

# From Customer Intelligence to Customer Understanding in Industrial Services

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**Abstract**—The paper suggests a new conceptual construct “Wheel of customer understanding” by bringing the concepts of customer intelligence, customer knowledge and service management together.

**Keywords**—*industrial service; customer understanding; customer information; customer intelligence; customer knowledge*

## I. INTRODUCTION

To gain a competitive advantage today, manufacturers in the industrial sector have to adopt new service-oriented mindset, i.e. service-dominant logic (e.g. [1] [2] [3] [4]) and to innovate and implement new service strategies. The shift from product-orientation to customer-orientation in industrial companies has its implications for overall product innovation and development. Reference [5] identifies inefficient or lacking customer intelligence processes as one reason for the barriers of new product development (NPD) process successes. Many organizations do not know what kinds of customer information they ought to be collecting, do not have the skills to do so even when they know and do not have formal processes designed to capture important customer information.

There is not much empirical research about what information about customers is needed. Furthermore, terminology used in the literature is varying and scattered. Concepts such as customer knowledge (e.g. [6] [7]), customer input (e.g. [8]), customer interaction (e.g. [9]) and voice of the customer [10] are used in the literature. Frequently, the concepts are defined on a very general level, if at all. Ref. [11] discusses the empirically based concept of customer understanding in the context of front end product development. She defines customer understanding as follows: “Customer understanding captures what can be offered to customers, thus it emerges as customer knowledge and possibilities as well as objectives of concept developers meet” (p. 159).

The purpose of the paper is to scrutinize customer understanding that is needed in industrial service innovation and development. The literature addressed comes from multiple sources, for example, from the literature addressing customer understanding, service innovation and development as well as from the area of information management to draw a multifaceted picture. The empirical study focuses on industrial B2B services that support customers' business processes and play a strategic role to the customers. The focal research project was carried out by VTT Technical Research Centre of Finland

and Turku School of Economics (TSE) and financed by Tekes – the Finnish Funding Agency for Technology and Innovation. The first phase of the empirical study applied a case study approach, a research strategy, which can involve either single or multiple cases to arrive at conclusions about a certain phenomenon, or to recognize complex interrelations and ambiguities of social life [12, p. 534] [13, pp. 34-35]. We focused on the interaction between different actors within the companies developing new services. The second phase of the study was a survey. The data was collected using Webropol questionnaire and analyzed by SPSS. Target companies were mainly from Scandinavia and Central Europe. They represented the same industries as the nine Finnish case companies. By this choice we wanted to gain more generalizability, understanding and benchmarking information of the vaguely explored industrial service development area. Thus, the evidence (data) of the study is both qualitative (interviews) and quantitative (survey with 65 respondents) aiming to build a picture about the phenomenon in multiple cases. We were interested in actors involved in service business and information they collected and transferred both in the company and outside it. Furthermore, we wanted to know from whom information was received and to whom it was given as well as about the means by which information was transferred and factors improving and building barriers to communication.

The paper is organized in the following way. After the introduction, successful service innovation and development is discussed in Chapter II. In the following chapter, the wheel of customer understanding is introduced and discussed with the findings of our study. Finally, conclusions are drawn and future research directions considered.

## II. SUCCESSFUL SERVICE INNOVATION AND DEVELOPMENT

That services differ from physical products in several important respects has been well documented thirty decades ago [14] [15] (see [16] for a summary). Four distinguishing characteristics - intangibility, simultaneity of production and consumption, heterogeneity of the service offering and perishability of services - generate unique problems that often require different kinds of marketing solutions. Ref. [17] identified four distinct performance factors that are associated with new service success. Each dimension represents an independent approach to gauging the success or failure of the service projects. They include Sales and market

share performance, Competitive performance, “Other Booster” and Cost performance.

Strong market- and marketing-orientation is the key to achieving a high level of Sales and Market Share. In addition, marketing-orientation within the firm is also essential. Preselling a new service to frontline personnel who have contact with potential clients and involving different functional specialties in the innovation process, play a key role in gaining market acceptance. Finally, choosing projects that fit with the firm’s core line of services and that benefit from its marketing proficiencies (e.g. sales force) are significant coefficients of Sales and Market Share success. For the Competitive Performance dimension, the dominant success variables are innovativeness and superior quality. As with Sales and Market Share Performance, success on the competitive dimension also requires an understanding of market needs and good internal marketing. In addition, formal prelaunch testing of the new service to make necessary adjustments and eliminate bugs is closely linked to getting a competitive edge. Projects characterizing successful “Other Booster” form of new service development performance usually are expert, auxiliary services aimed at the company’s existing client base. The new services are highly synergistic with the firm’s management skills, reputation and financial resources and take advantage of available expert and customer contact personnel. New service development projects that score high on the fourth success factor, Cost Performance, are improvements or modifications of existing services. These services also tend to fit well with available resources, including production and marketing, financial, expertise and managerial, producing important cost efficiencies. Other projects that improve Cost Performance are new services that respond to peaks or valleys in customer demand. Good internal communications and employee involvement in the stages of the new service development process are essential for success on this dimension.

