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Description	

Service Mediator Model for Value Co-Creation Based on Service Dominant Logic*

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ABSTRACT

A new mediator model for Information service firms (ISFs) is proposed based on Service dominant logic. In this model, mediators create a shared contextual place and it plays an important role in connecting and managing supply and demand to provide superior services. The mechanism of value co-creation based on service dominant logic in business activities through a suitable service field organized by mediator firms for interactions by all participants. This mechanism is demonstrated through case studies of the framework of Hitachi TWX-21 and Cookpad Inc., which are Japanese information service businesses. We found that a good service field was effective in helping all business's parties receive better value and gain satisfaction.

Keywords: Service Mediator; Service Field; Service Dominant Logic; Information Service

1. Introduction

Many companies in real business currently conform to service trends by shifting their business from goods to services [1-3]. Information in the era of knowledge is not only simple data but it is also services in high demand. Many companies do not provide tangible products but focus on information services to satisfy customers' demands. Tourist agencies, study abroad agencies, retrieval websites, and information solutions firms are examples of information service firms (ISFs) who supply information as services. These companies offer consultants, information, knowledge, and resources to help their business partners and customers exchange services and satisfy their requirements. They act as intermediaries to bridge the demand and supply of business partners and users. Various methods such as e-commerce or SNS tools enable them to interact with customers and exchange services. Although direct sales are encouraged and there do not seem to be any places for mediators in e-commerce, in fact, this is not true. Services in the information field are becoming more complex and separate, creating opportunities for new forms of intermediation [4].

When customers want to exchange information services, the information is large scale, which confuses them. The issue of how to match the seeds and needs of providers and customers suitably and effectively is the most important thing in creating service value and satis-

faction. Noll [5] in the previous theory suggested mediation theory to be "*the nature of the conflict dictates the mediation process to be used and the conflict's likely outcome*". This definition is close to G-D logic in which traditional mediators assist their clients deal with other parties to solve disputes. They rather help customers to negotiate rather than encourage the co-creation process. Thus, both clients and other partners lack the highest satisfaction and benefits. ISFs with the previous mediator model for information services just received information from one side and transferred that information to the others. There was no collaboration process in the service exchange so that the old mediator could not create value co-creation to satisfy both business partners and customers. Therefore, a new co-creation mediator model is necessary for ISFs to manage and qualify information service thus bringing satisfaction to customers through value co-creation [6] with service providers. This paper proposes a new service mediator model to effectively support the businesses of ISFs and bring satisfaction to all players in the business.

There are two essential factors in the new service mediators for ISFs to enhance the effectiveness of service exchanges. The first is matching the seeds and needs of service exchanges, and the second is enhancing the value co-creation process between users and service providers. S-D logic [1] is used as a foundational mindset throughout the new model to confirm the significance of value co-creation and encourage customers to collaborate with

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suppliers during each stage of product design and product delivery. ISFs in the new mediator model will seek the necessary information from both individual parties and attempt to come to a resolved agreement on the behalf of both parties' to improve the effectiveness of providing services [2]. ISFs, with professional services, will use their own resources to assist their customers reduce time, effort, and costs by using specific content and offerings of knowledge.

Case studies on ISFs are used to verify the effectiveness of the new service mediator model based on S-D logic discussed in this paper. The cases studies are done with Hitachi TWX-21 [7,8], which is one of the most successful and effective service businesses in Japan and Cookpad Inc., which is the foremost recipe Website in Japan (Alexa traffic ranked 77th of all Japanese Websites) [9], to analyze their business frameworks. New ideas are demonstrated through analyses of successful information service businesses to verify the effectiveness of the proposed model. The findings from the analyses provide evidence that the service field "Ba" plays a central role in cooperation with customers therefore leading to co-create values for efficient services. Here, the service field "Ba" is introduced by applying the concept of "Ba" in knowledge management proposed by Nonaka [10]. This service mediator model is believed to bring the triple win concept of benefits to all players in the business process.

