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Value Co-creation in Health Care: Insights into the Transformation from Value Creation to Value Co-creation through Digitization

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ABSTRACT

This study explores the transformation of value creation into value co-creation and how the digitization of services plays a key role in this transformation within the health-care sector, which faces new challenges with the increasingly active role of the customer. Customers are becoming active participants in value co-creation and now have expectations based on their needs from the service. The objective of this study is to provide a more holistic view of the customer's role and value co-creation within digital health-care services. This study emphasizes the necessity of the co-creation of value within the health-care sector and introduces a paradigm shift through the digitization of value co-creation. This study illustrates a new mode of interaction in value co-creation in which both parties are independent in their own spheres, but the service (via digital platform) is available to both and has a timewise continuum that differs dramatically from traditional episode-based meetings between the service provider and the customer. This study points out the necessity of increasing the customer orientation of health-care services development.

CCS Concepts

Information systems → Information systems applications → Human-centered computing → Human computer interaction (HCI) → Social and professional topics → Computing/technology policy

Keywords

Service logic; Service dominance logic; Value creation; Value co-creation; Digitization; Health-care

1. INTRODUCTION

The idea of value creation is currently the subject of active discussion in the health-care sector. This study explores the transformation of value creation into value co-creation and the way in which the digitization of services plays a key role in this transformation. Value creation is the central phenomenon in both service logic and service-dominance logic [1, 2]. Value creation itself is generally seen as a process in which both the service provider and the customer interact with each other. Value co-creation is a profound approach in which the customer is involved in creating the value. In value co-creation, both parties create mutual value via cooperation [1, 2]. The basic idea in service-dominance logic is that the customer,

through his or her active participation, ultimately defines the perceived value [1, 3]. Perceived value is a construct in which a variety of determinants and factors (such as price, quality, etc.) have an influence.

Within the health-care sector, the definition of value and the value offering are based on the betterment of the patient's condition, meaning that the services are produced for the patient. This can easily create the illusion that the patient or the customer is the focus. The planning of a service is often based on possibilities of production, cost containment, advancement of the science of medicine, or skills within the medical organization; whether or not customer requirements are met is seldom consciously considered [4]. The traditional focus of health-care service development has been on medicine or cost and not on the customer having personal expectations. Logically, service production and its related processes have been defined primarily from the producer's perspective [5, 6].

The empowerment of customers within the health-care sector is starting to gain a stronger foothold, however—one that digitization strongly supports. Two interesting questions we might ask include who defines the value of health-care services and when can value be defined within the service process. Value creation is an experiential process in which the customer creates the value “in-use” [2]. The transaction or the service content as such are not the focal point but are the process of the experience that the customer or patient is going through. The customer experiences value by being better or worse off after the experience; according to the idea of service logic, the target is the wellbeing of the customer or society in broad terms.

Within the health-care sector, starting with the terminology, the idea of customers and consumers is not well established [6]. The traditional terminology discusses customers using the term “patient,” which places the customer in an inferior position: that of an object that is subject to various actions and decisions and is not in the position of an active customer [6, 7]. In health care, the patient as a customer segment differs greatly from consumer market customers, but still we may find many similarities in the customer's expectation of the service. Recent discussions on hospital positioning and hospital marketing have established the term “health-care consumer” [8].

The recent development of digitization in consumer markets has created higher expectations of value for digital services, including health-care applications that use such services. Research on consumer adaptability and the use of new information technology is wide-ranging, and one could say that

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the field already has an established tradition. Several studies on the consumer acceptance of digital solutions have proposed theories on the ways in which consumers adapt and use new digital technology [9]. Studies on the use of information technology and the ways in which digital services in the health-care sector can improve customer involvement have not been pursued as comprehensively as they have within other consumer markets. The research that has been done on consumer behavior can be applied to the health-care sector, however, related to certain special features of the customer segment (i.e., patients).

