of plant and lower employee productivity. Sometimes repair shop even had to cut price to compete with other repair shops. Therefore, this company was left in the hardship under internal and external pressures.

To resolve these issues, Fortune Motors established a service innovation strategic committee to aggressively pursue breakthroughs in performance in 2003. A set of dynamic knowledge management initiatives named eCare system was developed, which embody three processes, integration, knowledge acquisition, and transformation. These processes are interrelated, and undergo along a cyclical path constantly, as shown in Figure 2.

Implementation of the dynamic knowledge management

The eCare system is aimed at improving service procedures and enhancing the quality of the customer's maintenance experience. Practically, the entire process of the dynamic capabilities of knowledge management is a link between knowledge generated from dealing with customers and internal knowledge and skills. With continuous learning, Fortune Motors was able to transform its work practices and business operations. The detailed findings are analyzed and discussed in what follows.

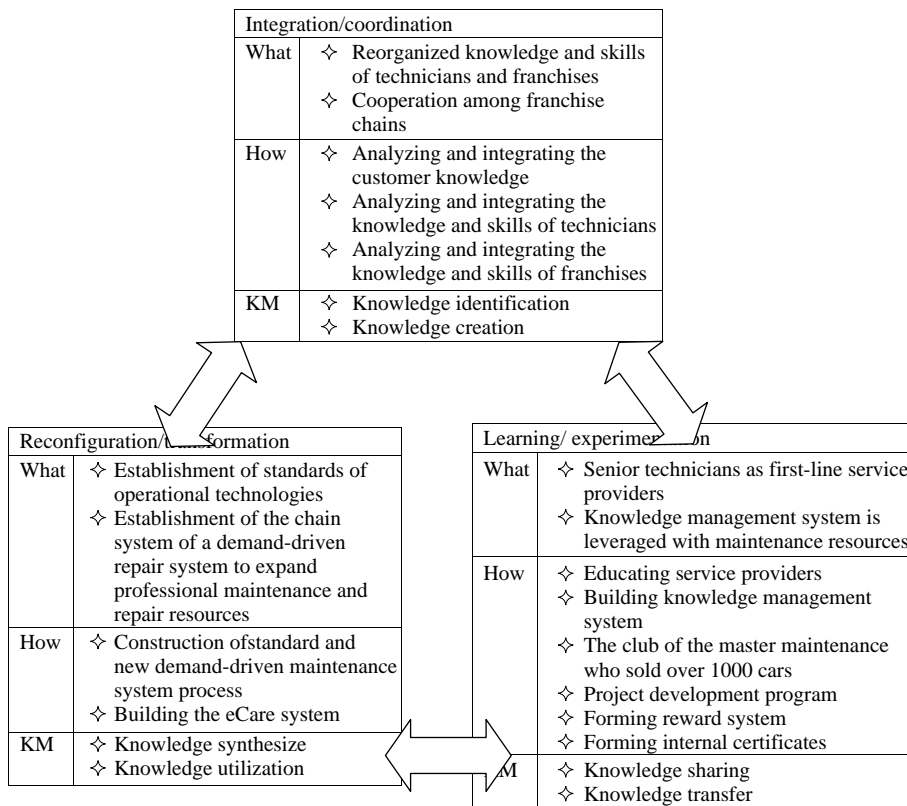


Figure 2. The dynamic capabilities of knowledge management

Integration/coordination. Under the pressure of decreased customer growth, senior managers were organized to seek root causes of the low-customer return rate. To understand customer demands, they organized discussions with frontline employees, technicians, and senior representatives from the franchised service centers. This was designed to leverage customer knowledge within the firm as well as among franchises. The frontline employees were enthusiastic about sharing their understanding of the customers, and most participants described the problem as one of inconsistent service quality among different franchised centers. The project group then examined the service processes and confirmed that service knowledge was distributed in different levels of skills and that resources were utilized inefficiently among the central and local service centers. This meant that customer experiences varied from one franchise to another. For example, some customers were served within an hour, while others were kept waiting for more than three hours. Making the matter worse, customer softeners were not informed about the time required for the service and thus were sometimes forced to reserve much more time for their repairs. The situation also varied from case to case – sometimes service took longer than expected, and sometimes it was completed faster than planned. Neither surprise was accepted readily by customers. To scrutinize the problem, the company integrated customer profiles, car maintenance and repair records, and data on the skill levels of technicians at franchises and tried to find a pattern to match the service demand with the supplied skills. They first consolidated maintenance skills and classified the skills according to different customer service demands. The historical data showed that one technician could not carry out repair processes on the entire car with a quality result. Therefore, it was necessary to restructure the maintenance specialties matched with different skill levels distributed among all service centers.