2. New Service Mediator Model Based on SDL

2.1. S-D Logic for New Service Mediator

S-D logic is an alternative mindset presenting new perspectives on services and their impact on organizations, markets, and society. The foundational proposition of S-D logic is that every social activity is fundamentally concerned with service exchanges [1]. Thus, services are exchanged for services, every company is a service company, all markets focus on the exchange of services, and all economies and societies are service based [2].

Using S-D logic as a foundation for this research, the proposed model will concentrate on new premises and potential ideas of S-D logic. S-D logic actually changes

the way people do business, has great advantages, and embraces the concepts of the "value-in-use" and "co-creation of value" rather than the "value added" approach of G-D logic. Instead of simply providing or delivering value to customers, firms cooperate with customers, as well as understand and tighten their relationships to build more useful and satisfying values for customers. S-D logic is used as a fundamental foundation to propose a new service mediator for ISFs, where the mediator bridges suppliers and users so that they can cooperate to co-create better service values. S-D logic encourages the concept of a value co-creation mediator in which the mediator assists firms and customers to highlight their supply and demand to exchange services. **Table 1** summarizes the difference between the traditional mediator model and our co-creation mediator model from the perspectives of both G-D and S-D logic.

2.2. Classification of Business Model

A new service mediator model is formed and classified with other business models based on the S-D logic previously mentioned. The new model concentrates on the value co-creation of S-D logic to tighten the relationship between firms and customers. From the premises of S-D logic, service values are enhanced and leveraged by both firms and customers. When firms and customers can understand each other, and then collaborate with trust, firms can provide better services that depend on agreement with customers. When they directly join the service co-creating process, they can increase their demands. Finally, customers are able to totally agree with the services provided and gain the highest level of satisfaction.

Figure 1 classifies the business models of direct business exchanges and mediator models based on G-D logic and S-D logic. The new service mediator model is a complete model with the perspective of S-D logic and the mediator supports suppliers and users to enhance service values. The figures also point out the difference between the traditional service mediator and new service mediator. The previous one just simply transferred the information and did not create much value for either customer (suppliers or users). Examples of this type are traditional

Table 1. Traditional mediator vs co-creation mediator model.

Traditional mediator (G-D logic)	Co-creation mediator (S-D logic)
Representative of client on one side	Support for both customers and suppliers
Neutral facilitator in parties' decision making	Involvement in decision making process by using their own resources
Assists clients by consultation, communications, and knowledge to solve conflicts	Using knowledge, technology, and own resources to match seeds and needs of clients and providers
Limited or no technical support. Negotiation mostly based on skills and quality of mediators	High levels of technology to utilize value co-creation
Value creation	Value co-creation

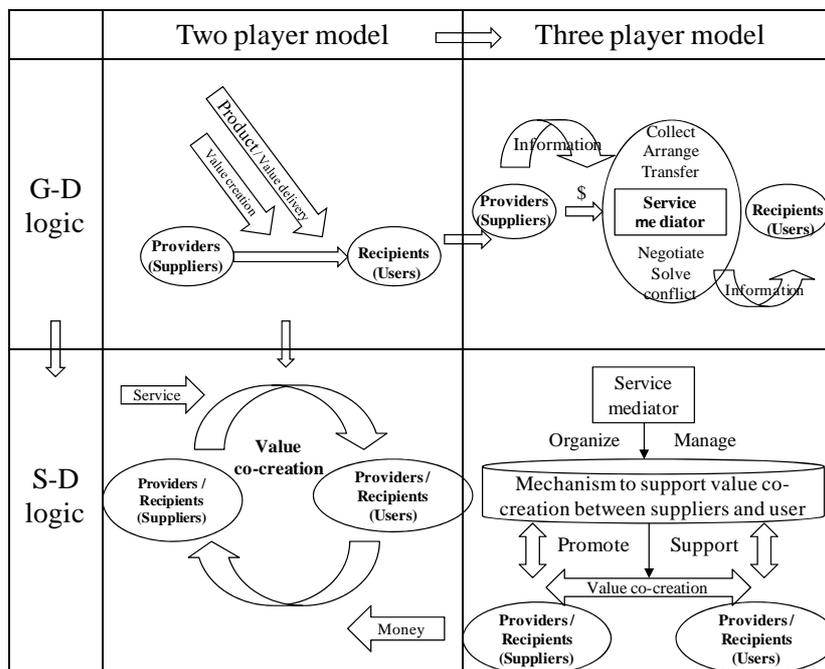


Figure 1. Classification of business models and new service model hypothesis.