The service-logic idea that value can be created only in direct interaction [2] and the idea that value can only be estimated by the output are now being challenged by the digitization of services, which has also transformed the traditional value-creation or service-process thinking in the health-care sector. Digital services are common in the travel industry, for example, where consumers are accustomed to shifting their buying behavior between the traditional methods of purchasing and the new digital services that are available. One could argue that the benefits that the digitization offers in providing the service can be restricted by the strict legislation and stipulation of health-care services. However, we may see analogies to many professional service sectors (such as banking) or to tax authorities who are very advanced in their digital-service offerings and have high standards of reliability and regulations. Likewise, the transformation of health-care services into digital formats or platforms must entail procedures to ensure that the services follow the legislation and are both credible and secure.

The transformation of services into digital format has been accelerated by the scarcity of resources in the wider economy. Although health care as an industry sector absorbs a majority of public expenditures in many countries [10], very few actual studies have been conducted on the ways in which digitization enables the transformation of value creation to value co-creation via customer interaction in health care. Common availability problems within health-care services are currently contributing to new ways of offering health-care services. One may see these availability issues in long lines for treatment; even calls from customers for acute help are often almost impossible to get through. Demands such as these challenge health-care service providers since resources cannot be increased to keep up with demand. Further, the cost development and the economic situation both enforce the requirement for patient self-care. These scarce resources for meeting increasing demand have forced health-care service providers to reach for new and different solutions to make health-care services both available and cost effective. In this area, the digitization of services will provide new solutions and possibilities to meet the currently unmet service demand.

The objective of this study is to provide a more holistic view of the customer's role and of value co-creation within digital health-care services. For this purpose, this study uses the four building blocks of interactions for value co-creation [11, 12] as a tool in identifying and categorizing the main factors that enable the transformation to value co-creation; these building blocks consist of dialogue, access, risks-benefits, and transparency.

This study discusses three approaches to the value co-creation of health-care services. First, it increases our knowledge and understanding of the transformative role of digitization in improving the availability of health-care services by making these services available in a completely new service format. Second, the study describes the changes in the interactions between customers and service providers through a shift in the timewise continuum of the available service.

Third, the study contributes to the discussion of the digitization of health-care services from the value co-creation perspective.

2. LITERATURE REVIEW

This study builds on the theories of service logic and service-dominance logic and their respective definitions of value creation; the study also makes use of ideas from the digital marketing field in the discussion, since the digitization of services (or “digital services”) is the transformative factor of value creation into value co-creation [13].

2.1 Value Creation

Value creation, value co-creation, and value production have distinct differences in the literature, but in practice they are used in mixed versions that describe the idea of producing additional value. All of this discussion within health care is understandably confusing, since the health-care industry has not been a leader in marketing science. Although value creation is often confused with value production, there is a difference: value production does not include the customer as an active participant in the process, and thus the producer can only make value propositions or value promises to the customer [1, 4]. Value co-production, in contrast, includes direct or indirect co-working with the customer; but still the focus is on the producer's processes, to which the customer makes an input through cooperation in information sharing and dialogue [15–18]. Value co-creation involves the customer as an active actor and participant in the process, where mutual interests exist and joint efforts create mutual value. Scholars have been engaged in an ongoing dispute over whether or not value can be co-created only in direct contact with customers or only with interactions with customers—or even without the direct involvement of the producer [1, 2]. In this dispute, digitization enables us to transfer the discussion to another sphere; we can actually create a new approach to the discussion of what “interaction” actually refers to.

2.2 Conceptualizing Value

The definition of “value” is a multifaceted issue, since one must first understand whose value is in question and who can define value. Value can be the customer's or provider's value or even their mutual value. Still, the term “value” is often unclear or is not understood in a unified way. Value is defined, for example, as consumers' assessment of their perceptions of what they receive and what they give [19]. Perceived value is an assessment, and thus quite a subjectively defined phenomenon [1]. Further, value has traditionally been related to utility traded against price, where value delivery is based on the exchange process [20].

