Knowledge Creation Systems in Seven-Eleven Japan

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Abstract Japanese convenience store chain Seven-Eleven Japan (hereinafter “SEJ”) has been profitable for 30 years by constantly anticipating changing trends regardless of the severe business environment. In this paper, the knowledge creation process and its supportive systems in SEJ to examine how information system can support knowledge creation are described. Using case study method, the knowledge creation theory is applied to SEJ, and the results show that facilitating “dialogue” and reinforcing “creative routine” might be the most important functions of information system to support knowledge creation.

Key words continuous innovation; knowledge creation; supportive information system

Seven-Eleven Japan (hereinafter “SEJ”) is the leading Japanese convenience store chain with the largest store network and the highest net income. It holds a 31.5 per cent share in sales and 21.7 per cent in the number of stores. SEJ’s sales profit ratio exceeded 36 per cent in 2003, while its main competitors, Lawson and Family Mart, showed about 14 per cent and 13 per cent, respectively. The number of outlets passed 10,000 on August 31, 2003, making this the first case of a retailer possessing such a large number of stores within a single country anywhere in the world.

1 Conceptual Framework

In order to elucidate the reason of SEJ’s high performance, the Knowledge Creation Theory is applied to the case analysis[1]. According to this theory, we propose the conceptual framework of this study as shown in Fig.1.

1.1 Knowledge Spiral

Knowledge is defined as justified true beliefs and bodily acquired skills[1]. There are two types of knowledge, explicit and tacit. Explicit knowledge can be expressed in words and numbers. Tacit knowledge, such as subjective insights or emotions, is non-articulated, and embedded in context and actions. It is highly personal and hard to verbalize or communicate. The essence of knowledge creation is conversion process between explicit and tacit knowledge. The SECI model describes the four conversion modes from tacit to tacit (Socialization), tacit to explicit (Externalization), and explicit to explicit (Combination), and explicit to tacit (Internalization). The conversion process is called “knowledge spiral” because knowledge is amplified through the conversion process.

Fig.1 Conceptual framework of this study
1.2 Ba / Network

“Ba” is the ontological platforms for knowledge creation[2]. Knowledge needs a physical context to be created. Ba can be thought as a shared context for emerging relationships that give the basis for one to interpret information to create meanings. Knowledge cannot be understood without understanding situated cognition and action[3]. In knowledge creation, generation and regeneration of Ba is the key, because Ba provides the energy, quality, and places to perform the individual conversions and to move along the knowledge spiral.

Knowledge creation is a dynamic human process that transcends existing boundaries. Knowledge is created by the interactions among individuals or between individuals and their environments, rather than by an individual operating alone. Ba is the context shared by those who interact with each other, and through such interactions, those who participate in Ba. Ba sets a boundary for interactions among individuals, and yet its boundary is open. Ba is a kind of open network to the environment.

2 SEJ’s Profile

The case is based on prolonged cooperation with SEJ. The interest in interviews over the years has been to identify the main internal and external linkages and organizational mechanisms that explain the innovative processes at SEJ. Most interviews and presentations by SEJ managers were recorded and transcribed. The information was supplemented and validated with internal documents. Detailed case study is in Ref.[4].

2.1 History

SEJ celebrated their 30th anniversary of its establishment in 2003. The history of the company starts in 1973, when The Southland Corporation (USA) licensed Ito-Yokado Co., Ltd the rights to develop the SEJ concept and name in Japan. The subsidiary, York-Seven Co., changed its name to SEJ Japan Co., Ltd. in 1978. The convenience store concept was an instant success and experienced tremendous growth. Since opening the first store in Tokyo in 1978 and being publicly listed five years later, SEJ has been one of the most profitable companies in Japan. It is currently larger than its parent company Ito-Yokado. Chairman and CEO of SEJ, Mr. Toshifumi Suzuki, is known as the father of the convenience store industry in Japan. He opened the first store, led the drive to computerize operations, and pushed his way to the top of SEJ and Ito-Yokado. The relentless knowledge creation enabled SEJ to reciprocate by buying out The Southland Corporation from bankruptcy in 1991.