travel and study abroad agencies. They only collect and transfer information. The providers offer some services based on customers’ requirements but they do not fulfill their needs. As most of their business processes involve paper work, are not inefficient in data storage and management. However, the new mediator model based on S-D logic, emphasizes value co-creation to maximize service values. **Figure 1** categorizes and describes our hypothesis for the new proposed model.

3. Proposed Model and Roles of New Service Mediator from S-D Logic

A value co-creation mediator model is formed and supposed to be beneficial to all players in business managed by ISFs from the propositions of S-D logic and the service field.

Figure 2 outlines a model of an ISF’s information system to help users and service providers collaborate with one another more productively and efficiently. First, the ISF organizes an open, truthful, and useful environment in which customers can collaborate. Users and service providers exchange their information, requirements, or services provided on this platform. Users and providers can freely share their information in the location managed by the ISF, and all their contexts related to the services to cooperate in a comfortable environment. The ISF not only uses its own advanced resources and technology to promote value co-creation but also provides a service field “Ba” for suppliers and users to communicate and cooperate in. These resources are recognized as the sup-

porting functions of ISF in the new mediator model. As a result, the ISF is able to respond to customers’ expectations and satisfy them by increasing service values via the supportive co-creation process.

It would be very complex and confusing if there were no mediators to support collaboration between service providers and users because a great deal of information would be exchanged by users and providers who were not good at managing these contexts. It could mess up the services and consume a great deal of time, cost, and effort and the results may not be helpful. Therefore, the existence of ISFs as mediators is extremely important to support higher value extraction to convey satisfaction. In summary, ISFs play two roles in the proposed model to maximize service values and assist cooperation between suppliers and users. They are:

a) *Organization and management of the service field “Ba”*

It is not easy for ISFs to control and balance the relationships and benefits of both clients in acting as an intermediary between business partners and users. How to build good relationships and encourage clients to efficiently work with one another are the responsibilities of ISFs. ISFs must know their capabilities and requirements to reach mutual agreements between business partners and users. ISFs will help customers exchange their values and ideas to thoroughly understand seeds and needs by organizing and managing a constructive service field “Ba”.

The service field “Ba” is a cooperative environment containing all contexts of services, and it is a mechanism

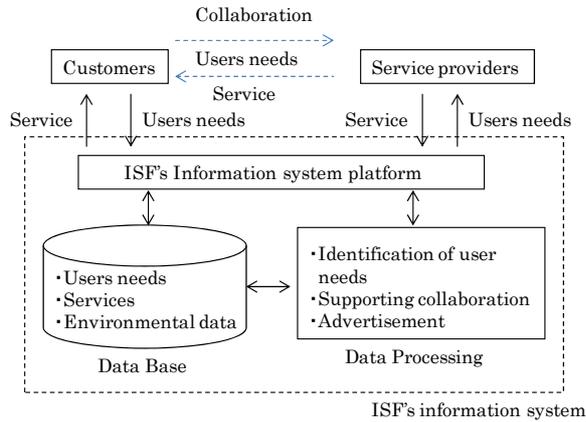


Figure 2. ISF's functions as a mediator.

to increase value co-creation and collaboration. The concept “Ba” was proposed by Nonaka [10] for knowledge creation environment in the area of knowledge management. Here this concept is applied to service value creation. When all contexts of services are gathered in the service field “Ba”, the mediator firm finds it is easy to identify the seeds and needs of suppliers and users. However, knowing requirements and service offerings does not mean that ISFs can analyze and match them suitably and correctly. Therefore, the new mediator must organize and manage a beneficial, comfortable, and trustworthy environment for their business partners (providers) and customers (users) for them to exchange supplies and requirements, and thus interact with them so that their service attributes can match the levels of satisfaction of one another.

