

Customer value creation in the development of digital health services: discourse analysis

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Abstract

The study's aim was to describe how customer value creation is reflected in the development of digital health services. To this end, we used discourse analysis to evaluate documentation from the ODA (Self-Treatment and Digital Value Services) project, which provides national-scale digital health services.

Three main discourses emerged: 1) a discourse on the active role of the customer, 2) a discourse on technology that activates the customer to create value, and 3) a discourse on the benefits of customer value creation.

The research provided new insight into customer value creation in digital health service development. Speech about customer value creation was a part of the social reality of the digital health service's development. The customer appeared as an active player and a key resource within the service. The role of the active customer was considered demanding and responsible. Our findings suggest that the new digital service changed customer behavior, with technology acting as an enabler of this change. Customer activity and information sharing were seen as enablers of value creation and the associated benefits, and there was a willingness to strengthen the customer's role as a need determiner.

Keywords: health services, telemedicine, value creation

Introduction

Digitization strongly supports the empowerment of customers within the healthcare sector [1]. Most healthcare customers wish to find health-related information on the internet [2]. Healthcare organizations have sought to satisfy this demand

by establishing customer-facing digital health services such as Finland's Omaolo service. In Finland, the ODA (Self-Treatment and Digital Value Services) project provides digital health services for citizens and is designed to support citizens' self-care, prevention of health problems, independent coping and self-assessment of the need for the

services [3,4]. Because the ODA is a publicly funded healthcare project with a national scale, it was chosen as the context for a study on customer value creation in digital health services.

The close connection between the use of technology, the integration of resources, network thinking, and the active role of the customer is central in service theories, and particularly in service-dominant logic (SDL) [5,6]. According to SDL, in a dynamic service process, the customers are not objects of an activity but active co-producers of the service who are involved in the creation of value [7,8], are increasingly aware of their rights, and expect health services to better meet their needs [9]. Whereas the customer's role was previously seen mainly as one based on adapting to the service providers' offerings, customers are instead seen as subjects who seek information and options, make choices, and contribute to value creation [10,11]. SDL emphasizes the experience that the customer is going through [1]. The goal of value creation process is to provide solutions to meet the customers' needs [7,8] and the shared goal of value co-creation in healthcare services is the customer's good health [12,13].

According to SDL, value is always created through a dynamic relationship whereby customers and service providers integrate their resources and apply competencies. Therefore, value creation depends the integration of tangible and intangible resources as well as and the efforts of customers to maintain their health and well-being [14]. SDL also emphasizes service network thinking [14], stressing that customers do not only use the resources offered by the main service provider, but also use the resources of other public and private service providers, associations and peer group activities, as well as family and friends [13,14]. All

actors in these service networks are seen as resource integrators [5].

Customers' activities and efforts to promote their own health and well-being are another key element in value creation. The effort, intensity, and range of these activities are linked to the customer's values, quality of life, and service satisfaction. [10] Various models have been developed to describe customer value creation activities [e.g. 13-18] and have helped improve understanding of customer value creation.

Recent studies have focused on value co-creation in healthcare services and the importance of engaging patients and other actors in service delivery [20], and patient participation in co-creating value was shown to improve expected service outcomes [19]. Studies have found that customer participation in value co-creation has a positive impact on outcomes including quality of life [13]. Additionally, some studies on the co-creation of value have focused on patient value creating practice styles [21] as well as micro-level factors influencing value co-creation seen from the doctor-patient perspective [22] and the patient engagement perspective [23]. However, less attention has been paid to customers' roles as value creators in the context of digital health services. This aspect of value creation is important because the popularity of digital health services has increased over the past decade, especially following the outbreak of coronavirus disease 2019 (COVID-19) [24]. The traditional service-logic idea that value can be created only through direct interaction and that value can only be estimated based on outputs are being challenged by service digitalization, which has transformed thinking about value creation in the healthcare sector.

