The Role of "Knowledge White Space" In Products for Value Co-Creation with Customers in Service Dominant Logic

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***Abstract* -- The selling price of commoditized products has recently been decreasing rapidly due to the commoditization of B to B products as well as B to C products. Manufacturers need to customize products to satisfy customers and earn higher profits rather than enhance product performance. Service dominant logic (SDL), which claims value co-creation with customers, is the most important concept for creating new products and services in these circumstances.**

The main purpose of this research was to propose a new concept of a "knowledge white space" in products for value co-creation with customers and verify its effectiveness through successful examples. Customers can express their needs to products in the knowledge white space and manufacturers can understand real customer needs through the knowledge white space. Two case studies of a sales company were analyzed in this research and it was found that approximate designs contributed to the creation of new ideas. It is very effective for value co-creation with customers from the viewpoints of SDL to leave a knowledge white space in which customers can place new ideas.

I. INTRODUCTION

The commoditization of B to B products as well as B to C products has recently been progressing. The field of Multi-Functional Printers (MFPs) where elements of the integral architecture are robust and Japanese companies have strong competitiveness is not an exception. Their selling price has been decreasing due to the effect of rapid commoditization of products. In addition, the commoditization of MFPs has not only affected low-end models but also those at the high end, and the fall in selling prices has been remarkable. MFP manufacturers are faced with the need to carry out differentiation at points other than price for this reason. There is the possibility of a variety of features, such as functions, performance, value creation, and business to carry out differentiation on features other than price. However, manufacturers need to carry out differentiation independent of functions and performance, considering that the current situation with commoditization has been proceeding rapidly.

Differentiation by service is the most important of these. Although the most general service is maintenance in MFPs, the contract ratio for this maintenance service has declined year by year. More than half of small business users, especially, have not contracted maintenance services. This means that conventional maintenance services are not important elements of differentiation. In other words, manufacturers need to differentiate their services from those of other companies by actively creating value for users and creating products and services with users to gain customer satisfaction.

We took up the case of a sales company in this research that supported the service development of an information equipment manufacturer called P Company. The sales company support at P Company was only one that offered high-performance products and information about them, and no direct support of services or solution businesses by the sales company was offered. They recognized the importance of services previously developed by P Company. However, practical service development had not yet been carried out proactively.

The main purpose of this research was to clarify the approaches to developing new services that gain customer satisfaction in the development process based on the case of sales company support in the development of services at P Company.

II. LITERATURE REVIEW

A. Service Development

It is not important for service providers to develop services by themselves in service development. Rather, it is important to involve customers in service development. [1] In addition, both service providers and customers are considered to be value creators in their relationship together. [2] Moreover, changes in the relationships between consumers and businesses, and new relationships are created by consumers' enhanced assertiveness. Value is co-created through this new relationship, [3] which explains the importance of co-creation. The co-creation of value is considered to become a driving force to develop services and grow companies in the future.

There is little customer involvement in the design stage in the field of software development, which is not cascading development (Water Fall) but interactive development (Agile), in which dialogs with customers in the middle of development are positively carried out.