Subsequently, the company restructured the service level of each maintenance shop in order to meet the demands of different types of customers. It integrated the knowledge and skills of different technicians among franchises and stored them in a newly constructed knowledge database. Different tasks in the maintenance and repair processes were handled by technicians from different knowledge levels. At the same time, Fortune Motors designed measures to assess capabilities so that different skills were coordinated to serve different repairing requests and to enhance the service quality within a more predictable service period. The knowledge base was designed not only to maintain repairing knowledge but also to share the accumulated knowledge.

Learning/experimentation. After the service experience was restructured and implemented through the new systems, the next strategy was to push employees of the numerous repairing shops to utilize the professional knowledge to achieve maximum efficiency. First, Fortune formed a Master Maintenance Club, which documented valuable car maintenance skills and problem-solving solutions generated by those who had serviced more than 1,000 cars. If members provided their experiences or knowledge, their names were recorded on the “hero” list. Master maintenance staffs are usually willing to share their know-how when they feel that their knowledge is appreciated, and this strategy brought in numerous experiences of solving customer problems. Second, company analyzed and shared success and failure experiences in dealing with customers. The knowledge was stored in the eMentor system, which contains more than 10,000 tips relating to automobile maintenance. The system

provided guidelines and standards of operation to assist junior customer service staffs in improving their service capabilities. Third, the company transferred complex repairing skills to franchises by creating a common platform between the firm and the franchises, which was used to disseminate required knowledge for auto repairing. Finally, the company appointed senior technicians to the franchises to guide their operations. Franchised service units sometimes had operating difficulties in maintaining and repairing different model of cars, and the knowledge resources assisted in solving particular problems with specific car models.

In order to offer customers the most professional services and diagnoses, Fortune analyzed and learned from employee success and failure cases. Through continuous experimentation, the quality of professionalism and efficiency was increased by systemization of the services. Fortune Motors planned not only to leverage internal customer knowledge but also to involve customer participation in developing a clearer understanding of customer requirements. Staffs were educated to utilize the platform for improving service and operational maturity, and repair shops were able to communicate with one another and learn from the experiences of other shops.

Reconfiguration/transformation. The company planned a service network to leverage all resources to the maximum utilization rate. Through re-arranging tasks by specialization, and by implementing a profit distribution system to provide an incentive for quality service, the overall repairing processes were redesigned. First, by synthesizing different customers' needs, employees transformed the traditional role of the service provider who deals with all customers the same to one of providing individual customers with customized services. The establishment of a functionally differentiated maintenance network was specifically designed to meet the unique needs of different individual customers. Second, Fortune set up a common agreement with franchises in order to enhance the cooperation and the technical support. If a single shop could not satisfy the needs of all customers, they could cooperate with other shops to meet customers' requirements. Third, the company utilized professional knowledge and skills in maintenance and repair through establishing the eMentor system, which stores and applies knowledge and information-related customers, operations, products, etc. Based on market segment, and knowing the year of the car, each repair shop could utilize this system to check the schedule and appointments arranged at the central shop and assign different times, materials, and discounts for the customer in time. Therefore, customers were offered a one-stop shopping service, which resulted from changing the service model from competition among shops to cooperation.

In summary, the Fortune eMortor system had constructed the eCare project, which developed the franchise service system. The knowledge flow among repair shops and franchises (shown in Figure 3) was designed to be able to differentiate services and resources required.