2.2 Philosophy

The philosophy of SEJ is well expressed by two basic statements: “responding to changes” and “relentless pursuit of fundamentals”.

Responding to changes means to predict and respond rapidly to the constantly changing customer needs. The business operations, since the establishment of the first store, have geared to meet the changing demand of Japanese society. Each convenience store consequently seeks to reflect and satisfy the specific needs in various local regions in Japan. The only Southland Corporation legacies in the present operations are the logo and some parts of the accounting system.

Relentless pursuit of fundamentals means to keep the fundamental principle: “Thinking from the customer perspective” and always devise methods for realizing the principle. At SEJ’s headquarters close to Tokyo Tower in the Shiba Koen area of Minato Ward, all office desks face one direction. This “classroom setup” helps employees to “think from the customer perspective”. Shared office space with small groups of desks would mean employees sitting with their backs toward visiting customers.

This kind of consciousness is also represented in the unusual way in which the organization is visualized: SEJ’s organization chart is drawn upside down. The stores are at the top of the chart, the various departments within headquarters are on the next level and senior management and the president’s office are at the bottom. This chart illustrates the fundamental principle because the stores have the most direct customer contact.

3 Information Systems

To cope with environmental change, mainly to
respond to the changing customer needs, SEJ has evolved their information systems continuously.

3.1 The History of Information System

The first information system, “Terminal Seven” was introduced in 1978. Before that, an order system called the “slip method” had been used. SEJ used order books containing slips on which the numbers of goods ordered were written. The slips or order sheets were detached from the order book and collected by headquarters, which placed the orders for all stores simultaneously. “Terminal Seven” made it possible to read barcode information with a light pen, greatly increasing ordering effectiveness. At headquarters all orders were automatically listed for accounting and order, making it possible to handle all orders simultaneously. This internal improvement also increased vendor capabilities. With this first system, SEJ continued to pursue higher efficiency at stores and in its interaction with vendors.

The second information system was introduced in 1982 and used the name POS (Point Of Sales) system for the first time. With this system, it was possible to keep a record of who (what kind of customer) bought what kind of product and when. SEJ uses the POS system in a peculiar way. While such systems usually help identify products that sell very well (hit products), SEJ uses the system to identify products that performed badly (failures). Failure products create increasing stocks and thus costs. If such products are identified they can be replaced with new products. This possibility has clarified the importance of single product management. The POS system, including the EOB (Electronic Order Booking) device and TC (Terminal Controller) that were introduced later, became the “General Store Information System”. The EOB device represents the same data as an order book. The person placing an order can look at the portable screen and order while walking along the aisles. Each store transmits the order information online to headquarters through the TC and a small computer.

The third information system “Graphic Information Computer” was introduced in 1985. This made it possible to represent the results of POS data analysis as graphs, rather than figures on reams of paper. The new system reduced the time needed to prepare the results of analysis and eliminated the time needed to find figures from among countless pages of paper. Additionally, the EOB device was improved to display the sales results for single products on the screen.

The fourth information system introduced the GOT (Graphic Order Terminal), SC (Store Computer), ST (Scanner Terminal) in 1990. The GOT is a notebook PC that combines the EOB device and the functions of a graphic information computer. This allows people who place orders to look at the graphic analysis of sales data when standing in front of items on a shelf. Ordering under the new system is very simple so that part-time employees or jobbers can process orders easily. Moreover, this system makes it necessary to look at a graphic representation of sales data to place an order. Meanwhile, the SC performs more complex analysis that the GOT cannot handle and the ST has largely rationalized the search for products in shops. This means that the time needed to place an order has been reduced considerably.