The aim of this study is to describe how customer value creation is reflected in the development of

digital health services. Understanding customer value creation improves customer knowledge and helps to develop more customer-oriented services. To this end, expressions relating to customers' value creation are analyzed to determine whether the social reality experienced during development work corresponds to the statement of customer orientation.

Material and methods

Data collection

The website of the Finnish Ministry of Social Affairs and Health [3] was searched to identify a project aiming to develop publicly funded customer-oriented digital health services with documentation available in Finnish. In this way, a key project of the Ministry entitled "Services responsive to client needs" (also known as the ODA project) and its subproject named "Acute consultation with intelligent symptom evaluations" were found. The subproject was selected for study because it satisfied all of the criteria specified above. The national ODA project aims to promote citizens' self-care by providing digital health services [3,4]. The manager of the local ODA project was contacted via the national ODA project owner to obtain project documents in her possession. The goal of the "Acute consultation with intelligent symptom evaluations" subproject is to develop a service based on an intelligent system that guides customers by combining information from different sources [25]. The purpose of this service was to provide a solution to the customers' needs and guide customers to appropriate services and treatments.

The data to be analyzed consisted of electronic project documents ($n = 37$), including 253 PowerPoint slides and 113 A4 text format pages. The documents were produced for different purposes

and included the opinions of diverse stakeholders involved in the service's development. The material consisted of a project plan, payment reports, meeting notes and PowerPoint presentations, a final report, and various development tools including a measurement plan, a benefit analysis, and Lean tools such as PDSAs and A3 documents.

Permission to conduct the research presented here was obtained from the project owner (an employee of the city of Oulu). The used data consisted of publicly available material. The project owner did not require the documents to be considered confidential or stipulate the preservation of anonymity when reporting the research.

This research focused on language and its impact on reality [26,27], and used discourse analysis as an analysis method. In this study, the healthcare organization was treated as a discursive structure [28] that is linguistically constructed and materialized in the form of project documents. Discourse analysis was used to examine what was and was not discussed during the project.

Data analysis

The material was initially analyzed by reviewing documents received from the project. Specifically, the material was searched to identify expressions relating to customer value creation. The model of customer value creation activities developed by Tommasetti et al. (2017) was used to operationalize the concept of value creation because it is consistent with SDL, applicable to healthcare, and describes customer activity as a value creator (Figure 1). Although the model is relatively new, it has already been used in a study exploring the use of social media technologies as a source of value creation in healthcare [29]. It should be noted that the Tommasetti et al. (2017) model was only used

to identify expressions relating to customer value creation; the subsequent analysis of those expressions was data-driven. According to the model,

value creation activities occur throughout the process, i.e. before the service is used, during its use, and afterwards.