The findings of the above study demonstrated that many firms appeared to have major problem holding back the firm’s new service development effort. New service development projects which are characterized by inadequate internal communications and which do not receive the attention they require from the different functional areas performed poorly on most of the success measures.

### III. WHEEL OF CUSTOMER UNDERSTANDING

From the communication perspective, innovation processes are often considered involving primarily the integration of new external information into pre-existing internal knowledge. Thus, the success of creating customer understanding depends of the absorptive capacity of the company, that is, the ability to integrate external information and knowledge that is important to innovation and development processes. Because the existing knowledge about and understanding of customers and markets is both tacit and explicit, there is a need for a continuous customer understanding process. The process of creating, maintaining and utilizing customer understanding is introduced

here as a Wheel of customer understanding and depicted in Figure 1. It consists of customer intelligence, knowledge management and service management.

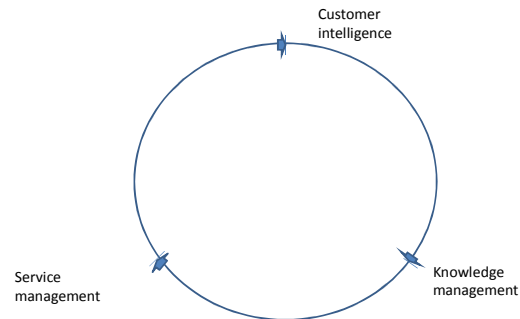


FIGURE I. WHEEL OF CUSTOMER UNDERSTANDING

#### A. Customer intelligence

Consistent customer and market understanding best comes from formal processes designed to generate customer and market intelligence and not from merely ad-hoc interactions with the marketplace. Processes that capture deep customer information about both current and possible future customer needs are very helpful in developing new products and have been referred to collectively in the broader marketing literature as “customer value-oriented marketing information systems” [18].

Case companies’ customer information consisted of information that is acquired by the supplying company from external sources. Internal information consists of external information transferred by company personnel within the organization and of internal information stored in different systems and databases. Customer information may be technical information about the condition of customer’s machines and equipment, production lines etc. Operational information is concerned with issues like customer’s perceptions about the supplier’s ability and willingness to serve the customers. Organizational information includes strategic information about customer organization’s structure, policies, future plans etc. Market information is general knowledge of customers’ industries and markets where they operate in. Market information may include political, economic and cultural as well as environmental and social factors.

Sources of customer information at the organizational level were customers, suppliers, different business units and subsidiaries of own organization like sales and marketing units, project business, product business, service business, import and spare parts supplying organizations in addition to different country organizations, regional units and competence centers. Furthermore, customer information is acquired from competitors, resellers, consulting companies and media. At the individual level, information is gathered and distributed by sales personnel, mechanics, maintenance staff and managers,

service employees, customer service personnel, technology managers and experts working with customers, key account managers, service and product developers, regional and country managers as well as general management.

### *B. Knowledge management*

The concepts of explicit and tacit knowledge first distinguished by Polanyi and popularized by [19] are of central importance to understand the objectivist and practice-based approaches to knowledge. Explicit knowledge refers to knowledge that can be articulated relatively easily in words, numbers, manuals and universal principles. Thus it can also be transferred relatively easily between individuals while tacit knowledge is highly personal and deeply rooted in personal experiences and background as well as personal ideas, emotions and values. Tacit knowledge refers to knowledge that is difficult to articulate using formal language and is therefore hard to formalize. This makes it also hard to share with others. [20] [21] [22] [19]. It is important for a business to build up an extensive customer knowledge database, as well as to develop the necessary mechanisms for acquisition, control, and publication of the information it contains. Ref. [23] argues that customer knowledge is an essential intangible asset for any company, because it enables them to create value for customers and themselves. Ref. [24] pointed out that workers should seize every opportunity for interaction with customers so that they can enrich their customer knowledge database.