When users want services, they receive huge amounts of information from service providers and they are not able to choose the best for their solutions. It is also hard for service providers to find customers due to various reasons such as lack of market research, culture, and language barriers. This leads to the importance of the mediator who is an intermediary that collects and balances the seeds and needs of the services by managing the service field. ISFs organize a common interactive environment in the beginning to gather information from customers, which thus makes it useful for analyzing and matching suitable services. ISFs have to provide their data mining systems with advantageous collections and analyze data to fit potential supply and demand. When users and suppliers are ideally matched, they are relaxed in cooperation and carefree in sharing and discussing services, after which they can build agreeable services together.

b) Promotion of value co-creation

Another important role of ISFs is that they must do their best to support value co-creation. Service values here are constructed by all parties in business. This means that one must use the applied knowledge of others

(services) as a resource to benefit others [11]. Many tasks are set up for ISFs to fulfill customers’ expectations to enhance value co-creation.

Values in S-D logic are created by collaboration between firms and customers. Values in the new service mediator model are created by collaboration between all three parties. Therefore, the mediator needs to use his/her professional services to enhance value co-creation by providing an ideal environment and tools to support collaboration. Users and suppliers are encouraged by mediators with well-equipped systems, excellent technologies, and specialized knowledge to enhance co-creation. Finally, the created values are outstanding, and satisfy all participants.

4. Case Study 1: B to B Information Service—Hitachi TWX-21

4.1. Outline of Hitachi TWX-21

Hitachi established TWX-21, which is the business media between enterprises that have offered places of business-to-business transactions on the Internet to customers. TWX-21 means “Trade Winds on eXtranet-21” [7]. It is a business system cloud, which enables business operations of all business partners and customers via a cloud platform and it supports electronic data interchange (EDI). The three players of TWX-21, business enterprises, and customers in many processes cooperate such as in design, procurement, production, and sales. This business model is considered to convey the best benefits to all players in business. Figure 3 outlines the concept underlying TWX-21 in which an eco-system is proposed in collaboration between users and vendors.

TWX is the mediator who connects the seeds and needs of business partners and its users in this framework.

TWX-21 services are summarized below:

TWX-21 collects service demands, and through standardizing service quality, it develops the requirements of

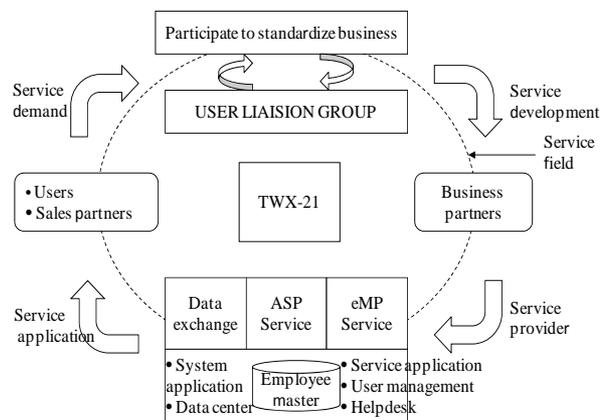


Figure 3. TWX service process.

customers and then links them to suitable suppliers. TWX-21 uses its huge database and tools to match the seeds and needs of users and business partners in this process. TWX-21 proposes a service field “Ba” to connect this supply and demand, which is its cloud platform, to collect and correctly analyze the requirements of customers. This is not an easy task because it must satisfy customers from the beginning by choosing the best partners; otherwise, TWX-21 will fail to make customers feel satisfied with their services.

When all its services are organized within the service field, TWX-21 assists customers to access and manage their services well.

As illustrated in **Figure 3**, we can see that Hitachi TWX-21 is:

- 1) A collection of inter-enterprise, electronic commerce (EC) services for affiliated members.
- 2) A company that provides a highly reliable global network.
- 3) A company that provides various services that enhance business efficiency.
- 4) A company that provides a business infrastructure to service providers.

TWX-21 builds a good environment for all players in the business and contributes and creates beneficial services for all by being a bridge that connects business partners and users and assists them to co-create service values.