The system was divided into two parts. First, the system provided the differentiated service system, which is now classified by the level of services required to provide professional and convenience services to customers. For instance, as the car problem is diagnosed as server damages, the central shop is then responsible for fixing these damages. The central shop is equipped with the most up-to-date technology, equipment and employees who are required to pass a higher level of maintenance certificate. Thus, the central shop was able to identify car problems accurately, estimate the time required for fixing up, and to provide the most

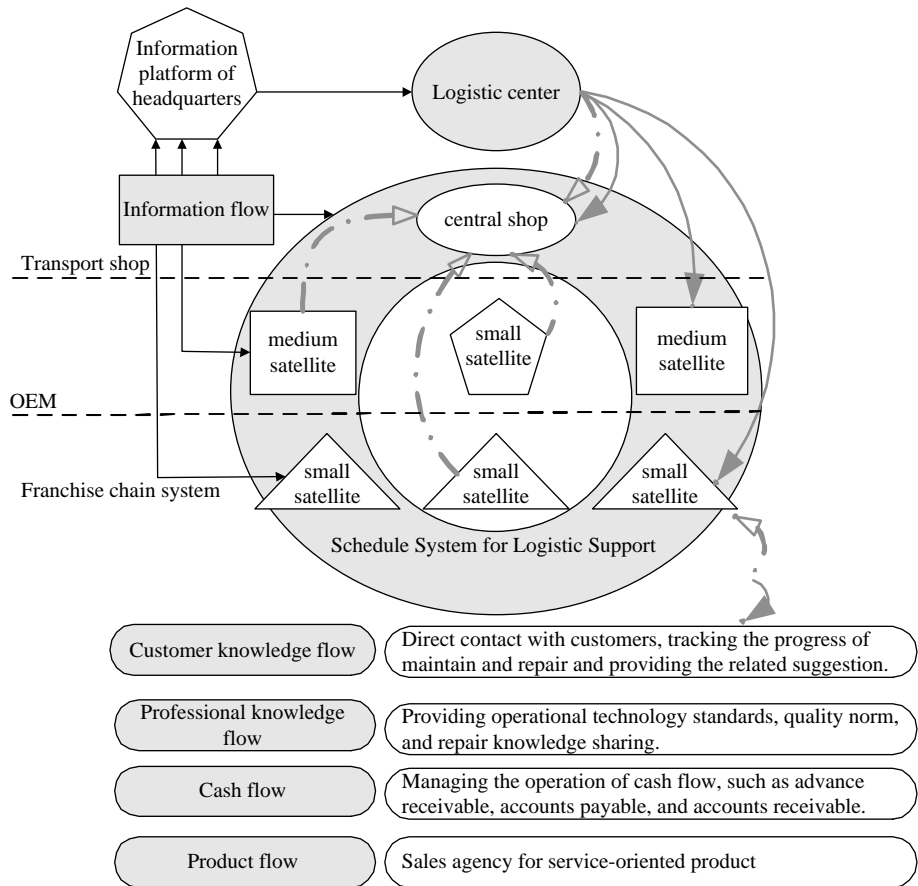


Figure 3.
The objective oriented
system of eCare

professional maintenance. If a car just needs a minor repair or maintenance, customers are encouraged to send their cars to medium- or small-sized satellite shops. Though the small and medium-sized shops have no expensive equipment, small-sized shops do offer quick general maintenance services and medium-sized shops, in addition to the quick general maintenance services. The collaboration and cooperation among small, medium and central shops has solved the problems of higher idleness ratios resulted from internal competition in the past, and has improved the problem of lower employee productivity. Second, the eCare system integrates and coordinates overall operational flows, including product flow, customer knowledge flow, professional knowledge flow, and cash flow, from the logic center to centric maintenance shops, and then to franchise shops. Through the process of creation, synthesis, and utilization of knowledge flow, the system further shares and transfers knowledge and skills in order to match employee skills with customer needs. Fortune managed to establish this operating system and to provide logistic support so that the company can directly contact customers, track the progress of maintenance and repair, and provide related suggestions. The eCare system not only can manage the operation of knowledge flow

and product flow but also can provide operational technology standards, quality norms, and repair knowledge sharing. As a consequence, Fortune the eCare system has turned the experience of its senior technicians into a key asset for the whole organization.

The organized knowledge about services provides insightful analysis of customers and their problems. It has extracted the essence of the experience of senior sales representatives and constructed problem-solving reference standards. With the established base of service knowledge, the company further designed the eCare system with the aim of improving service procedures and enhancing service quality. Faced with a wide range of maintenance and repair demands, the company redesigned the role and functions of the maintenance center and built a virtual skill network, which has assisted technicians of all units in providing satisfactory and competitive services.

In order to adapt to the ever-changing environment, Fortune Motors continuously identified and created more knowledge and skills for upgrading its competence. A mechanism was built to facilitate cyclical flow of the processes of integration/coordination, learning/experimentation, and innovation/transformation to yield sustainable competition advantage.

