

Title	Hospital Knowledge Management : A Case Study of Call Center Implementation
Author(s)	Kamada, Go
Citation	
Issue Date	2007-11
Type	Conference Paper
Text version	publisher
URL	<a href="http://hdl.handle.net/10119/4118">http://hdl.handle.net/10119/4118</a>
Rights	
Description	The original publication is available at JAIST Press <a href="http://www.jaist.ac.jp/library/jaist-press/index.html">http://www.jaist.ac.jp/library/jaist-press/index.html</a> , Proceedings of KSS'2007 : The Eighth International Symposium on Knowledge and Systems Sciences : November 5-7, 2007, [Ishikawa High-Tech Conference Center, Nomi, Ishikawa, JAPAN], Organized by: Japan Advanced Institute of Science and Technology

# Hospital Knowledge Management

## A Case Study of Call Center Implementation

Go Kamada

School of Knowledge Science,  
Japan Advanced Institute of Science and Technology  
g-kamada@jaist.ac.jp

### Abstract

This is a case study of the implementation of a "hospital call center", of which there are few examples in Japan. The aim of our study is to present implications that lead to successful medical service management by analyzing, from the perspective of knowledge management, how call centers are linked to the provision of medical services and improved operations, and also by analyzing the functions that they provide.

**Keywords:** knowledge management, knowledge creation, call center

### 1 The Basic Theory of Knowledge Management

Knowledge management is a theory and practice of operations with a focus on knowledge as a managerial resource, and constitutes a style of "management based on knowledge creation" in which new knowledge is constantly created through the sharing and application of existing knowledge. As such, knowledge management is not a transient business fad, but a type of social technology that can be applied in various areas of society in much the same way that quality control is currently being applied. It therefore provides a valid perspective for studying the management of medical enterprises.

This study was based on the theoretical background provided by the "Theory of Organizational Knowledge Creation" developed by Ikujiro Nonaka and Hirotaka Takeuchi. According to this theory, new products and innovative operational processes are created through a process of knowledge creation in which tacit and explicit knowledge mutually convert to each other when members of an organization or organizations interact intra- or in-

ter-organizationally[1].

The theory consists for four elements: (1) the SECI model which describes the process of knowledge creation, (2) the "ba" which describes the location where this process takes place, (3) "knowledge assets" which describe knowledge as a managerial resource, and (4) "knowledge leadership" which describes the characteristics of a leader capable of promoting the process of knowledge creation [2].

#### (1) SECI Model

The SECI model describes the process of creating new knowledge through the interaction and interexchange of tacit knowledge and explicit knowledge in four modes. The four modes are as follows.

"Socialization" whereby individuals, who share experiences in a shared space, sympathize with each other's "thoughts and feelings" which are a tacit form of knowledge.

"Externalization" or the process of applying these shared tacit forms of knowledge to create explicit concepts which are an explicit form of knowledge.

"Combination" or the process of creating systemic forms of explicit knowledge by combining existing and new explicit knowledge.

"Internalization" or the process of acquiring new tacit knowledge by actually experiencing these systemic forms of explicit knowledge [3].

#### (2) "Ba"

The definition of "ba" is a shared context in which knowledge is created, shared, and utilized. "Ba" can be physical, virtual, mental, or any combination of them [4].

#### (3) Knowledge Assets

The concept of knowledge assets comes from identifying an organization's knowledge as a managerial resource. Knowledge assets, or the

accumulated "output" of an organization's process of knowledge creation, are subsequently used as the "input" for creating yet more knowledge. Knowledge assets include "experiential knowledge assets" which are tacit forms of knowledge such as skills and know-how, "conceptual knowledge assets" which are explicit forms of knowledge that include the concept or design of a product or service as well as a brand image held by the customer, "systemic knowledge assets" which are explicit forms of knowledge that include manuals and specifications, and "routine knowledge assets" which are tacit forms of knowledge that include customary practices within the organization and an organization's culture [5].

#### (4) Knowledge Leadership

Knowledge leadership describes the roles of top and middle management for promoting knowledge creation. The responsibilities of a knowledge leader are as follows.

- Provide a "knowledge vision" which defines the types of knowledge that must be created in specific areas.

- Constantly redefine the types of knowledge assets that are needed.

- Create a "ba" and infuse it with energy through love, care, trust, and commitment, and connect "ba" to create larger "ba".

- Verify whether the process of knowledge creation and the resulting knowledge is in line with the knowledge vision, provide advice and concepts to validate the SECI process, and promote the process of knowledge creation.

A knowledge leader also makes certain that the knowledge vision is understood throughout the entire organization. The task of promoting knowledge creation in the actual workplace is the responsibility of knowledge producers or the middle management [6].

## 2 The Call Center

In this study, we analyzed the operations of a call center that was implemented at a hospital. A call center is a business interface that connects customer needs with services via intermediate channels including telephone, email and instant messaging. Its functions are broadly categorized into customer support, accumulation and analysis of data, and management. To fulfill these func-

tions, a call center is positioned so that it is able to connect with both the internal domain of a business organization and domains that are external to the organization.