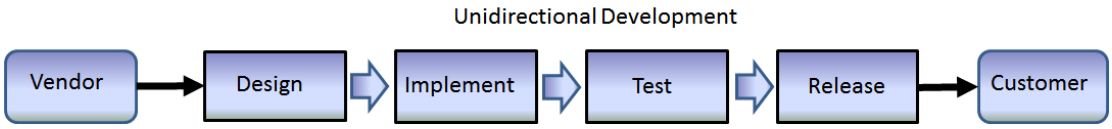

Figure 1. Water Fall Method

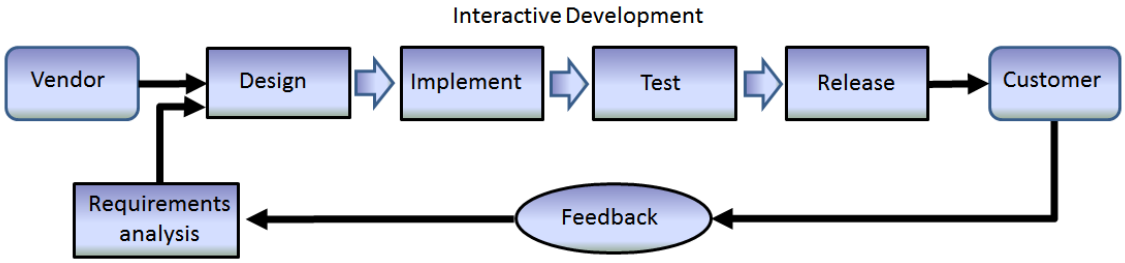

Figure 2. Agile Method

The relationship between providers and customers in the development of services, and the dialog between developers and customers in responsive software development can be considered to be a "ba" of the knowledge creation that can produce new ideas. The "ba" is a concept that includes time and space and it is possible to create the "ba" in an environment where opinions with customers can be easily and intentionally exchanged. [4] However, when it is difficult to contact customers directly as in the examples in this paper, it is difficult to create this "ba." It becomes difficult to co-create values in relations with customers through dialogs and to create new ideas for this reason. More effective techniques and methods of development are required when it is difficult to contact customers directly.

B. Sticky information

Sticky information refers to the cost involved in transferring information to the receiving side from the transmitting side. [5] There are three elements that make transfer costly: the "behavior of the information itself", "attributes about the character of the recipient and the informer of information", and the "quantity of the information that must be transferred". [5] Moreover, it is classified into A and B from the viewpoint of an adhesive determinant. [6]

A. Costs involved in changing into forms that recipients can use.
B. Costs concerning the process itself to transfer information.

Furthermore, there is a concept that classifies A into C and D. [7]

C. The character of the information itself.
D. The connection between the character of the recipient and the informer of information.

Tacit knowledge and explicit knowledge are greatly concerned with C, [8] and prior knowledge on the receiving side is greatly concerned with D. [9]

The locations where innovations occur are dependent on sticky information. [10] In addition, where innovation and sticky information occur can be summarized as in the figure below. [11]

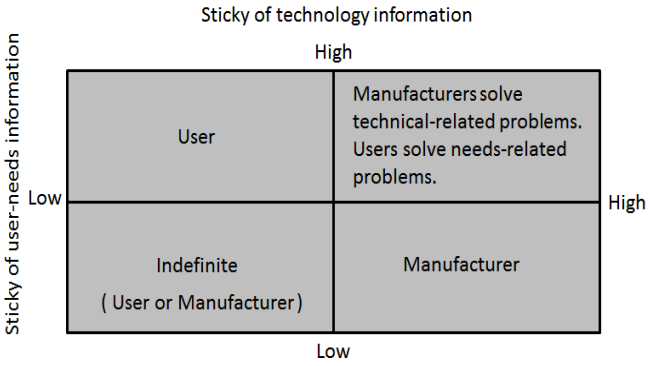

Figure 3. Location Where Innovations Occur

The adhesiveness of technical information has been considered to be comparatively low in this paper and the adhesiveness of user information has been considered to be high in the development of services for MFPs. The locations where innovations occur have a high possibility of being on the user side for this reason. This is an indication that it is possible for the user to create new ideas, which is the most reasonable alternative. [12] Moreover, customers have useful information and capabilities, and companies will be able to gain a competitive advantage by exploiting the abilities of customers. [13] Customers are allowed to participate in development and promote the creation of ideas beside customers in the examples explored in this research. It is important to use elements that can be used to develop new services that can gain customer satisfaction.

III. CASE STUDIES

We selected two examples of development (Cases 1 and 2) in this study where they were continuously carried out. Although Case 2 was an example of development after Case 1, the deliverables in Case 2 were not improved versions of Case 1, and the two were quite different. The organization that created service development was a software business (Corporation A) and the printer business was Corporation B, which was a subsidiary company of a Japanese information equipment manufacturer, Company P. The customers of this service, i.e., the users of deliverables, were overseas sales companies. Each sales company used the deliverables of development to propose services & solutions to end users.

A prototype of the software using an MFP was developed in Case 1. We established a concrete user and scenario in which a product was used by using the "persona" and "service blueprint" (Shostack 1984) as a development technique to provide detailed design. [14] After evaluations by end users were obtained by offering deliverables in Case 1 to employees of the manufacturer in Company P, we received an evaluation from sales people and marketers by offering the deliverables to overseas sales company α. As a result, the deliverables were able to obtain a certain level of evaluation as products from end users by establishing a concrete and detailed scenario for using the development technique ("persona" and "service blueprint"). However, since the products were detailed, those who could understand them were limited. Moreover, it was not possible to contribute to the creation of new ideas, and only low evaluations were received from marketers and sales people.