4.2. Supporting Functions (Services) of TWX-21

1) For organization and management of the service field “Ba”

a) *Strong Brand*

First, Hitachi has a good brand that can gather together suppliers and users to work smoothly under the TWX-21 umbrella. It is one of the most well known ISFs in Japan so that many business partners and customers want to do business with it. It also has a high standard of quality that helps control and qualify the services provided. Suppliers and customers can believe in the services provided and enjoy joining in the environment that TWX-21 has organized and prepared for them because of its good reputation. TWX-21 has attracted over 43,500 customer companies globally from over 20 countries and regions as it is a trustworthy and effective company for all IT solutions. It emphasizes the well known, strong brand of TWX-21 in attracting customers and creating favorable impressions.

b) *IT infrastructure*

The second reason, which is one of the most powerful functions of TWX-21, is that it has an outstanding IT infrastructure and systems. Today’s business market demands a high rate of change in information technology

(IT) by which organizations are required to handle problems. Organizations face rapidly changing market conditions, new competitive pressures, new regulations that demand compliance, and new competitive threats. All of these situations drive the need for the IT infrastructures of organizations to respond quickly to support new business models and requirements. Fortunately, TWX-21 has a strong foundation in its IT system and can provide all services from maintenance to e-sourcing services. TWX-21 focuses on its IT infrastructure to create a robust and suitable space for its customers to cooperate in creating new values in services.

The three most remarkable functions of TWX-21 are Web-EDI services, Document Exchange Services, and SaaS support services. **Figure 4** shows the structure of the SaaS business support service that is a useful function to help suppliers and users launch their businesses quickly and inexpensively [8]. Its powerful system creates a comparative service with other competitors and exceeds the others in excellence. TWX-21 has solved all problems and provided direct interactions between suppliers and users at lower cost by providing outstanding services and making coordination between firms and customers become more efficient and responsive. Therefore, TWX-21 has become one of the leading global providers of IT solutions in cloud computing in Japan and China.

2) For promotion of value co-creation

a) *Efficient system of data processing*

TWX-21 has an enormous data center that helps its employees analyze the supply and demand of suppliers and users and match them fully. Moreover, its feedback system and spiral data processing with a trial and error process are repeatedly implemented to leverage the data after feedback. The spiral model is applied in the development process as it continues to develop, provide feedback, and revise data until agreement is obtained from users. This system provides customers with more valuable and useful information. As a result, this model establishes professional levels of performance that satisfy customers.

b) *Communications by human*

Hitachi knows that communications is the means to approaching customers’ perceptions and decisions. Therefore, it concentrates intently on building excellent front-line teams to serve customers. All customer-service employees are qualified in communicating with people and helping customers to choose the most suitable services for them. They also can provide customers with consultations giving professional advice and recommendations. Technical expertise has also been taken into consideration with a professional helpdesk that can help customers with 24/7 assistance and immediately solve their problems. Moreover, all services and helpdesks are offered in