In Japan, the number of call centers in the corporate area grew dramatically in the mid-1990s as banks introduced telephone banking systems, and with the advancement of information technologies including computer telephony integration (CTI) and the Internet. As companies now begin to place importance on customer relationship management (CRM), the core functions of call centers are beginning to shift from that of "telephone centers" that are little more than an extension of switchboards to that of "contact centers" providing personalized solutions on a per-customer basis [7] [8].

According to Masahiro Kanno MD., Director of Keiju Medical Center (Nanao City, Ishikawa.) which equips call center as a CRM, a call center is a knowledge management tool that helps improve the quality of medical service by sharing knowledge from patients [9].

## 3 Case study: Chibana Clinic

In this study, we analyzed the operations of a call center introduced at Chibana Clinic (Okinawa City, Okinawa. Director: Seigo Nakada MD). Chibana Clinic had been plagued with problems whereby various sections in the clinic—the administrative section that was responsible for call-fielding and individual departments that handled changes to appointments—were unable to fulfill their primary duties due to the amount of incoming telephone calls they had to field. Additionally, a greater need for rigorous telephone support arose after the clinic was designated a "regional support hospital" as part of a program for improving collaboration with private practices. These factors lead to the clinic's decision to introduce a call center in the summer of 1999.

The clinic explored how it could consign, to an in-house call center, the responsibility of handling telephone interactions that were previously handled by different departments. Initial discussions were based on the idea that operators with no medical qualifications would be capable of handling simple calls involving, for example, the provision of medical service information. This idea, however, caused concern among medical professionals; even though they were reluctant

themselves to take phone calls while treating patients. As a result, it was decided that a test period for the call center would be set, during which a nurse would always be responsible for the center's operators. Eventually in December 2000, the call center was introduced as an independent department within the clinic.

The call center was implemented with a team of 8 personnel: 2 full-time contract employees, 5 part-time employees, and 1 former administration clerk who was appointed as supervisor. The responsibilities of the call center included call-fielding, telephone information services such as the provision of medical services information, and responding to appointment changes. At first, however, even the most basic of its operations, call-fielding, was fraught with confusion. For example, operators were unable to recognize by name whether the caller was a patient, supplier or practitioner; or did not know which department doctors belonged to. Call-fielding took too much time or calls were fielded to the wrong recipient. The team went through a difficult learning phase during which operators asked for instructions on a case-by-case basis, and eventually went on to create operation manuals, flow charts and other aids.

During this process of trial and error, however, the team began encountering unanticipated events. While it was standard procedure for the call center to ask for advice from relevant departments when replying to incoming inquiries, increasingly, the center found that these departments were unable to provide appropriate responses. The reason was determined to be the ambiguous operational procedures that each department practiced according to their own set of unspoken rules. The call center requested these departments to clarify their procedures, and in response, departments reviewed their routine procedures, and developed charts and other documentation to clarify their processes.

All operations in the hospital were analyzed through the call center, and the call center became the central section where this information was accumulated and managed. As a result, the call center is now able to provide responses based on a firm set of rules for almost all of the inquiries it receives.

Six years after its introduction, the chief of operators has this to say about the role the call center plays in the hospital's operations: "The most important thing we do is to take the time to

listen. So we receive a wide range of feedback, both good and bad. This could mean that people are more comfortable saying what's on their minds on the phone than in person. My feeling is that we now have a place where people can voice their opinions, including complaints about how, for example, they were treated as an out patient during a particular visit."

While the initial purpose of introducing a call center at the Chibana Clinic was to consolidate its call-fielding functions, its introduction has had the unanticipated effect of improving hospital operations. For example, the call center received a complaint from a patient who had been given different sets of instructions at different sections. The patient, who did not carry a social insurance card and had paid for his own medical costs, was given one set of instructions at the department where he received treatment and another at a different section. It was later discovered that this confusion was caused by a missing piece of information on the patient information form that was shared between departments; the hospital staff who first admitted the patient had forgotten to include this information in the form. Soon after this incident, all sections were reminded to carefully observe all rules on filling out forms.

Other areas for improvement were also recognized by the operators during their course of work. One issue concerned how to respond to inquiries regarding in-patients. Because the hospital had no clear rules for protecting personal information at the time and there was no consistency in how these inquiries were handled, problems were surfacing with patients who did not want others to know that they were being hospitalized or those who did not want to receive visitors. This problem was first cited by operators and now a policy has been established where nurses at admissions or the ward are required to record specific notes such as "no phone calls" or "no visitors" on the patient list on the ward PCs. Operators can then refer to this information on their own PCs and respond to telephone inquiries accordingly.

The Chibana Clinic sees their operators as "call center experts" and allocates considerable resources for their training and education. New operators are required to gain working experience at the general information section, whose functions are similar to that of the call center, and also to learn the general workings of the entire hospital. In addition to practicing patient contact and

call scripts, the operators are required to undergo a rigorous training program that includes monthly tests. The center has also compiled an "operational training list" based on operator requirements that were gleaned from experience, and continues to maintain and improve their competency through subjective and objective evaluations.