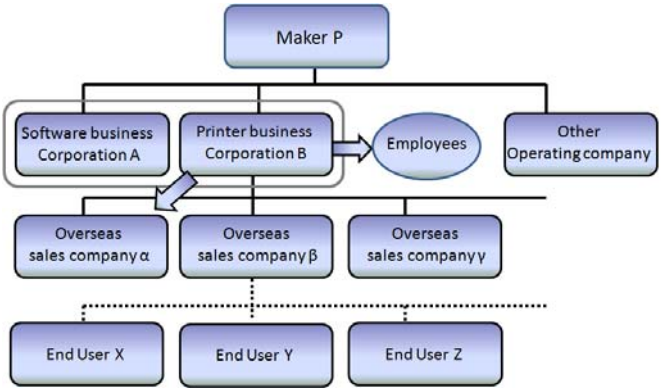

Figure 4. Organization Chart: Case 1

A demonstration system to propose solutions for a support system using an MFP was developed in Case 2. Here, no special methods of development were used. Moreover, we did not determine the specifications for the deliverables in Case 2. The specifications were determined by a development team who reviewed the deliverables every week. We received evaluations from sales people and marketers by offering the deliverables to overseas sales companies and did not receive evaluations from end users. The deliverables in Case 2 were quite simple whose functions were not elaborate unlike the products in Case 1. However, they were able to receive excellent evaluations from many overseas sales companies. Simple deliverables that were not elaborate enhanced versatility and also prompted overseas sales company to create new ideas. As a result, they were considered to be able to support services and solutions in the businesses of overseas sales companies. The deliverables in Case 2 were actually used for the proposal made to the customer, and could be considered to be a successful case of services being developed through sales company support. An added new function was offered when the products in Case 2 were offered, which were improved versions of the products in Case 1. However, despite having carried out improvements to the functions, high evaluation levels were not able to be obtained.

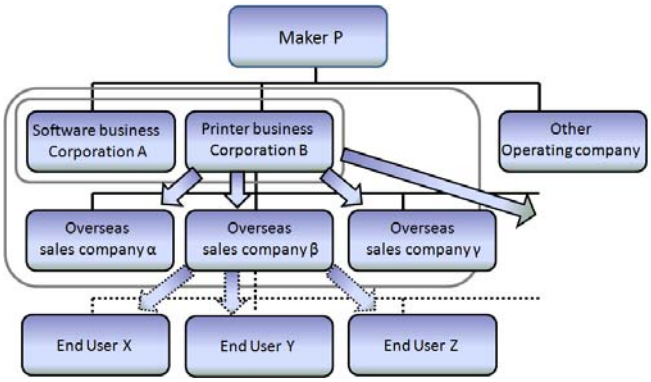

Figure 5. Organization Chart: Case 2

IV. DISCUSSION

Obtaining evaluation from two development cases occurred as follows.

Case 1: A high quality product was able to be provided to particular users by elaborating on details. However, it did not contribute to providing services that created new ideas introduced by users. In addition, comments obtained from users remained as improvements and objective results of evaluations of the product.

Case 2: It was possible to support the creation of new ideas for services by users (overseas dealers) by not elaborating on details. Opinions acquired from users, methods of utilizing services, and a proposal to provide the target were able to be obtained.

The target for evaluation was elaborated on in too much detail from these. However, it did not contribute to creating new ideas. Detailed portions were not developed intentionally, i.e., it was suggested that it was important to use the "knowledge white space".