After the implementation of the service innovation project, Fortune assessed the effects of the eCare system and realized three benefits. First, customer satisfaction was increased because the return rate of cars in the first year rose from 85 to 90 percent, and one of cars of the third year was from 58 to 78 percent. Second, operational efficiency was increased because labor productivity in one month went from 232,000 cars to 260,000. Finally, corporate capability was increased because the comprehensive utilization ratio of plants reached 85 percent and the utilization ratio of labor reached 95 percent. Consequently, the transformation of maintenance experience into knowledge, and the encoding of knowledge into the information system, enabled cloning of the knowledge for use in any franchise in the system. At the same time, this ability, coupled with effective management systems, expanded Fortune's competitiveness in the national automobile market.

Discussion

Building a profit chain with knowledge of the service triangle managed

Fortune Motors has developed processes and mechanisms to identify, create, share, transfer, synthesize, and utilize knowledge for effective service improvement. A profit chain (Heskett *et al.*, 1994) was built based on knowledge collected and exploited by key stakeholders – namely, the customers and the employees. The underlying concept is that the service success is based on the KM of the triangle of customer, firm, and employee (Teboul, 2006; Constanti and Gibbs, 2005). Customers contribute to the profit chain by patronizing the service shop for quality services, and shops are able retain customers due to their ability to effectively address changing customer demands. Finally, employees are the key performers, providing the services as well as sensing changes in customer needs.

The business knowledge is extracted from the employees who interact with customers, and the knowledge of customers is documented and analyzed. The technology applied here enables electronic documentation and borderless knowledge sharing. To make this KM process work efficiently, Fortune Motors invested not only

in developing the electronic repository but also in facilitating the involvement of employees in generating, disseminating, and utilizing the knowledge.

Synchronizing internal and external knowledge for resource uniqueness

Firm-specific resources and capabilities that cannot be easily imitated and substituted to yield sustained competitive advantage (Rouse and Daellenbach, 1999). To establish service uniqueness, Fortune Motors leveraged all kinds of resources by developing their maximum synchronization. Internal knowledge and customer knowledge were consolidated and disseminated to enable employees to exercise dynamic capabilities in serving customers with efficiency and responsiveness. At the same time, internal processes and structures were changed. For example, to offer customers the most professional services and diagnoses, senior technicians have replaced some less-knowledgeable representatives. Technicians are required to learn related skills for handling customers, but they are also considered the judges of the initial stages of the maintenance and repair processes. Senior technicians have been turned into first-line service providers for collecting and codifying accurate data to the knowledge base. The utilization-of-labor system among franchises was also differentiated by skill level to reduce the number of returned cars. Training and education equipped employees with issue-analysis, problem-solving, customer-service skills, as well as knowledge of integration and cooperation. Hence, customer satisfaction was increased, and the customer-retention rate in the third year increased from 58 percent in the previous year to 78 percent.

Although scholars have identified and refined the RBV's core tenets to explain processes of knowledge development and utilization (Grant, 1996; Nonaka, 1994; Spender, 1996), the shortcoming of this perspective is to focus primarily on the internal resources of the firm. In addition, the capability of managing the process of leveraging intellectual capital is a key for competitive advantage (Edvinsson and Sullivan, 1996; Teece, 1998). The concept of dynamic capabilities enhances the exploitation of existing internal and external business-specific competencies to address changing environments.

The building of dynamic capabilities focuses on the resource configuration for managing the rate of change of the operating routines. Meanwhile, KM is critical for technology development at Fortune, and it has established the resource architecture of sharing the accumulated knowledge base. With more and more franchises, Fortune has to integrate experiences from every shop, help the technicians learn specialized skills and knowledge one another, and spread innovation throughout the firm through the knowledge-sharing system. Therefore, Fortune has build a knowledge base to aggregate all kinds of knowledge in its franchise chains, including knowledge of processes, customers, and technology, to enhance professional capabilities and consistency of service.