With the call center now an established and independent section, employees of the Chibana Clinic recognize that call center operators have the most breadth of knowledge regarding the hospital. Moreover, the community has come to see the clinic as a reliable presence because of the longer ongoing relations the clinic has formed with patients and families. This is evident in the following testimony by one of the operators: "The other day, I received a call from a patient who wanted to know the phone number for the Central Prefectural Hospital next door. She didn't call 104 (directory service) but us. She may have felt that we were kinder than the people at 104. I've also had calls from callers asking for numbers to the Ryukyu University Hospital or whether a particular hospital had a neurosurgery department, for example."

#### 4 Case Analysis

The analysis of the call center implemented at the Chibana Clinic produced the following results:

(1) Rules were clarified for operations, enabling staff members to respond to situations appropriately.

Operational processes that were mired in day-to-day routines were systematically clarified and shared. This led to securing good levels of service, improved training, and risk management.

(2) A new specialized job description emerged which consisted of individuals with a broad range of knowledge of the hospital.

The clinic was able to clarify the significance of generalists who possessed a breadth of knowledge regarding the hospital as a whole; a role that could not be covered by specialists such as physicians, nurses or pharmacists.

(3) Operational improvements that originated from call centers gained more momentum.

Issues that were considered to be intangible in the past were made visible through the call center, leading to improved operations.

(4) The clinic now has a section that is able to gather feedback from patients and the community, and respond in a timely manner.

The clinic is now able to respond proactively and in real-time to requests from outside the clinic. This has resulted in a higher level of confidence in the clinic by the community. Moreover, the call center functions as an interface between the hospital and the community, creating and sharing a brand image that helps maintain the relationship between the two.

#### 5 Implications

Knowledge management functions fulfilled by the call center studied in this case analysis were determined as follows:

(1) Knowledge coordination

This refers to the function in which a call center facilitates the exchange of information and knowledge between the hospital, the patients and community. Patients and the community want timely access to appropriate information and knowledge. For example, call-fielding is an intellectual operation that involves connecting callers, in a timely manner, with departments or individuals that are able to provide the appropriate information. Operators are "knowledge workers" with extensive knowledge on a broad range of matters concerning the hospital, and as such, constitute a new job description within medical institutions. The fielding of inquiries, booking of appointments, and handling of requests to change appointments constitute a coordinating function between the hospital and the community, and comprise the most routine tasks of the call center.

(2) Knowledge advocacy

Although it is a function of the hospital, the call center, by taking a neutral position, is able to gather opinions and comments from patients and the community. By communicating these opinions and comments to relevant sections within the organization on behalf of callers, the call center contributes to improved operations and the development of new services. This results in brand

building and sharing, as well as consistent or better levels of retention and governance.

### (3) Knowledge mediation

The call center mediates and promotes improvement efforts and other specific problem-solving efforts. Needs communicated by patients and the community, as well as insights gained by operators are conveyed to relevant departments, committees and project teams who in turn work to improve operations and develop new services.

## 6 Conclusion

The majority of medical institutions in Japan are based on a clear division of job functions and a hierarchy based on job description and position. As such, very few have job descriptions or sections with responsibility for knowledge management functions such as coordination, advocacy and mediation. Their organizational systems, which have been optimized for efficiently managing existing operations, lack the flexibility and creativity required to respond to rapid changes in institutional systems and patient needs.

In order to provide the best medical solution for each patient, hospitals must take creative steps to improve their management operations in addition to refining their medical capabilities. The next generation of medical enterprise management systems will be required to have knowledge management functions such as those suggested in this study built into their day-to-day routines.

## Acknowledgements

The author thanks Seigo Nakada MD., Director of Chibana Clinic, for his cooperation throughout this research.

## References

- [1]. Ikujiro Nonaka and Hirotaka Takeuchi. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, New York, 1995.
- [2]. Katsuhiko Umemoto. Managing Existing Knowledge is Not Enough: Knowledge Management Theory and Practice in Japan. In Choo, C.W. and Nick Bontis, Ed. *Strategic Management of Intellectual Capital & Organizational Knowledge*, Oxford University Press New York, 463-476, 2002.
- [3]. Ibid.
- [4]. Ikujiro Nonaka and Noboru Konno. The Concept of ba: Building a Foundation for Knowledge Creation, *California Management Review*, 40(3), 40-54, 1998.
- [5]. Katsuhiko Umemoto, op. cit.
- [6]. Katsuhiko Umemoto, op. cit.
- [7]. Editorial department of Monthly Computer Telephony. *White Paper on Call Center*. Ric Telecom, Tokyo, 2006, (in Japanese).
- [8]. Eiki Maruyama and Tomomi Kobayashi, Ed. *Virtualex, Building of Call Center : Contributing to Management*, Eiji Press, Tokyo, 72-73, 2006, (in Japanese).
- [9]. Katsuhiko Umemoto and et al, *Knowledge Management in Healthcare and welfare*, Nissoken publishing, Nagoya, 145-148, 2003, (in Japanese).