Value has many multidimensional aspects to it that define if value is more utilitarian or “hedonic” in nature and describe how value is categorized based on the customer-value hierarchy [20, 21]. Value can also be seen as a very abstract phenomenon, as in “value-in-exchange” and “value-in-use” [2, 22]. Value-in-exchange refers to a utility as an output of a production process that can be exchanged for another utility (i.e., money); the process of the supplier is involved in the concept of value-in-exchange [2]. The value-in-use concept describes value creation as a process in which the customer feels better or worse off after its completion; as such, the value cannot be defined nor assessed before usage [2]. Value-in-use is the customer's experience-based definition of the value. Value creation is an experiential process in which the customer creates the value-in-use. The transaction per se is not the focal point, but rather the *process* of the experience the customer is going through is what is important. The customer experiences value by being better or worse off after the experience and, according to the idea of service logic, the target is the wellbeing of the customer or

society in general in broad terms. [2]. During the service process, not only the actual actions of the service provider matter but also 1) the holistic experience of the service situations, 2) the result in actual terms of being better off after the service (as in the case of health care), and 3) the result as an experience that turns into a sense of security or a feeling of happiness, both of which are significant phenomena that affect healthcare processes and their outcomes [2, 22, 23]. The customer experience during usage can easily be adapted to the service process and to the use of digital services.

These two schools (service logic and service-dominance logic) have different opinions about how customers are involved in the value-creation process. The main differences in these two paradigms is the locus point of value creation. Service-dominance logic defines value as always being co-created, whereas service logic holds that value is co-created only in direct or face-to-face interactions [1, 2]. To bring these two schools' conclusions closer to the realm of organizational impact, this study uses Prahalad and Ramaswamy's "DART" model (dialog, access, risk-benefits, and transparency) in value co-creation through interaction [11, 12]; the model presents several specific aspects in determining the factors of interaction through which value is co-created and emphasizes the idea that value is co-created. It interprets the co-creation process through the above-mentioned four factors or building blocks.

2.3 Digitization in Health Care

The digitization of services (and the increasing access to these services through digitization) has transformed traditional service-process thinking [24]. The service-logic idea that value can be created only in direct interactions and the idea that value can only be estimated by the output defined by the producer have also been the traditional means of understanding the service in the health-care sector. The direct interactions during appointments with patients is the traditional and dominant way to deliver the service, but it is a very resource-bound service method—a method that again is limited by scarce resources. Value creation in health care should be closely linked to the idea of service as a process and thus a series of interactions. The involvement of both parties in value creation occurs in a series of interactions instead of in single episodes, and the interaction process has a timewise continuum. The process may not be linear, however, since customers' activities do not necessarily follow producers' activities. This brings to mind the potential benefits of digitization, as the technology enables both parties to act independently and not simultaneously. This aspect shows one of the main differences in how Grönroos and Voima [2] view value co-creation. According to these authors, value can only be co-created in direct interactions (in contrast to Vargo and Lusch [1], who do not see the necessity of direct interaction); Grönroos and Voima argue that value can only be created by the customer.

Digitization provides a refreshing point of view to the arguments that the service and service-dominance logics present. In the health-care services sector, for example, digitization is starting to be oriented more toward social-marketing aspects and the digitization of services. Saarijärvi et al. [21] introduced technology as an enabler in value co-creation in their work. Technology offers a platform in which the customer and the service provider can interact in the best interests of both parties. Technology allows for value co-creation to be a process that takes place within and between service systems. Saarijärvi et al. [21] introduced three elements to address the conceptual complexity and to develop the analytical framework for this idea. There first must be an understanding of what kind of value is being created, and for whom. At this point we must define value, which, as discussed, is not always easy to do. Value has been defined in several

ways, but generally speaking, value is very much context dependent; in other words, the actors, situations, and resources involved affect the way in which value is understood. Second, value is also linked to a certain dynamic and is not static, since value is created by experiences [2, 14, 22, 23, 25, 26]. Then again, we may bypass the service-dominant-logic and service-logic discussions about who exactly is defining the value by simply taking both parties' views on value co-creation into account. The service provider should recognize the value that is being co-created for both parties, since the service provider is in a position to have a significant impact on both parties by also enabling and supporting the creation of customer value. In addition, Saarijärvi et al. [21] discussed the actors and their resources involved in creating the value; their third element is thus the mechanism of value creation in which technology plays a role.