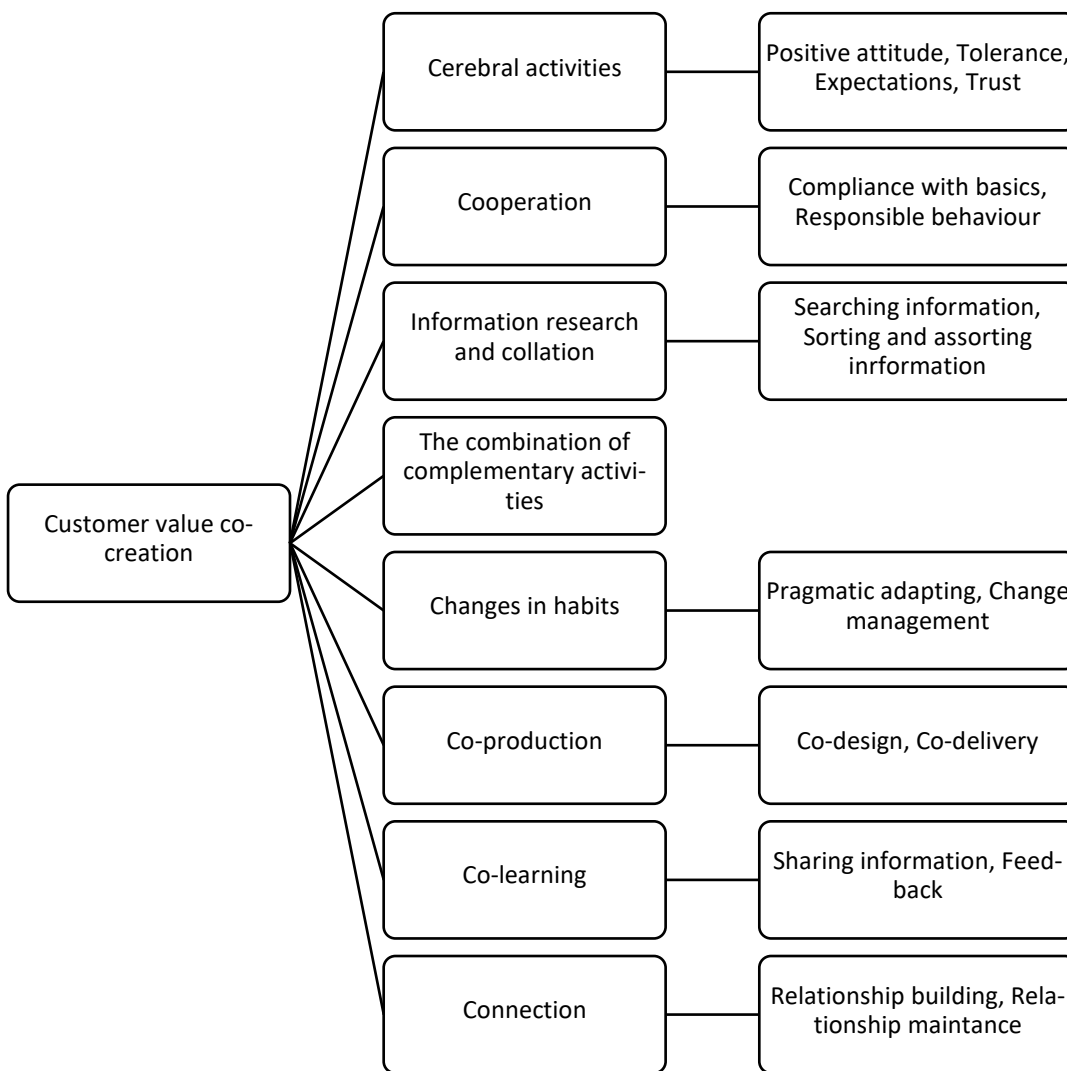


Figure 1. The model of customer value co-creation activities based on the work of Tommasetti et al. (2017).

The unit of analysis was sets of single or multiple sentences, which were transferred to an Excel table with their original spelling. Expressions relating to customer value were simultaneously selected by two researchers using the model of Tommasetti et al. (2017). In total, 154 original expressions relating to customer value creation were extracted from project documents. These original expressions were then reduced (i.e. condensed) without changing their original meaning. The reduced expressions (n=69) were added to the Excel table and grouped by the discourse analytical question-answer method, with the focal question being “What purpose does the expression serve?” [30]. An example of discourse analysis process is presented in Table 1. The research objective was to

perform a material-bound analysis of the finite material. In contrast to critical discourse analysis, we adopted a constructivist approach to discourse analysis because we are not interested in power but instances of social practice. The analytical focus was placed on the text because the goal was to study local social events, happening here and now [27]. Reductions serving the same purpose were grouped by data without presumptions, with the aim of being as open as possible to the material and content contained within [31]. Based on the grouping, 21 themes, six sub-discourses and three main discourses were identified (Table 2). Each of these discourses is exemplified with representative original expressions.

