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Development of technology and service thinking for technical personnel: Action research at a Japanese monitor maker

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ABSTRACT

The importance of services within technology-based business in terms of customer value is increasingly well-understood by manufacturing companies. Manufacturing companies are trying to restructure their business models by adding the concept of service that is required to make a process of value co-creation with customers. Human resources are a core factor in the implementation of this notion in the practical field. In a technology-based business, technical personnel must have not only technology-oriented thinking but also service-oriented thinking in order to generate new value propositions. In this work, we propose an approach to transform the way of thinking and support knowledge co-creation with others with a focus on new corporate value propositions. We combined a service innovation chart with a business model thinking methodology to create a new approach intended for the development of technology and service thinking within technical personnel. Our objective is to help manufacturing companies create a service climate and clarify the knowledge co-creation process. We conducted action research by introducing our approach to 25 technical personnel employed by a Japanese monitor maker and obtained data including feedback on its usability and the impact on corporate business models. The findings of this study will help personnel to generate technology and service-based innovation concepts, thereby promoting servitization in technology-based companies.

1. Introduction

As the world becomes more and more service-oriented, businesses are placing more of a focus on the value co-creation process with their customers. The growing importance of services is one of the key trends witnessed in recent years [1]. Desmet et al. [2] conducted a survey among manufacturing industry executives in Germany and Belgium and found that more than 90% of all people in manufacturing companies believe that the growth of services is essential to maintain corporate sustainability.

In this atmosphere, manufactures are pursuing ways to increase the opportunity for competitive differentiation by adapting themselves to the service climate, which also includes effective use of technology and different ways of providing value to society (e.g., [3]). They have already started to sustain themselves on the basis of value delivered by shifting their market share from manufacturing to more product- and service-oriented systems [4,5]. Manufacturing companies are becoming more oriented to the use of product-service offering rather than focusing purely on products [6–8] and are trying to adapt to the new climate of product/service-oriented systems.

However, service-oriented climate adaptation and implementation is difficult for typical manufacturing firms because it requires redesigning the organizational philosophy and improving the performance capacity [9] through successful management of the interaction of business, people, and technology [10]. In general, organizational climate is an attribute of the organization—a conglomerate of attitudes, feelings, and behaviors that characterize life in the organization [11]. Regarding a service climate in general, there are previous studies about the need for having the mindset of customer service and service quality [12] and its relationship with performance (e.g., [13,14]). Employees are more devoted to think about satisfying customers' requirements. Therefore, there is a need to change a mindset of technical personnel from technology oriented to technology and service oriented one. This study aims to provide a practical methodology for adding the service thinking

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that is based on service dominant logic essence to technical personnel. We performed action research with a leading monitor manufacturer in Japan that wants to shift from a pure technology-oriented organization to a technology and service organization.

Here, we present our approach to add the way of thinking and support knowledge co-creation with others for new corporate value propositions. The proposed approach is designed to develop both technology and service idea creation ability. The rest of this paper is structured as follows. Section 2 reviews the literature on expertise improvement for the service climate. In Section 3, we present our approach for promoting service thinking in technical personnel based on technology thinking. Section 4 describes the action research we performed at a Japanese monitor maker and its results. We conclude in the final section with a brief summary after practical implication.

2. The need for service thinking in technical personnel

Manufacturing companies are increasingly being pressured to change their business stance from a technology-based one to one based on both technology and service. In other words, manufacturers need to transform their business focus from function-based value-in-exchange to experience-based value-in-use [15]. In this current service-focused economy, manufacturing companies need to apply their expertise to offering service value to their customers. Human resources that have service thinking skill, which is a form of intellectual capital [16], play an important role here.

In 2008, IfM and IBM white paper [17] argued that the growing demand for service innovation is having a massive effect in terms of the skill and knowledge bases that can support the transition into a new organizational service view philosophy. According to Magnusson and Stratton [18], in the servitization process, manufacturing companies often need not only their existing manufacturing skills but also service-related skills including external focus, customer accessibility, and solution-orientated thinking [18].

Regarding service thinking, Hastings and Saperstein [19] have created a general method for service thinking which is based on the manifesto including core insight, core belief, change impact, core offer, brand behavior, target customers and value propositions (how will we make customers feel etc.). However, in a typical technology-based company, technical personnel tend to focus mainly on engineering skills. When such an organization aims to incorporate technology into a service concept, they must take steps to cultivate the service skills of their technical personnel. If employees can find within themselves a new service mindset to go along with their technical skills, the company will enjoy an enormous competitive advantage over its competitors.

3. Approach for promoting organizational service climate

3.1. Service innovation chart for individual work

We came up with a service innovation chart, shown in Fig. 1, to promote service thinking in technical personnel. Here, we define "service thinking" to means that employees think about the potential benefit for the customers using the goods or services in their daily lives. The chart consists of seven key phrases: Technology, Improvement, Customer Satisfaction, Value, New Customers, Relationship, and Sustainability. These phrases are derived from service dominant (S-D) logic [15] and service sustainability [20] concepts. The essence of S-D logic is value-in-use, which is created by experiencing something with the concept of the customer as an active participant in the value co-creation process. Similarly, the essence of service sustainability centers on a sustainable relationship with customers and relative stakeholders by providing each other with some reward in the form of parties. The authors used these essences as inspiration for the Value, New Customers, Relationship, and Sustainability elements of the chart.

Technology personnel usually have a technology-oriented mindset, concentrating mainly on technological improvements and related value based on technology itself. Such thinking is of course invaluable—indeed, it has created radical innovation that consumers and society could scarcely imagine. The authors have integrated technology thinking and service thinking into the same chart, which consists of four questions and one instruction. Regarding technology thinking, we ask "What can you do to satisfy customers through technological improvement based on the functional perspective?" and "If you raise the prices of your product, what technological function will make the price increase worth it to your customers?" After that, through the instruction of "Mindset change from value-in-exchange to value-in-use," technology personnel shift their mindset from a technology orientation to a service orientation by the questions "What is your idea?" and "Based on the value-in-use thinking, what value can you offer to new customers and how can you create a sustainable relationship with them?"

In this chart describing the technology-based concept, producers indicate that technology is a core tool of value creation. From this perspective, they consider economic gain the main target. Consequently, organizations are developing technology that suits their customer segments and offering products as value to recipients. In contrast, manufacturers coming from the service-based concept are starting to think of value propositions for existing and potential customers by integrating resources. They place more priority on building a continuous relationship with stakeholders' aims in order to gather up-to-date knowledge applicable to long-term sustainability.

3.2. Business model thinking for service-oriented idea integration

Based on the individual task using the service innovation chart, we employed a business model generation framework [21] to promote collective service-oriented idea generation and new service business generation. In general, business model is recognized as the story that explains how an enterprise works [22] and helps employees think about what value their company can propose to customers, who the customer is, what resources the company has, etc. Yunus, Moingeon, and Lehmann [23] have articulated that the concept of a business model offers a consistent and integrated picture of a company and a clear way to generate revenues and profit. A business model designates the rationale of how an organization creates, delivers, and captures value [24]. According to McGrath [25], it would be better business model that creates customer stickiness or loyalty and allows company to hold on to an advantage for a long time. Therefore, it is important to think about sustainable relationship with customer by arranging corporate internal and external resources.

We made a minor revision to the original business model generation framework by designating differently colored areas on the map to differentiate previous ideas from new ones: specifically, a white area on the map means something new while a gray area means something current or conventional within the company. Technology personnel can come up with ideas by brainstorming with others and engaging in knowledge co-creation for service generation.

4. Methodology

To evaluate the effectiveness of our approach, we tested it in