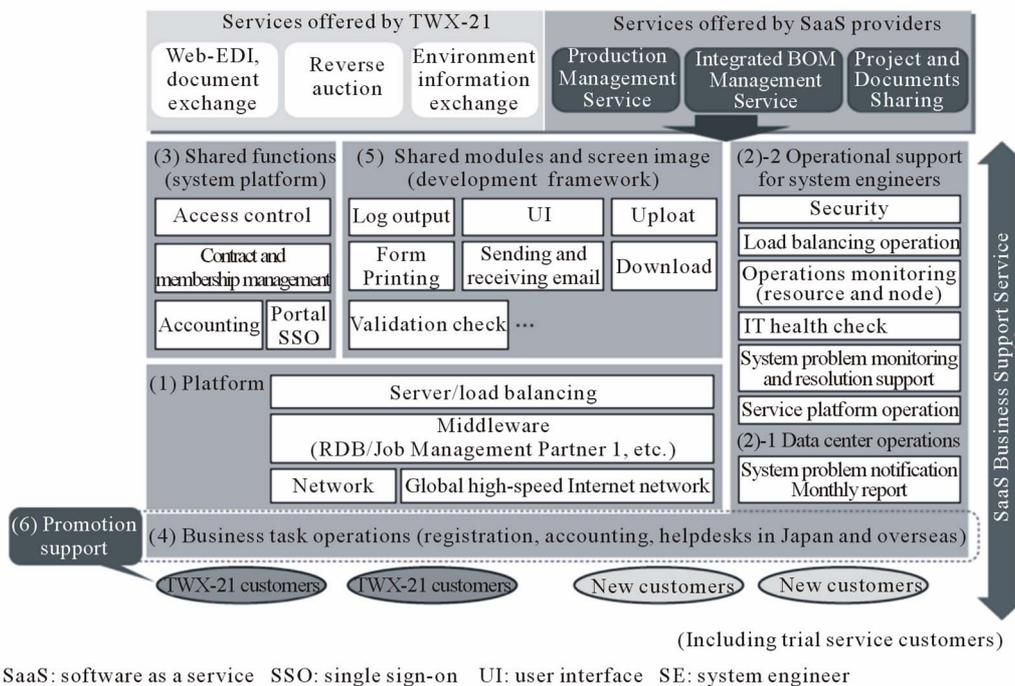


Figure 4. Structure of SaaS business support service (source: [8] Kiuchi *et al.*, 2012).

multiple languages (English, Chinese, and Japanese) to enable customers to easily communicate and collaborate. Hence, human resources represent one of the most significant functions of TWX-21 operations in satisfying customers.

5. Case Study 2: B to C Information Service—Cookpad Incorporated

5.1. Outline of Cookpad Inc.

Cookpad Inc. was founded in October 1997 and has developed from a small Website (www.cookpad.com) providing information about cooking and recipes to a successful service company with a huge number of users that reached 14 million in September 2011. Cookpad has gradually made innovations to its services through 15 years of business to become the No. 1 recipe data Website in Japan and it attracts huge numbers of pageviews per day. Cookpad is Japan's largest recipe site allowing visitors to upload and search through original, user-created recipes. Not content with being No. 1 in Japan, Cookpad has plans to conquer the world and has recently expanded its services outside Japan with an English Website @www.cookpad.it.

Cookpad is engaged in the operation of contributing recipes and searching Websites and mobile Websites. Increasingly more users come to Cookpad.com to experience its services and enjoy the recipes, pictures, and cooking tips it provides. **Figure 5** outlines the operations of the Cookpad firm.

As can be seen from **Figure 5**, Cookpad Inc. works with both business partners and users as a mediator. The company operates in three business sectors. They are the membership, the marketing support, and the advertising sectors.

Concerning on the first business sector, Cookpad in its membership sector provides friendly and easy searches of Websites to users so that they can interact. Most Cookpad users are housewives who have had less experience with technical issues on Websites. The Cookpad Website is well organized for cooking lovers to come together, share their recipes, and learn from other people's experiences. Users can then co-create service values and provide satisfaction by providing services.

The second business sector is marketing support, which provides tie-up advertising services, including recipe contests and sponsored kitchens for manufacturers, sellers, and distributors of food, beverages, home electronics, and cooking equipment such as that for the Ajinomoto, Meiji, and Denki Meikan companies. Cookpad provides an analysis tool @tabemiru.com to analyze the search log data of identity (ID) login users for Cookpad.com. Business suppliers identify customers' needs, learn from their perspectives, and make plans to create the value-in-use customers want based on this service. Both business partners and users in these kinds of services obtain benefits from Cookpad's services. It connects the demand and supply of customers and helps them to understand one another. Co-created value is built from the service field such as contests or the Tsukurepo presents that Cookpad

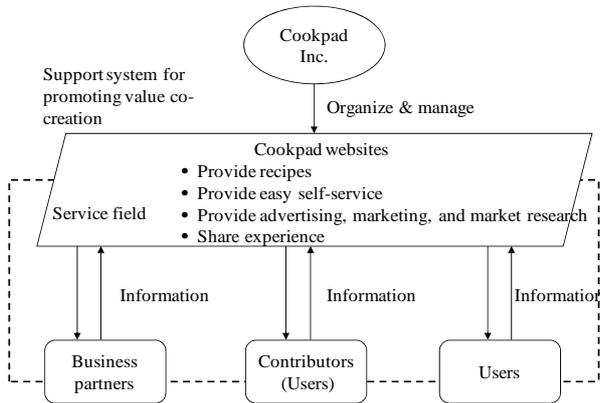


Figure 5. Business model of cookpad.

provides to customers.