Our study revealed that customer knowledge and information is not as well-organized as it should be to serve as an effective assistance in creating customer understanding and effective service development and production. The respondents used multiple means to acquire and transfer customer information. Different reports and measures, formal audits, surveys and systematic analysis of customer databases and project databases produce information about customers' behavior while maintenance reports and equipment audits, reclamations, remote control and diagnostic tools mediate technical information about machines, equipment and service. Knowledge is, however, mainly acquired and exchanged in multiple face-to-face situations. Examples of these are visits to customers and customers' visits to supplier premises, periodic customer meetings, seminars and workshops, lead user discussion groups, focus groups, different formal team and departmental meetings within own organization as well as informal discussions among colleagues both inside and outside own organization. Furthermore, information is exchanged in technical and commercial negotiations as well as in reference visits where a supplier and a customer together visit another customer. Still, information is gathered as feedback from testing and piloting new products and services. Some of the case companies have customer programs and idea competitions. One company maintains a discussion forum on the Internet.

IT systems play a vital part in information gathering, storing and dissemination in the case companies. CRM (Customer relationship management) systems, maintenance information and management systems, engineering information systems, project management and invention announcement systems as well as ERP (Enterprise resource planning) systems were mentioned by the respondents. Customer databases, digital reports of maintenance and repair visits, sales tools,

technical information bases on the intranet, as well as team tools are used in some companies. Furthermore, customer knowledge base was mentioned too. Telephone and email were also emphasized in many answers. Respondents also mentioned other than digital IT systems as systems for customer information transfer inside their own organization. These are, for example, monthly project meetings, monthly departmental meetings, team meetings and periodic briefings.

Non-documented, verbal information that is communicated in face-to-face situations and by telephone plays a crucial role in everyday communication. About 73 % of the survey respondents say that their main connection with their own company's personnel who are relevant to their work is face-to-face contact and 19 % use primarily e-mail when contacting others.

Personal networks are important in development projects. About 65 % of the survey respondents search information about previous development projects primarily through personal networks to find answers or to find the right person and 6 % search information primarily through grapevine. To find the right information, IT systems are primarily used by 30 % of the respondents.

### *C. Service management*

From customer understanding perspective service management is here defined as the utilization of internalized knowledge to innovate, produce, deliver and develop services. A service provider is often required to customize services to meet individual customer needs and to respond positively to changing customer requirements. Rapid technology development, and increased competition drives the service providers to continuously innovate and to focus on creatively using technology, knowledge and networks to provide services that create value for a customer [25] [26].

According to our study, the strategic decisions concerning the service business are mainly in the hands of the top management while the decisions about service concepts are more decentralized in the organizations. The direct involvement of customers in the innovation processes seem to be moderate. However, services (or solutions) are quite often piloted with customers.

As [17] stated, firms need a formal new service development process. The findings of her study confirm that all four performance dimensions are positively affected when companies use a formal and well managed new service development program. Active involvement by employees from different functional areas and use of a "drawing board" approach to designing services clearly influences how well the new service meets customer needs (sales performance), whether it is truly superior in some way to competitive services and to what extent it achieves cost advantages for the firm. In our study, only 12 % of the respondents told that service development activities were standardized in their company. Standardization takes such forms as ISO 9001 and other quality standards, process descriptions, process portfolios, and process standards and modules.

#### IV. CONCLUSIONS

The heterogeneity of industrial services is vast. The variety of industrial services yields for multiple ways of service management, innovation and development. Customer understanding and communication are crucial in service development. Present state of customer understanding, customer intelligence as well as customer knowledge and information management varies considerably between companies. Due to the easiness of producing and storing digital information, its amount is huge and finding the relevant information is difficult and time-consuming. Therefore, face-to-face information and personal networks are preferred in many cases. Furthermore, much of the customer information and knowledge is tacit knowledge, which is hard to explicate in digital systems. To effectively utilize the transfer of tacit knowledge, communication management is a vital part of customer knowledge creation. When a company is collecting customers' personal information, trading data, preferences, and so on, this information should be systematically organized into communicative customer knowledge. Here we need both digital and face-to-face organizational communication systems.

The main contribution of the paper is the Wheel of customer understanding. It combines service innovation, business intelligence and knowledge management with the overall service management. Naturally, this area needs further research. One interesting area worth future research is the different values, experiences and feelings of customers in, for example, different cultures and countries. For instance, according to the respondents in pulp and paper industry, Asian customers are not interested in buying maintenance and modernization services. Instead, they are willing to buy new better machines for their plants.

Due to industrial services' growing emphasis on the economy not only in companies but on the national level specifically in western countries, more research and understanding is needed in the area. In spite of the fact that the importance of customer understanding and knowledge in product and service development processes has long been recognized, its potential has not been widely studied.

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