The impact of digital marketing is not just a matter of moving the service platform to a digital model or adding a digital element; it creates dramatic changes in interactions, value co-creation mechanisms, and the way in which value is defined or perceived. The dispute between service-dominant logic and service logic over whether value is created or co-created can be taken to another discussion level through the digitization of services. Digitization transfers the need for immediate contact to another forum in which simultaneous interaction is unnecessary, since the platform changes the communication independently of location and time; in other words, the timewise continuum is extended.

This development of technology vis-à-vis digital customer solutions in health care is booming and has created completely new ways of interacting within the service process. The customer's role is changing from that of passive patient or treatment recipient to a responsible party and partner in the value co-creation process via the digital platform. Online behavior certainly differs from the actors' behavior in the traditional form of service. Consumer behavior and digital marketing now share a joint sphere.

3. METHODOLOGY

This study is based on a single case-study method. A single case evaluation was selected because the introduction of digital services in the health-care sector is a strongly growing phenomenon in a very complex environment, and the use of the case-study approach allows the researcher to observe the processes that form these services. Further, because no clear and identifiable strategies related to the implementation of digital services in the health-care sector are to be found, the study of a theoretical framework using a case study is the most feasible approach. A single case study serves in this paper as an example of the industry entering a new method of value creation and service provision. Single-case studies are also said to be feasible when exploring new phenomena under unusual circumstances [27]. For this study, the organization that we studied provided the case study, since very few references are to be found on the topic. The case that we have investigated is an interesting one, because researchers have scarcely studied the concept of value creation and the role of digitization in the transformation to a value co-creation model in relation to health-care services. This particular case study also provides us with a better understanding of the underlying drivers of the digitization of health-care services, as well as the consequences of this phenomenon in a complex environment.

The case was selected by the organization based on the company's experience and commitment in developing digital services in a completely new, systematic, and comprehensive way. The case is a high-level operator in its field of expertise that has invested years of effort and expertise into developing

viable digital-service offerings for the health-care sector in the extremely challenging areas of psychiatry and weight control. The first algorithms had already been defined for these services in digital format some seven years ago; despite strong resistance to the new way of offering the company's services and availability, the experts were persistent and continued to strive for a breakthrough. They can at last be said to have accomplished this.

The empirical material for the study was gathered based on various qualitative methods, including theme interviews, focus group interviews, and observations. The interviews were recorded for later reflection and further analysis. Qualitative research is generally thought to be subjective in nature and difficult to replicate [28], but because the development of value creation through digitization is a new phenomenon within the organization, there were few other ways to gather the experiences from the interviewees, and experiences are subjective by their very nature. The interviews were conducted using a snowball-sampling method [29] in which each interviewee suggested the next contact for interview. This resulted in seven interviews with different individuals, all of whom were active in designing, planning, creating, and establishing digital services in a defined manner in this particular health-care organization. Two more interviews were also conducted with people who have a strategic approach within the service design and architecture of these digital services in the health-care environment. The gathering of empirical material via the nine interviews continued until the information that the interviewees provided to us had started to become repetitive. All of these interviews were conducted as thematic interviews in which each interview focused on predetermined themes of the value co-creation DART building blocks of dialogue, access, risk assessment, and transparency [11, 12].

The interviewees provided additional insights into the topic of digital services as well as the challenges involved in establishing these services in the strictly stipulated environment of the health-care sector. We also conducted focus-group interviews in which fifteen people altogether (both from inside and outside the organization) participated; the thematic background for these was the same as with the individual interviews. The focus groups were comprised of people who had participated in the planning of digital services either directly or through commenting and providing feedback. One of the authors of the study also completed the empirical material by observing and gathering information from internal workgroups and digital-service workshops within the organization. All of this material provides a comprehensive understanding of the organization's actions and ideas about the process of value co-creation and service digitization.

All of the interviews were recorded and transcribed. Notes from the interviews were used to support the interview material and analysis. All of the interview materials, along with the notes, were reviewed and analyzed using the qualitative research program Atlas to secure better reliability and validity of the analyses. Using the Atlas processing, the research material was organized into the guiding themes of the interviews that had resulted in ideas about value co-creation factors through the digitization of health care.