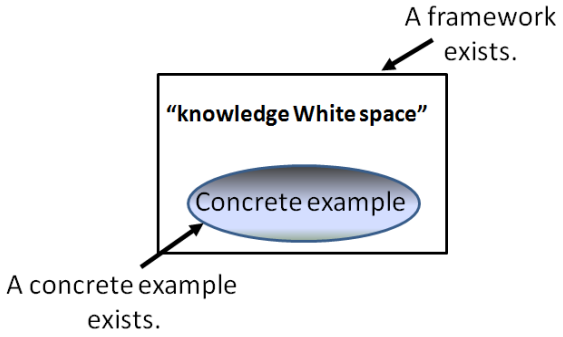

Figure 6. "Knowledge White Space" State

The meaning of the "knowledge white space" was defined as follows in this study. "knowledge white space" is not the same as the "white space" in the marketing strategy i.e., "unknown market" or "untapped market". "knowledge

white space" is a view for value co-creation. A state that exists within the extent where a concrete example does not fill the whole of the framework is defined as a state with a "knowledge white space" in a particular framework. Moreover, a portion that is not filled is defined as a "knowledge white space."

A state where the framework and the concrete example do not exist is defined as a "nil" state and a "nil" and a "knowledge white space" are differentiated.

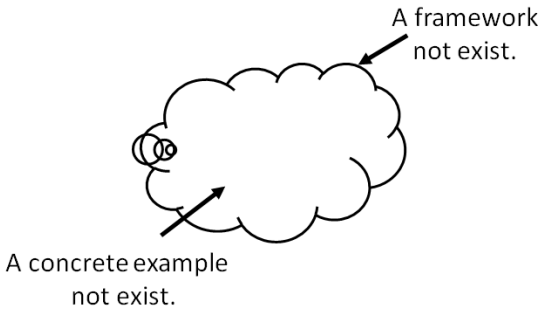

Figure 7. "Nil" State

A state where the inside of the framework is filled with a concrete example where a "knowledge white space" hardly exists is defined as a "full" state.

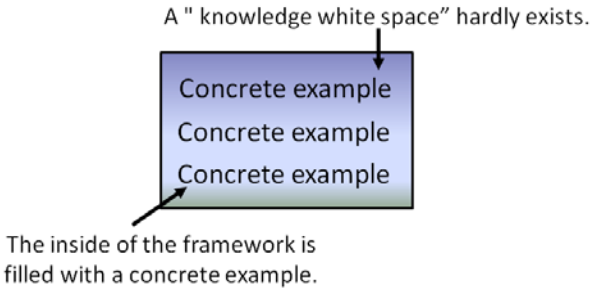

Figure 8. "Full" State

A "knowledge white space", which is suggested by the development case, is knowledge white space on knowledge, so to speak. Further, a "knowledge white space" is an important element to create new ideas on services and technology. The sales company that was the information - products or services - receiver in the case in this research did not objectively evaluate the received information but began to actively consider the received information by intentionally leaving a "knowledge white space". As a result, it was able to encourage the sales company to propose ideas as a provider.

A new virtual business was launched in Case 1, and the understanding of development was insufficient in the early stage of development. For this reason, participants did not understand what to do about development, and anxiety increased. This was suggested by the results obtained from interviews.

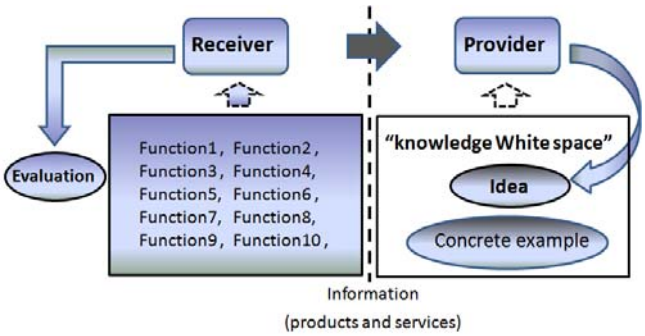

Figure 9. Effect of "Knowledge White Space"

"I was first worried that specifications were not clearly determined."
"There was a difference in consciousness between the technology and solution divisions."
"There was no mechanism to provide services."
"I had never done such developments."
"I could not use my experience in my current job."

Moreover, participants' consciousness started to change as development progressed, and it began to feel like fun with proposals being made voluntarily. This was suggested by a couple of remarks.

"I came to feel that very flexible development was possible in the middle of the project."
"I came to think that development was interesting when proposals were accepted."

However, only objective evaluation results were received from sales companies, and also new ideas were not able to be obtained from them as was identified in the previous chapter, as a result of the final deliverables in Case 1 being offered to the sales companies.