The last sector is in advertising, which sells companies advertisement spots on the Cookpad Website through advertising agencies and media representatives. Advertising on its Website is a good choice as Cookpad is one of the most popular sites for cooking lovers. Business partners can advertise their products to users and users can find the information they want from the advertisements posted on Cookpad Websites. As values are beneficial to both kinds of customers, they can collaborate to extract values they both agree on.

5.2. Supporting Functions (Services) of Cookpad Inc.

1) For organization and management of the service field “Ba”

a) Popular brand

First, it is undeniable that Cookpad is the most well known recipe Website in Japan by ranking No. 1 in cooking Websites. Cookpad still has pride of place for cooking lovers and housewives despite the various other interests of Japanese. Cookpad obtains over one million recipes from their Websites most of which are contributed by users. This demonstrates strong cooperation by customers to develop Cookpad as No. 1. Users consider Cookpad to be their home on the Net to have fun, to learn to cook, and to make friends with one another. It is like a small world in which people are always happy.

Moreover, Cookpad is more competitive than other companies by having a huge amount of data on food recipes. This Website has more members than any other providers in this area. Even big companies like Yahoo Japan still lose out to Cookpad in the membership battle. Yahoo Japan Recipe has five million users, which is only one-third that of Cookpad’s [12]. This affirms the dominance of Cookpad in recipe Website services. It means the Cookpad brand is very popular with people who love preparing food because increasing numbers of people have joined the Website and everybody is contributing

efforts to developing the Cookpad database. Cookpad with its popular brand has the power to make business partners and users work together and co-create service values to create mutual satisfaction.

b) Friendly and productive interface

The second function, which is believed to be Cookpad’s strongest weapon is the high quality of its IT infrastructure. Cookpad has created a speedy, easy, and friendly Website for its customers. As most of Cookpad’s customers are women aged 35 - 54 [9], the company assumed that most of them would not be good at IT technology. A friendly Website could help them find the information they wanted immediately and accurately. As Cookpad uses state-of-the art security to protect data, this makes users have confidence and trust in exchanging information on its site. We know it is very important to ensure the safety of personal information because hackers can use that information to harm customers. Such issues could damage the relationship between firms and customers. The Cookpad Website is an enjoyable place to look for food recipes.

Its strong IT infrastructure also led Cookpad to expand its services to users using mobile devices. Increasingly more people are currently stuck with their phones and tables rather than their usual computers. Cookpad understands this trend and made innovations in Website design to attract more users. Combined with mobile and smartphone services that can be used on the go and in stores, Cookpad plays a significant and influential role in the shopping decisions that consumers make in their everyday lives.

2) For promotion of value co-creation

a) Uniquely shared experience through additional recipes

Cookpad has a huge database of food recipes, pictures, and tutorials that can be uploaded for free due to contributions by users. These satisfy the rest of the users. The information provided by over 14 million users is invaluable and it could help business partners such as food and kitchen appliance companies understand their customers and prepare goods/services that suit them.

Furthermore, Cookpad lets users upload recipes and pictures of the dishes to the Website in their folders and share these with other users. Other users who try these recipes upload small changes to the recipes to improve or provide more suitable tastes. The process then continues spirally with other people and enhances the values provided to customers. These experiences certainly are invaluable and more attractive to customers. Clearly, the “shared experience” satisfies customers more than just “information sharing”. It enhances value co-creation by connecting people to share great experiences around cooking. With Cookpad, customers reduce the time they need to learn about preparing food and learn from others’

experiences. This is the best service to satisfy their requirements.