Table 1. An example of the discourse analysis process.

| Reduced expressions | Theme | Sub-discourse | Main discourse |
|---|--|--|---------------------------------|
| Customer is seen as a resource Customer can make use of various resources | Customer is part of the value creation process | Customer as an active actor | The active role of the customer |
| Citizen defines themselves Customer chooses Customer assesses their health Municipalities have capabilities Municipalities use digital services | Customer acts for their health | | |
| Test-customers are recruited Users/customers/municipalities/patients test the service | Customers test the service | Customer as a service developer | |
| User interviews are utilized in development Tester/customer gives feedback Development team creates user stories Customer asked for service stories Customer satisfaction is measured | Feedback is collected from testers | | |
| Customer may review their own information Customer utilizes technology to manage information | Customer manages the information | Customer as a co-producer of the service | |
| The system utilizes information The system combines information | Information is combined | | |

Table 2. Formation of discourses during the analysis process.

| Theme | Sub-discourse | Main discourse |
|--|--|--|
| Customer is part of the value creation process | Customer as an active actor | The active role of the customer |
| Customer acts for their health | | |
| Customer is willing to act | | |
| Customer responsibility is increased | | |
| Customers test the service | Customer as a service developer | |
| Feedback is collected from testers | | |
| Feedback guides development | | |
| Customer participates in development | | |
| Customer needs information | Customer as a co-producer of the service | |
| Customer manages the information | | |
| Customer produces information | | |
| Information is needed from the customer | | |
| Customer receives information and guidance | | |
| Information is combined | | |
| Service changes customer behaviour | Technology activates customer value creation | Technology that activates the customer to create value |
| Technology enables behavioural change | | |
| Customer needs are assessed | Need-based approach | Benefits of customer value creation |
| Customer receives need-based treatment | | |
| The customer's process improves | Customer orientation | |
| Customer service experience improves | | |
| The service creates value for the customer | | |

Results

Three main discourses emerged from the research material: 1) a discourse on the active role of the customer, 2) a discourse on technology that activates the customer to create value, and 3) a discourse on the benefits of customer value creation (Table 2).

The active role of the customer

The discourse on the *active role of the customer* as a value creator related to the customer's role. The customer made choices and defined, selected, and evaluated, i.e. actively sought improvements to their own health at different stages of the service process. Thus, the customer acted as a member of the care team. The assumptions concerning the customer's role were also described. Notably, the customer was expected to want to do things for themselves – for example, to find out about their state of health when they experienced symptoms, and to want to use digital services. The text noted a desire to strengthen the customer's active role by supporting self-care and increasing the customer's responsibility for their own health. It was stated that the role of the customer should be emphasized by making the customer's own activities more visible in the digital service. It was recognized that different customers needed different opportunities to manage themselves through self-care. Some original expressions relating to this discourse are quoted below:

"The goal is to increase the municipality's responsibility for promoting the customer's own well-being, to which the ODA service and renewed processes may respond well."

"First, the need for the service is recognized, then the customer retrieves information, is

directed to symptom assessment, performs a symptom assessment, receives home care instructions, requests comments from a professional, sends a symptom assessment to the professional, is identified by the system, sends a message, receives feedback, acts according to the instructions, and gives feedback."

"What can I do for myself?"

Another sub-discourse, in which the *customer participates actively in the development of a new digital health service*, also describes the active role of the customer. In addition to professionals and customers, municipalities, and patient organizations were involved in the service's development. During the service development phase, customers were referred to in different ways depending on their position in relation to the service: users, customers, municipalities, and patients were all asked to test the service under development. The active role of the customer in the development of the service encompassed the roles of the feedback provider, tester, and experience expert. Customers' feedback and experiences directed development:

"By collecting operational needs related to the whole service from municipalities and customers using different service design methods, e.g. customer panels."

"Patients can do (piloting) when the technical side is in order."

The third sub-discourse on the active role of the customer was co-production. In the language used in the healthcare project, the key element of co-production was the exchange of information and the active role of the customer as a seeker, manager, producer, and recipient of information. The

texts stated that information exchange was the core of the service and that the customer played a significant role in this exchange.