Case 1 can be explained in this way from these findings. It is suggested that three states (the "nil" state, the "knowledge white space" state, and the "full" state) existed in Case 1 as outlined in the following figure.

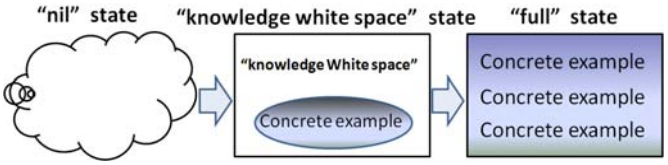

Figure 10. Change in Stat: Case 1

Participants' uneasiness had increased in the first "nil" state because there was no framework or concrete examples.

Next, it was possible for the developer to create new ideas since the "knowledge white space" state was temporarily present. However, the developer advanced development without being aware of the "knowledge white space". As a

result, it changed into the "full" state where many functions were packed. Therefore, the final deliverables that were provided to the sales companies no longer contributed to the creation of new ideas. The participants in Case 2 understood the content of development. In addition, those who participated from Case 1 were people that had backgrounds as software engineers. Their technical skills also increased through developments in Case 1 for this reason. Detailed portions were designed from the beginning by focusing on technical elements.

People who had sales backgrounds joined together in Case 2. The direction of development changed triggered by proposals from people who thought differently from technicians.

The following comment was made.

"There are technically no problems with imitation. I want you to make a product that the people in charge at sales companies will find interesting."

Developers began to think about first impressions to convey to users after this, such as appearance. Already designed portions were redesigned, and detailed portions were not intentionally developed. Eventually, we offered simple deliverables to sales companies. As a result, it was possible to support the creation of new ideas by overseas sales companies. Case 2 can be explained in this way from these findings. It was suggested that two states (the "knowledge white space" state and the "full" state) existed in Case 2.

Furthermore, the state changed from being "full" to a "knowledge white space, as seen in the following figure.

The "full" state changed in the early stage for detailed design to be carried out from the beginning in Case 2. However, we were able to offer the deliverables of the "knowledge white space" state to sales companies in the end.

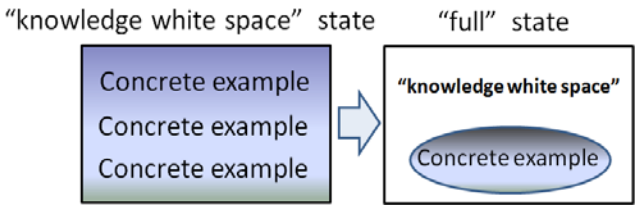

Figure 11. Change in Stat: Case 2

V. CONCLUSION

By not developing a detailed portion intentionally, it leaves room for new ideas to enter.

It was also able to be confirmed that it could support a method of customers' participating in value creation, in other words, achieving value co-creation through this. A provider intentionally leaves a "knowledge white space" by offering a service, and customers who receive this begin to think proactively. As a result, customers become subjects who create value along with the provider, and value co-creation is promoted.

"Knowledge white space" theory is thought to be very effective for value co-creation with customers from the viewpoints of SDL. The ideas for products and services are created by a manufacturer who is a provider in conventional sales companies that support the development of services.

However, sales companies that provide information, which includes evaluation of products and services by end-users, are able to create new ideas themselves and become subjects in the development of services by using a "knowledge white space". Improvements to the motivation and assertiveness of sales companies are also achieved.