4. FINDINGS

To meet its demand for health-care services, the case organization has chosen to take on an active role in developing digital health-care services. The target is to increase the availability of its services: in other words, to enable access to health-care services and aid for people in need. The case organization's strategy is to provide digital services with high-

standard professional expertise. The fundamental difference between this service and free health applications that can be downloaded anywhere is that the latter offer numerous instructions or opinions on health issues; instead, the organization offers only evidence-based, high-standard, professional services with correspondingly knowledgeable and suitably reliable and secure applications.

The case organization is a public health-care service provider that aims to offer maximum value to its customers without pursuing financial profit or otherwise maximizing economic results from its digital health-care service. As the medical director put it:

Our target is simply to maximize the welfare and quality of the medical service [and to combine it] with excellent services. [Medical director]

(Note that interview quotes in this paper have been edited very slightly for clarity and grammar; the editing has not affected the meaning in any way. The original transcripts are available upon request.) The development work at the case organization for high-standard, evidence-based digital health-care services started almost ten years ago and was focused on one specific area of medicine. The early stages of this process provoked strong resistance among professionals and practicing physicians; the pioneers in the development work were accused of leaving patients untreated and drifting between treatment options. This meant that the company faced enormous resistance to change (or to adapting new ways of treatment via digitization) and skepticism about the treatment process via a digital platform.

After years of persistent development work, however, the results are now starting to emerge. During 2015, the number of users of the digital health-care service tripled from the 2014 figure. By late 2015, the numbers were still low—only 7 percent (or 1,500) of the patients were customers who used the digital service—but the growth of this sector is accelerating. The benefits of the digital therapy service are that it is scalable, and the number of customers the service can accommodate is essentially limitless compared with the traditional face-to-face service. The service baseline is public and is openly available through the Finnish public health-care system, as well as through private clinics.

4.1 Value Co-creation through Digitization

Value creation in health care is often taken to be self-evident, but it is not taken for granted that a customer focus is the primary steering factor. The participants in the workgroup discussions recognized that a change in focus needs to occur:

We need to focus on the customer instead of our internal processes. [Physician, workgroup participant]

The question of who defines what value means to the customer remains open. In addition, value creation is often referred to as "creating additional value," but if the value is unclear, then the meaning of "additional value" is irrelevant. The health-care sector is strictly regulated, and the related professions are licensed. This has created a culture in which professionals use their medical expertise to define and produce value within the internal processes. According to service-dominance logic, this means that for customers, value proposals and the whole chain of value creation are not fully utilized. The culture is changing with increasing speed, however, and empowerment of the patient is now on the agenda of every service producer. But more than simply empowering the patient, one must view patients as customers who have knowledge of their individual conditions and ideas about their personal aims in the health-care process. With digitization, the empowerment is transferred

to value creation shifting toward value co-creation, where both parties work together in the process to create mutual value and value to each other. This is already the work process within the development work of digitalized health-care services. Successful development work for digital health-care services for professional use now utilizes the service providers' knowledge and processes and combines them with the results of working together with customer representatives, who provide their experience and knowledge of customer expectations.

The development work within the case organization has thus far been organized between the medical units and the IT department so that dedicated resources are available for the development work. The first evaluations started by identifying which services could be offered digitally (or would benefit the customer when offered digitally). Evaluations of the possibilities for providing and developing the service in a digital format then followed. After these two phases, the management decided whether or not to start the development work; it evaluated the service against the case organization's current (at the time) service architecture and created a clear definition process for the service design to follow. When the development work started, the patients and patient organizations also participated in the actual development work together with the health-care professionals. The possibility to influence and actively participate in the development work on the digital service has increased the organization's transparency and has made the customer the focal point in planning the processes.

The service was designed based on high-level medical professionalism and evidence-based research work. The service for the customer has followed defined research-based algorithms so that customers cannot create medical diagnoses for themselves, as that is the fundamental responsibility of doctors. But based on this algorithm, a "symptom navigator" directs the customers to the correct service point within the digital-service platform. Based on the algorithm behind the symptom navigator, customers are segmented and are offered the proper contacts to proceed in the service process. While the service algorithm requires the work of experts, the service was tested during the development work within a group of "experience-users" and patient-organization representatives in order to acquire their feedback on the development work.