The customer's role was described as that of a producer and manager of information during the service process. The system utilized and integrated customer-generated health information and other information to produce the service. In this case, the information provided by the customer was critical to the success of the service. In addition, pre-information provided by the customer via the digital service system streamlines the process and directs the customer to a suitable professional and appropriate care. In the co-production sub-discourse, the customer's ability to manage information in a digital system was considered important. The customer's information was kept safe and they were able check it later if needed. The customer also used the technology to manage the progress of the service process and stayed informed about healthcare issues. In addition, the text stated that the customer needed and wanted information about their own health. The customer's role as a co-producer is illustrated by the following original expressions:

"When I make a symptom assessment, I can look back on my previous illness and medicine information. I can change the information if it's not up to date."

"The customer knows all the time how the process progresses and can ask specified questions as needed."

Technology that activates the customer to create value

The second main discourse related to the way in which technology established preconditions for

value-creating behavior and activated the customer for co-production. The customer generated information for symptom assessment, participated in care planning, retrieved information, and worked according to provided instructions. The text stated that technology brought the service to the customer and that the service was integrated into the customer's everyday life. The customer was seen to benefit from the use of technology, which improved the accessibility of the service, expedited the start of treatment, and increased the benefit of the service to the customer.

"When the need for a service arises, the customer retrieves information from the web, completes the symptom assessment form with his/her own information, gets instructions for home care, works according to the instructions, gives feedback ..."

"The product is being used as part of the care path ...in the customer's daily life (production phase)"

"Benefits of self-service: flexibility, speed, independence from time and place, self-influencing, smooth service, continuous monitoring, ease, more options, transparency."

Benefits of customer value creation

The need-based sub-discourse reassured the customer that their health-related discomfort would be treated, their needs would be identified, they would be directed to a suitable professional, and they would receive appropriate service. Digital symptom assessment confirmed the role of the customer as a definer of care needs. Previously, healthcare professionals classified the needs of some customers who came to reception as being

groundless, whereas other customers were judged to require consultation. The aim of testing the digital symptom assessment was to distinguish between value-generating work and so-called “wasted work”.

"If the customer's situation requires intervention, the customer knows who will perform it, what they will do and when they will do it. Interventions are chosen to best suit the situation of that customer."

"The symptoms of flu were often such that help from a professional was not needed but a consultation was performed nevertheless to address a variety of needs and wishes."

In addition to the need-based discourse, the project identified other benefits from customer service, as illustrated by a *customer-oriented sub-discourse* that emphasized the customer service experience. The digital health service was considered to improve patient and customer satisfaction, increase the sense of security, streamline the customer process, reduce waiting times, and improve the continuity of treatment. The service promised customers that it would help to promote health and well-being.

"Patient satisfaction and safety are improved: the number of negative feedback cases decreases, as do the numbers of complaints and reminders."

Discussion

The analysis produced new information on customer value creation in digital health service development. Three main discourses emerged: a discourse on the active role of the customer, a discourse on technology that activates the cus-

tomers to create value, and a discourse on the benefits of customer value creation.

Speech about customer value creation was a part of the social reality of the digital health service's development. The customer was seen as an active player and a key resource within the service, and the active role of the customer was based on a broad range of customer activities. Assumptions concerning the role of the active customer were also discussed; the active customer was considered to be both demanding and responsible. Fulfilment of these role assumptions seemed to require the customer to possess knowledge and expertise, as well as the mental capacity and motivation to perform self-care and take responsibility for their own health and act in a way that promotes their health. This is consistent with the SDL: customers are seen not as objects of activity but as active co-producers of the service who contribute to the creation of value [7,8]. A recent study Osei-Frimpong et al. [32] similarly highlighted customers as active co-producers of health services and noted that such active participation may enhance customers' commitment to following medical advice. Our analysis also indicated that the adoption of an active role was expected to support customers' self-care and responsibility for their own health when utilizing digital health services. Thus, both our findings and previous studies indicate that being given an active role and participating in service co-production may empower customers and promote a degree of responsibility for self-care [32,33].

The discourse on technology that activates the customer to create value emphasized the potential of the digital health service to expand the customer's activity. Our findings suggest that the new digital service changes customer behavior and that technology acts as an enabler in this context.