The introduction of the fifth generation information system was completed in June 1999. It integrates seven subsystems: 1) store system, 2) order, distribution and vendor system, 3) network system, (4) groupware system, 5) multimedia information transmission system, 6) POS information system, and 7) store POS register system. Total investment for this system was 60 billion yen. The most striking achievement of the new system is its distributed ordering function. The store system accounted for half of the investment. Implementation was begun in November 1997 and was completed in April 1998. Until then most information from headquarters had been printed and sent to stores by mail. The goal of the new system was to reduce time by using satellite transmission and to increase the hypothesis-testing capabilities of each store. In the past, information on new products, for example, was paper based. It took an entire week for the material to be prepared and delivered to the stores. Given that products identified as failures were eliminated immediately — some new products had only a two-week lifespan on the shelves.
-- the time that it took to share information on new products had to be reduced from a week.

The store system with satellite transmission reduces the time needed for material preparation and transmission to the stores to 3 days. These transmissions of multimedia information include introductory commercials for new products, campaigns, urgent notices, and shelving methods. Furthermore, handwritten memos can be attached to other information that is sent to the GOT, so that advice from Operation Field Counselors or owners can be sent directly to the person placing the order.

POS data for all items is stored for 400 days in a large-scale data warehouse. The system supports the analysis of hit products and those that do not perform well, the shelving method, and past changes in sales, among other things. With this system, it is possible to go beyond finding items that “sold well” to analyzing which items “sold well in combination”. Fine-grained analysis allows an understanding of customer purchasing patterns.

3.2 System for Internal Knowledge Flow

The POS system, which represents SEJ’s digital product information systems, comes to mind first when talking about the company’s information system. However, this ICT based information system is not the only one.

There are two kinds of information at SEJ. Product information related to the sale and stock of individual products is the most fundamental data. The second kind is that related to problems arising during daily operation and management, and solutions to those problems. This important information has cause-and-effect implications and is closely related to knowledge. This information is shared and discussed in three different dialogue meetings, the “manager meeting,” “business revolution meeting,” and “field counselor meeting”.

Every Monday morning at 9:00, regional managers gather for the manager meeting and exchange information. The business revolution meeting usually begins the same morning at 11:00. All division leaders and department chiefs (bucho) participate to discuss problems that have occurred on the shop floor during the past week and possible countermeasures to be taken. Furthermore they discuss all hints, claims and requests from the front line during the meeting. The department chiefs need immediately to solve the problems that are raised during the meeting. If a certain product were to smell strange, for example, the QC department chief would be under extreme pressure to find an effective countermeasure – immediately. He would run out of the room, return to his department to stop the production line there and then and begin to implement countermeasures to solve the problem as quickly as possible. He would then have to rush back to the meeting to report on the progress made.

Following the Monday meetings, the field counselor meeting (FC Meeting) is held on Tuesday. About 1,500 people, including the OFC (operation field counselors) who provide managerial guidance to franchise owners, store developers and area merchandisers gather at the headquarters in Tokyo. The problems that were discussed during the manager meeting and the business revolution meeting are then shared. Every week the Chairman or the President gives a 30- to 50-minute speech on important topics relevant to the entire organization, such as “Fundamental Thinking.” In addition to the 1,500 people who attend the FC meeting, about 500 headquarter employees join the large group. All 2,000 people simultaneously receive identical information. When the FC meeting is finished, several sub-meetings are held in the afternoon.

This sharing of time and place incurs high costs for SEJ. The travel costs for airline tickets from Northern Hokkaido and Southern Kyushu, overnight accommodation and travel allowances amount to Yen 50 million each week. The total annual cost for the meetings amounts to 2.5 billion yen.

One reason for investing such a large amount is the advantage in the speed of sharing information that could, otherwise be shared through e-mail. SEJ uses meetings to communicate information that can only be shared at a common time and place. Executive director Mr. Tadahiko Ujiie explains the necessity of sharing time and place in the following way:
There are things that you cannot understand unless you participate in a meeting. If I were unable to participate I would listen to the report from someone who went in my stead. Let’s say he reports, “Chairman Suzuki was very upset about Mr. A.” However, there is a world of difference between Suzuki smiling and adding, “Next time try better” and his saying, “Idiot! Drop dead.” If I had been at the meeting, I would have known what was important and what not.