4.2 Dialogue and Interaction

The digital-service platform enables both parties—the service provider and the customer—to engage in new kinds of interaction. Support is offered via the digital-service platform, but contact with the therapist is based on dialogue via the service platform and is not necessarily "online" in the traditional sense. Customers may operate independently (whether or not a therapist is available) using their own forums of information and self-care tasks; they may also leave questions for the therapist to answer later on that will be visible in the system. In addition, when customers use the service independently, the system recognizes (via the parameters of the algorithm) if they have experienced a change in their condition and thus require immediate medical assistance. An example would be the symptoms of suicidal behavior; in this case, the system would cancel the customer self-care and would urge the customer to seek immediate medical help instead.

The normal therapy process takes around one year, after which the therapist evaluates the process and the customer's state during and after the process for the physician who will be doing further medical decision making or treatment. The therapy process starts with a referral from the physician; the digital service includes online therapy at agreed-upon intervals

and durations. The challenge with online sessions is to find the best way to offer the personal touch that is often so important in the treatment process:

What [the] digitization of a health-care service mostly requires for value creation is a sufficient combining of the systematic way of treating [patients] with a sufficient amount of empathy. [Director, ICT Psychiatry]

The benefit of online psychiatric therapy is the independence of the therapist; in face-to-face sessions, in contrast, customers may become attached to a particular therapist. The more impersonalized online service supports the customer's self-care; it keeps the focus on the treatment and the acquisition of the correct information while avoiding attachment or dependency building. Digitization of the service does not eliminate the organization's medical responsibilities. The physicians are still responsible for the patients or customers, and the digital therapy is done only on a consulting basis in medical terms. If there is no response from the customer for a defined period of time, or if the symptoms that are received through the system refer to a severe condition, the customer is contacted directly; the service is then transferred to a traditional service with an identifiable therapist.

4.3 Availability and Affordability

The system navigator segments the customers and directs them to the correct service point. The customers can then access the open forum, where information is freely available and can be used for self-care. When the navigator points someone toward professional therapy, the customer is instructed to contact the physician to obtain a referral for the therapy service; the therapy process is then offered in digital format.

In the usage phase of the service, value co-creation is enabled from the beginning through interactions and dialogue during the service process. With the established digital service, the customer plays an active role in defining the diagnosis and planning the treatment with the therapist. Customers can choose which therapy format to utilize and how much face-to-face time will be required. Digitization enables access to the service even without direct interactions with the therapist, since the information is available online. The online service offers self-help tasks and information so that customers may proceed with the therapy even without the active online portion that is conducted with the therapist. Based on the algorithms behind the service, certain processes have been put in place to identify whether the customer should directly contact the therapist or physician in charge or should go directly to the emergency department for acute conditions. This has been the most criticized feature to date, since opponents claim that customers are left without help. But because the service is available around the clock, customers are supported all the time; in addition, help is available much more often than is the case with traditional treatment, where therapists or physicians are available only during working hours. (In-person visits generally also require long waiting times.)

Customers want a quick and easy service process that will be available whenever they need service; they want to be able to access the service whenever they want and wherever they happen to be located. Customers also want to control their service process, which is made transparent via digital platforms.

Accessibility and affordability are the key defining features steering the development of digital health-care services in public health care. [Medical director]

The traditional direct interactions within health-care services creates a hindrance to service by limiting availability through

time and resource constraints. Digitalized service is now revolutionizing the availability of health-care services. In the case organization's service, the digital service for mental therapy is openly available, as is the professional section for therapy with a referral from any physician (private or public); all is done at very low cost. The digital-therapy format is a process with set dates for the beginning and end of the therapy process. The normal duration for a digital therapy service is one year at a cost of €670 for the entire process. Therapists' availability is also extended, since one therapist can consult thirty customers daily instead of only five or six cases as is the case with traditional face-to-face consulting. If one compares this cost with the traditional therapy costs of face-to-face appointments—where one appointment can easily cost over €200, and the appointments are both resource-bound and scarce due to limited therapist availability—the advantages of digitalized service become clear.