b) *Online Communications*

It is very important to understand customers' needs in acting as a mediator to connect the requirements of users and business partners. Cookpad always tries its best to listen to customers and define problems with customers to assist them quickly. Consequently, Cookpad lets users provide feedback online and it responds to all inquires as soon as possible. Cookpad has made an effort to try to create an English Website to receive feedback from users. However, Cookpad, it is not yet as complete as Cookpad.com but it is a good way for English speaking users to exchange their ideas and knowledge with the company. This is a particularly clever achievement by Cookpad. Customers really want their feedback to be listened to and their problems solved. This process secures the relationship between the firm and customers and leads to long term commitments. The longer customers use services, the more successful a company is.

6. Considerations on Required Functions of ISFs That Support Two Roles of New Mediator

Some factors were identified to enable the success of Hitachi TWX-21 and Cookpad to be understood after the two real companies were analyzed. They have similar functions that support the co-creation process in service exchanges. These functions were also categorized to contribute to the two roles of a new service mediator model based on S-D logic and the service field, which are organization and management of service field "Ba" and promotion of value co-creation. Organization including brand management and identification of users' needs using strong IT infrastructure are important for management of the service field "Ba". Also leverage of customers' knowledge and value and communication for service value co-creation are important for promotion of value co-creation between users and service providers. **Table 2** summarizes the actual useful functions of the two ISFs

that verified the functions of the new service mediator we propose.

7. Conclusions

Firms in the new era of customer-centric businesses must reconsider their business systems to discover customers' requirements and satisfy these. In this paper, a value co-creation service mediator was proposed from the perspective of S-D logic to help mediator firms provide greater value to their customers by co-creation in the service process. Value co-creation based on S-D logic is the core process to enhance the productivity of services thus making customers satisfied with companies. The service field in the new model is cyber space in which service values are co-created and used as a mechanism to determine how satisfied customers are via the co-created values.

Ideas for providing better value co-creation in the business of the service mediator were identified through case studies on Hitachi TWX-21 and Cookpad Inc.; thus, propositional support functions were demonstrated. The results obtained from the success of the two companies that used the new service mediator model also affirmed its effectiveness. Knowledge from interviewing and surveying company staff contributed to defining the required functions for ISFs to gain customers' satisfaction and develop business in a sustainable way.

Therefore, this suggested that ISFs should re-consider their roles in business and use the new service mediator model to provide high values in exchanges with customers. This strategy would help firms win customers' satisfaction and be more competitive in the market. By developing a new service model of ISFs based on S-D logic, we hope that it will help leverage value co-creation, and enhance collaboration between mediators, suppliers, and users. Moreover, this new model in the fast changing service market can be suitable not only for ISFs but also for other manufacturing companies or retailers. Mediators will contribute to the value creation process and help all parties collaborate optimally in providing superior

Table 2. Comparison of service mediator models.

Functions	Hitachi TWX-21	Cookpad
Organization (Brand, etc.)	<ul style="list-style-type: none"> Well known brand Over 43,500 users Ecosystem based on IT 	<ul style="list-style-type: none"> No. 1 recipe Website 14 million users User friendly Website
IT Infrastructure (Identification of users' Needs)	<ul style="list-style-type: none"> Strong ICT, IT infrastructure Huge data center 	<ul style="list-style-type: none"> Huge database of users' information Effective marketing tools
Leverage customers' values & knowledge	<ul style="list-style-type: none"> Powerful with eMP, SaaS, and ASP Trial & error feedback 	<ul style="list-style-type: none"> Over 1 million recipes Shared experience
Communications	<ul style="list-style-type: none"> Frontline employees Help desk Multiple language support 	<ul style="list-style-type: none"> Online feedback Bilingual feedback

values by acting as a useful bridge between business partners and users. The proposed mediator model is indispensable for such new information services in the 21st century.

8. Acknowledgements

We learned a great deal from the successful businesses of Hitachi TWX-21 and Cookpad Inc. to build the new service mediator model in our research. We would particularly like to thank Mr. Kamada who is the Senior Director of Hitachi TWX-21 and staff from the two companies for the information they kindly shared with us and the discussions we had with them.

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