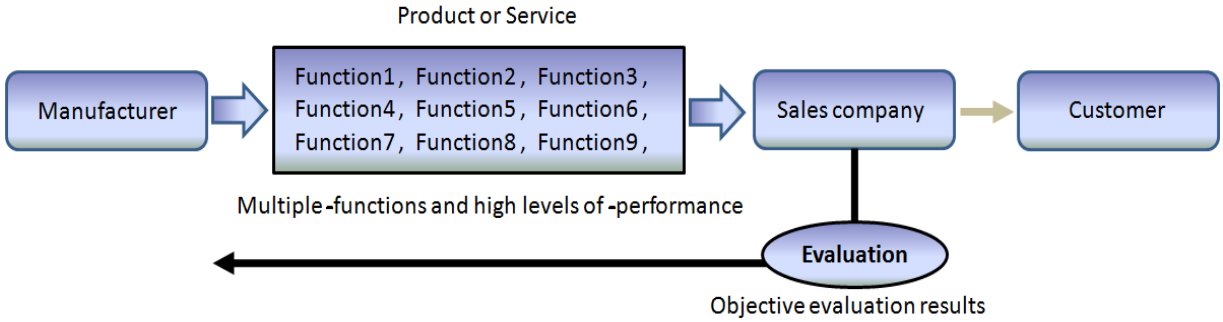

Figure 12. Conventional Service Development

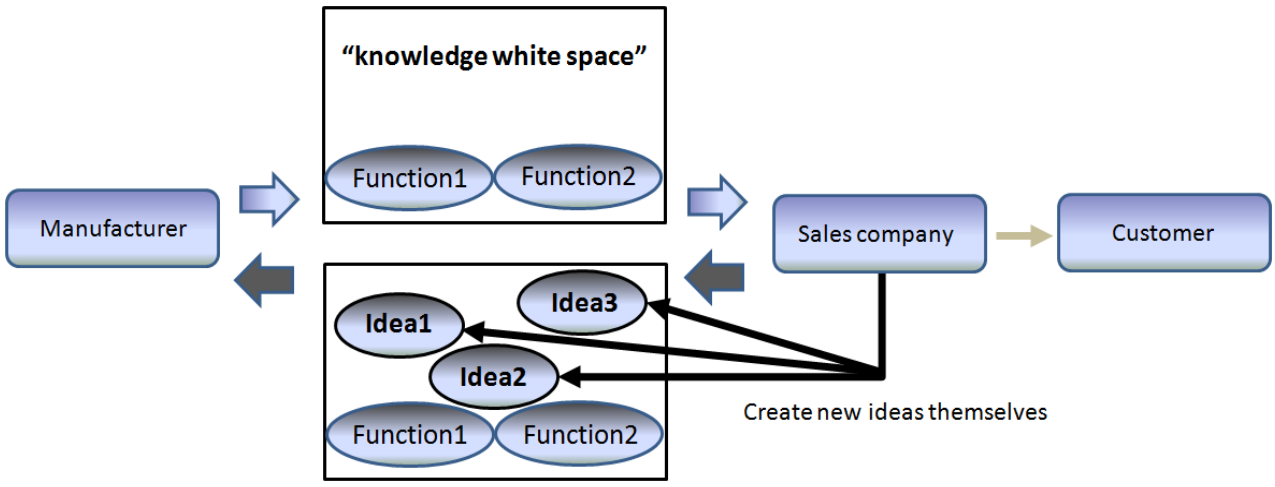

Figure 13. Service Development Using "Knowledge White Space"

Narrow down multi functional service intentionally.

That is, not pressing the service made by the maker but the service which took in the customer's idea were able to be created by making use of "knowledge white space".

It can be understood that service innovation, i.e., ideas on the creation of services that customers truly want, is implemented near customers.

A new problem was discovered through this research. There is a possibility that multiple functions and high levels of performance will inhibit value co-creation. Of course, Japanese manufacturers have not necessarily provided unsatisfactory products and services to sales companies until now. Rather, they have made efforts to provide multifunctional, complete products and services.

Surely, in the end products, multi-functionality or completeness is one of the important elements in many cases. However, in the service development process, there is a possibility that the multi-functionality or completeness is its inhibiting factor. The Company P, The Sales company did not develop services.

That is, the creativity of the sales company may have become weak by making a multi-functional product from the early stage of a service development process. Creativity as an enterprise group may also have been weakened by this.

"knowledge white space" theory can contribute to developing services in the future by verifying the theory by analyzing more examples.