We are casting our expertise into a black hole of unmet needs. We have the expert resources and therapists of the special health care, and through the digital service we can offer expert service [for] basic health care and handle the unmet needs. This level of expert service of special health care has not been available for the basic health care [when using] the traditional way. [Director, operating area of psychiatry]

Customers have access to the service at any hour from anywhere and are not bound to wait for the next meeting with the therapist. The information for the customers is stored and available for reviewing, instead of the customer having to try to remember what the therapist or physician told him or her; this prevents difficulties in understanding and receiving the information flow. In relation to value co-creation, this shifts the time aspect of the service and creates a time-continuum that is vastly different from the traditional way of meeting with the therapist. Access for support through self-care is available when needed, and the service offers access to the correct information. The digital service supports or "carries" the customer through times of need by attaining help between the online therapy sessions. (See Figure 1.)

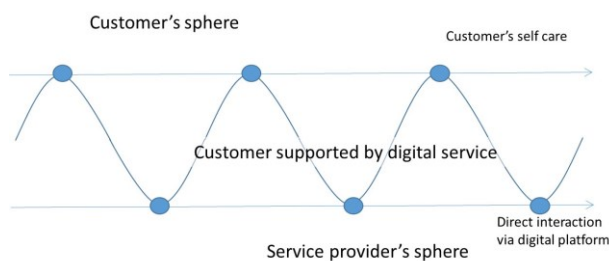


Figure 1. Customer support by the digitalized service

The empowerment of the customer in the value-creation process is currently taking the customer onboard in planning the service; what is even more crucial in the health-care sector is the self-care feature, which is supported by digital service solutions. The customer is given responsibility in supporting the treatment by actively participating and carrying out certain processes independently.

People want to engage themselves, and digitization enables us to transfer part of the work in the service process to the customer. This is what we mean by "self-care." Earlier, in traditional therapy, most unsuccessful therapies resulted because there were no requirements for the patients, who confused care with treatment. The digital service contains coaching features that allow the customer to act as an expert on his or her own life; the therapist is changed from

having a "know-it-all" status to being a mentor or coach who is enabled to empower the customer.

[Director, ICT Psychiatry]

These self-care features further support the therapists' availability, since the scarce health-care resources can be used more effectively in areas where professional expertise is required in the service process.

4.4. Risk-Benefits

Digitalized health-care services are increasing at an ever-growing speed. But because health-care services are strictly regulated, it is essential that the digital services should be carefully analyzed before entering the digitization process so that their role (in this case) in the case organization's service architecture can be evaluated. The digital services are connected to an enormous network of systems and connections in the health-care environment, and they encounter various regulations on the reliability and safety of handling patients' information. Regulations serve as a form of risk in the development work, in the sense that not every service feature can be established. For example, restrictions exist on how openly customers may be followed by monitoring their everyday lives with remote identifiers.

Legal and other authority regulations also enable the systematic development of high-quality standards. This makes the case organization's efforts valuable, as the service it offers reflects high professional standards and is based on medical evidence and research. Companies that offer various health applications are currently offering their services widely; providing such services through the Internet is a major field today, with varying levels of information quality and connectivity to other health-related services. The case organization's target is to offer high-quality medical services, and not applications for entertainment or fitness purposes. The development work for digitizing health-care services requires a careful understanding of the service architecture and regulations, followed by a high level of medical expertise. For the patient, this means reliability of the information that is provided, high service quality, and a high level of transparency of the process.

4.5. Transparency

The treatment program for the customer before and after a therapy or surgery session can be personalized using a digital service, since it is then possible to enter tasks and instructions that are directly relevant to the situation and condition of the customer. Such a system advances the transparency of the service process; in addition, the customer becomes an interactive actor in the service process, thus strongly contributing to value co-creation and the success of the treatment.

The main transparency-related achievement may be found in the increase in service quality. The care and treatment processes must be described in detail for the digitized service to proceed; the process is steered by algorithms and parameters. This means that every therapist follows the same procedures that are based on medical evidence and research. Variations in quality due to the person-related quality dependency are therefore diminished.