Developing intellectual capital using the dynamically established knowledge base

The impact of the dynamic KM initiatives has been directly reflected in the maturity of the process capital. The vast knowledge from years of maintenance experience was broadly applied in the maintenance and repair operations and the establishment of quality standards. The bank of know-how was regulated as the foundation of operating methods, construction procedures, and the logistics system. At the same

time, the maturity of process capital has also affected the development and improvement of other intellectual capital:

- *Customer capital.* The KM system at Fortune Motors has enhanced customer relationships with improved service quality and interactive communication based on structurally accumulated customer knowledge.
- *Relationship capital.* Through the service network, each repair shop operates closely and cooperatively with the others, focusing on providing consistent services to customers.
- *Human capital.* With the support of an IT system, the accumulated knowledge and experience enriches the knowledge base of the eCare system, driving the growth of all members.
- *Innovation capital.* The consolidation of knowledge about customers, services, and skills has provided a base for analysis of behaviors, problems, and resources.

The deep understanding of the services has inspired innovations in service design, process improvement, and resource utilization.

The shift of management style from industrial age to the knowledge age

Current businesses have to adapt their management style and strategic perspectives because market is highly competitive. Indeed, researchers argued that e-business should be undertaken as a strategic initiative (Chang *et al.*, 2003; Azumah *et al.*, 2007; Raymond and Bergeron, 2008), and then these firms are able to manage intangible factors, such as organizational learning and growth, internal and external knowledge, as well as customer value creation. In all kinds of organizations, non-financial assets are of increasing importance for generating business value, and the management of the firm's intellectual capital is transferred from production driven to customer driven. For example, when the employees have more practical experience and knowledge, they can generate the internal process to serve and fulfill customer satisfaction. Traditional management styles represented by functional rationality, rule-based management, hierarchical control, productive efficiency are being replaced by network organization represented by flexibility, dynamic capability, and organization learning. Consequently, the new paradigms are focusing on a customer-driven orientation and intellectual capital management rather than cost efficiency orientation and "Tangible Assets" management initiatives. Such assets as knowledge management and resource allocation can be better controlled and performed (Chu *et al.*, 2008).

Summary

The successful service innovation enabled through dynamic knowledge management in Fortune Motor presented here provides empirical evidence on how an organization aligns knowledge management with fast changing business environment. The dynamism in the market imposed new challenges to the managers in Fortune Motors, who were confronting with severe bottlenecks in its existing business practice. Fortune Motors sought to adapt itself to the new demands of market by developing and adopting the eCare system. The implementation of the KM system demonstrates the critical role of dynamic capabilities of knowledge management in transforming the business processes and creating competitive advantages for the company. The three inter-relating processes of dynamic capabilities were integrated into the routine

workflow and operational procedures of the service company, where they were used to help the management in sensing the changes, identifying the managerial bottlenecks, re-evaluating customer demands, reconstructing the processes, creating and utilizing the knowledge base, optimizing the routines, and eventually accomplishing a successful service process innovation and customer satisfaction.

The findings in this study confirm that of Cooke (2002), maintenance workforce can contribute to organizational competitiveness when the organization harnesses their knowledge. The dynamic capability of KM has not only built a profit chain with knowledge of the service triangle but also established resource uniqueness by synchronizing the internal and external knowledge. Furthermore, this KM capability has facilitated the development of other structural components of intellectual capital.

While research on service innovation is still scant, the case of Fortune Motor demonstrates a practical example of how organization successfully substantiates service innovation to turn its performance around. We note that our research findings are consistent with dynamic capability and knowledge management theories that highlight exploration and exploitation of the collective knowledge in an organization help an organization to compete effectively, and that dynamic capabilities enable organization to exploit existing knowledge and explore new knowledge to form a competitive advantage. Specifically, we applied dynamic capabilities of a recursive flow of integration, learning, and transformation to demonstrate how Fortune Motors leverages its intellectual capital into value creation process (eCare system). The model developed here will provide a useful basis for further testing effectiveness of knowledge management practices.

In developing our study, we have noted several limitations in our approach. First, regarding the service innovation, our analysis has concentrated primarily on how the alignment of KM with dynamic capabilities assists the creation of new service processes. A fuller understanding of knowledge as the source of organizational advantage will require an examination of the ways in which dynamic capabilities can be developed and exploited. Second, given that the sample is selected from the automobile service industry, adapting the model to other sectors under different context should be cautious. What is more, as this study is based on a single case, the findings may not be generalized so as to replicate to other instances. It does, nonetheless, provide managers with some useful insights and guidelines for organizational process transformation and service innovation, including:

- managing the knowledge of service triangle to build a profit chain for customer, firm and employee;
- synchronizing internal and external knowledge to create and sustain the uniqueness of resources of the organization; and
- developing intellectual capital using the dynamically established knowledge base.

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