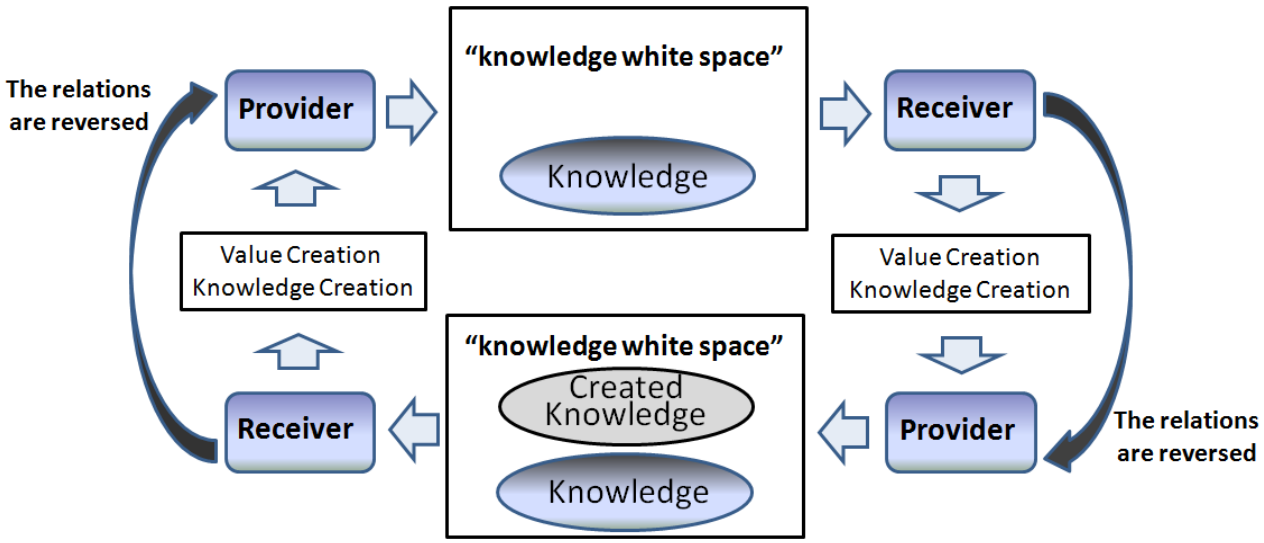

Figure 14. "Knowledge White Space" Theory

REFERENCES

[1] Lovelock, C. and Wirtz, J., Services Marketing People, Technology, Strategy, 2007

[2] Vargo, Stephen L., and Robert F. Lusch. "Evolving to a new dominant logic for marketing." Journal of marketing (2004): 1-17.

[3] Prahalad, C. K. and Venkat Ramaswamy. "Co-creation experiences: The next practice in value creation." Journal of interactive marketing 18.3 (2004): 5-14.

[4] Nonaka, Ikujiro and Noboru, Konno. (1999) “Chishiki Keiei no Susume” Chikumashobo

[5] Von Hippel, Eric.（1994）””Sticky information” and the locus of problem solving:Implications for Innovation”, Management Science, Vol.40, No.4, pp.429-439.

[6] Sugiyama, Yasuo. “User Innovation” (2000) Takahashi, Yoshio (Eds.) ‘Cyousoshiki SoshikiRonn’ yuhikaku: 10.

[7] Hirano, Mitsutoshi. (2004) “Soshiki-Mode no Hennyou to Core-Jinnzai no Management” Graduate School of Business Administration School of Business Administration paper: 8.

[8] Nonaka, Ikujiro. Takeuchi, Hirotaka. Umemono, Katsuhiro. (Transrate) (1996) “Tishiki Souzou kigyou”, TOYO KEIZAI INC.

[9] Cohen, Wesley M. & Levinthal, Daniel A.（1990）"Absorptive capacity: a new perspective on learning and innovation" Administrative Science Quarterly, Vol. 35, No. 1, Special Issue: Technology, Organizations, and Innovation. (Mar., 1990), pp. 128-152.

[10] Von Hippel, Eric.（1994）””Sticky information” and the locus of problem solving:Implications for Innovation”, Management Science, Vol.40, No.4, pp.429-439.

[11] Ogawa, Susumu. (2000) Innovation Hassei no Riron –Jyouhou no Nenntyakusei kasetsu ni tuite , Kokuminkeizaizassi 182(1) 85-98

[12] Mills, Peter K., Richard B. Chase, Richard B., and Margulies, Newton (1983), "Motivating the Client/Employee System as a Service Production Strategy," Academy of Management Review,Vol.8, No.2, pp.301-310.

[13] Prahalad, C. K. and Ramaswamy, Venkatram (2000), "Co-opting Customer Competence," Harvard Business Review, Vol.78, No.1,pp.79-87.

[14] Shostack, G. Lynn. “Designing Services That deliver.” Harvard business review 62.1 (1984): pp. 133-139.