Technology was seen as both a tangible and an intangible resource. As a tangible resource, technology enables and supports self-care. The customer accesses the service through technology and technology enables data management and interaction between customers and professionals. Technology thus plays a central role in the exchange of information. The work of Osei-Frimpong et al. [33] supports these findings because it suggests that increasing customers' access to their health information improved their knowledge and empowered them to participate actively in service co-production. In our study, technology was also seen as an intangible resource because the digital health services act independently, integrate resources, provide instructions for home care, and suggest action plans for the customer. In the service development phase, technology was not seen only as a unit or an instrument. Instead, a broader perspective was adopted, allowing the technology's potential to also be seen in a broader context. Digital health services enable changes in customers' habits and behaviors, and permit integration of the service in their everyday life. Seeing technology as an intangible resource moves the value creation locus closer to the customer. According to Akaka and Vargo [34], viewing technology only as a tangible resource may limit the discovery of new ways to use technology in service development. As an intangible resource, technology is critical to value creation: it is seen as a resource integrator that can influence the customer's actions.

Major perceived benefits of customer value creation were customer orientation and need-basedness. There was a clear willingness to strengthen the role of the customer as a need determiner who participates in assessments of the need for the service by producing information. In this way, the customer gets the feeling of being heard and is directed to the right service. Custom-

ers' knowledge and sharing of information was critical in value creation. Customer activity and information sharing were seen as enabling the occurrence of value creation benefits. In this respect, our analysis confirmed previous findings [2] showing that knowledge in the service exchange and the sharing of information between providers and patients is critical to value co-creation. Finally, our analysis indicated that other benefits to customer value creation included improved customer orientation and service experiences, a streamlined service process, and an increase in the value achieved by the customer (i.e. improved customer health and well-being).

A limitation of this study is that bias originating from the researcher cannot be excluded in discourse analysis: the researcher's own context inevitably influences all choices and delimitations made during the analysis as well as any resulting solutions and interpretations [28]. This work provides an interpretative and context-related perspective on customer value creation [35]. The analysis and interpretation of the material was performed by two researchers familiar with the vocabulary of healthcare, which helped the researchers to understand the meaning of individual words. However, the researchers' pre-understanding of customers' value creation would also have influenced their interpretation of the data despite efforts to remain objective. A project organization is a temporary and unique form of work that is tied to a specific time and place. Therefore, the transferability of the analysis presented here will be limited by the context-relativeness of the research. However, the trustworthiness of the research is enhanced by the detailed description of the analysis, and its authenticity was strengthened by presenting the original expressions on which the analysis is based [31].

All of the various elements and activities of customer value creation [36] were represented in the language used with the exception of combining complementary activities. The focus group consulted during the service's development consisted of customers with acute conditions, i.e. temporary illnesses, meaning that peer groups and other social support were not essential to their value creation. If the research had instead focused on a project seeking to develop a service for customers with chronic illnesses, complementary activities may have been considered more important to customer value creation. Chronically ill patients often rely on family, friends and peer groups as part of a service network that can improve the customer's well-being [13] and add customer value. Finally, if we had interviewed customers directly, the customer's point of view may have been communicated more strongly. Instead, the customer's point of view was expressed in texts written by professionals.

Conclusions

The following conclusions were drawn from the analysis:

1. Digital health services emphasize the active and demanding role of the customer. Support for this

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demanding role can include digitalization and motivating people to take responsibility for their own health.

2. Digital services represent only one option for providing health services. Digital health services create new opportunities for increasing individuality in healthcare.

3. The customer plays an active role in providing information, which affects both the quality of care and the service experience. The latter factors are no longer independent of the customer, but it is possible for the customer to influence them through their own actions.

4. Examining customer value creation through language research revealed that SDL thinking in healthcare is going through a transitional phase: roles are being defined at the same time as digitalization is progressing, and there are some inconsistencies in the understanding of roles. However, the language used reveals a clear intent, and the transition to a digital service seems to provide a natural opportunity to think again about customer-ship.

Conflict of interest

None declared.

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