3.3 System for Stores-Headquarters Knowledge Sharing

The OFCs, who provide the franchises with managerial guidance, are an important link between headquarters and the franchises. Each OFC is responsible for counseling eight stores on average. An OFC visits each store at least twice a week. An OFC also visits the offices of regional managers, which are often on the second floor of directly managed stores, to write brief memos and exchange information. However, according to Suzuki “An OFC had better not waste too much time in the office, but rather spend time on the shop floor.”

Contact between OFCs and regional offices are mostly made by pager and voice mail. If an OFC discovers that the promotion photo at a store does not match the products delivered, he immediately conveys this news to the regional office. From there another OFC might respond with an order to all OFCs on the road to collect the wrong products. After receiving the pager notice, an OFC will immediately check voice mail to receive the full message. Although OFCs can access e-mail on their notebook PCs, e-mail does not convey the urgency. Therefore they use voicemail. Furthermore, as OFCs rarely have the opportunity to meet face to face, they prefer voice mail to other impersonal media.

OFCs are one way in which headquarters and the franchises are linked. The “Owner Consultation Club” (OCC) is another. Recently established, this department is directly linked to the president of Seven-Eleven. The OCC consists of selected owners who are on average 50 years old and come from diverse backgrounds. OFCs visit stores twice a week and teach ordering or hypothesis building capabilities, raise problem awareness, and provide external information to support owners and staff. The owner consultants complement these activities, especially as it is expected that owners confide more information to them than to an OFC.

4 Discussion and Conclusion

What is the most important function information system can offer to knowledge creation? The case of SEJ suggests that facilitating “dialogue” and reinforcing “creative routine” might be critically important.

4.1 Dialogue

Dialogue is a powerful way to externalize tacit knowledge to explicit. And dialogue enables the company to share dispersed tacit knowledge from all parts of the franchising network.

New ideas or concepts often come from dialogue. SEJ’s face-to-face meeting system seems to facilitate the dialogue among the managers and OFCs. OFCs visit the local stores regularly to engage in dialogues with store owners and employees and to advise them on placing orders and managing stores. The goal is for owners and employees to articulate their tacit knowledge. If an OFC notices unique ideas, such as new way to display merchandises at one store, he or she may share that ideas with other stores.

Computer based information system is good at accumulating past information, however, it is almost impossible to extract meaning from the data. In this sense, Mr. Ujiie says, “the POS system can do nothing but eliminate items that perform badly. It is people who search for hit products”. New ideas or concepts rarely come from the tacit knowledge of the person who places the order. They come from observing customers and talking (dialoguing) with them when they visit the stores.

4.2 Creative Routine

The core component of SEJ’s knowledge creation process is “Hypothesis-Execution-Inspection Cycle”. SEJ encourages this cycle by owners, all part-timers in the stores, and employees at headquarters. In each store, hypotheses and ideas are developed and then tested by placing orders. The sales data is collected as
POS data and through field counselors. At the headquarters, hypotheses and results are inspected against the available data and through experiments. Such testing accompanies product development and increases the probability of success. “A sports festival is to be held at the school around the corner, therefore inari-zushi (a kind of sushi) will sell well” or “It looks like rain – I should order vinyl umbrellas” are examples of splendid hypotheses that can improve sales.

There is consequently a clear trend in convenience store industry that best-selling products and services are those that offer unique features. Those products and services can be developed only based on embracing and systematizing tacit knowledge from customer interface. Store employees accumulate tacit knowledge about customers’ needs through face-to-face interactions. Long-term experiences in dealing with customers give store employees unique knowledge and insight into the local market and their customers. They often say that they can just “see” or “feel” how well certain items will sell in their stores, although they cannot explain why. Their tacit knowledge about the customers is then converted into explicit knowledge in the form of “hypotheses” about market needs.

The ultimate goal of the advanced information system and the detailed support of OFCs might be to get every worker in every level who works for SEJ into the habit of Hypothesis-Execution-Inspection cycle. The knowledge creation is the everyday way of being at SEJ as employees at the shop floor create hypotheses of consumer behavior, managers change emerging ideas of new products/services and businesses to predict and respond rapidly to the constantly changing environment.

References

Brief Introduction to Author
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