Because the customer is already involved in the planning phases of the treatment and is given responsibility through self-care, all of the information related to the customer and his or her condition is available all the time for reviewing within the service platform. It is possible for the customer to enter that information whenever needed and to reflect on the process and the treatment that they were provided with. This dispels the traditional "black box" between the specialist and the customer

by offering open and transparent information for both parties who are involved in the process.

5. DISCUSSION

The task of this study is to provide an overview of the marketing paradigms of service logic and service-dominance logic. This overview presents the similarities and differences between the approaches to value creation and value co-creation. The distinction between service logic and service dominance-logic appears to be the subject of much debate, and the role of the customer accordingly differs from different viewpoints [1, 2]. In terms of value co-creation, whether the customer is the only actor who can define value or whether value can be mutually defined is a matter of some debate. The second dispute relates to whether or not the value can be co-created by indirect interaction. Digitization offers several mechanisms for value co-creation that differ from previous discussions of interaction [21]. Just as a thesis needs an antithesis in order for the synthesis to emerge, this, too, is the case with service and service-dominance logic. These paradigms enable a paradigm shift through digitization; a new construct of value co-creation can be created through this shift as a synthesis of the two paradigms that are up for debate.

Service logic uses the point of view that value creation involves the customer in defining the value. The idea that the producer could only make value proposals and that the customer defines value are sources of some confusion. Service-dominance logic takes the approach that only the customer can define value. Again, in co-creation it would be impossible to think of a situation in which the service provider (along with its expertise and knowledge) would not play a significant role in defining value. The border between service logic and service-dominance logic is thus quite vague.

5.1 Managerial Implications

This study has a number of managerial implications. First, this research emphasizes the necessity of value co-creation in the health-care sector. The idea that the service provider makes value proposals has dominated the health-care sector's traditional way of operating within the producer's sphere. Such providers offer very expert-oriented services, the focus is on treatment or medicine, and the customer is involved no earlier than during the testing phases of the developmental work. Further, the customer plays the role of patient (which is traditionally a very passive role), and the value the service provider offers cannot be questioned or discussed, since the patient lacks the relevant information to engage in any meaningful discussion. Health-care services require medical expertise, but a successful treatment requires interaction and cooperation between the service provider and the customer in order to meet the general target of improved services. Value co-creation is thus imminent in digital-service format, since both parties' actions contribute to the advancement of the treatment processes and their outcomes.

Second, this study introduces a paradigm shift via digitization within value co-creation. Service logic and service-dominance logic have different definitions for issues that essentially cannot be viewed in black and white, since the complexity of these definitions is self-evident. For example, service logic and service-dominant logic provide different insights into when, exactly, the value is created. Service logic holds that value can be created only "in-use" or through experience, and only during direct interactions; the interaction between the service provider and the customer is the relevant building block for value co-creation. Interaction enables dialogue and the exchange of relevant information. Within the health-care sector, interactions and dialogue are traditionally limited to face-to-face appointments or episode-based

customer/patient treatment. This study illustrates a new way of interaction in value co-creation in which both parties are independent in their own spheres, but the service (via digital platform) is available and has a timewise continuum that differs dramatically from traditional episode-based meetings between the service provider and the customer. In this system, the customer is supported until both parties meet during the session via the digitized service. This timewise continuum through digitization enables the paradigm shift, while the definition of "interaction" changes from direct-indirect to time-independent interactions.

Third, this study points out the necessity of increasing the customer orientation of health-care services development. Communication and the language that is used should be adapted to this increasing customer focus. As long as customers in the health-care sector are only categorized as patients, the patient/customer will remain in an inferior and passive position and will remain a target for care or treatment. Health-care consumers bring to the discussion the idea that customers can choose and provide feedback, ultimately by changing their service provider. In public health care, the customer as patient is traditionally taken for granted; the customer is not an active consumer with different options. Communications with the customer should respect the customer relationship and should reflect the changing relationship through value co-creation.

5.2 Limitations and Future Research Directions

This study has several limitations related to the research context and the theory-building process. First, we have studied value creation in the health-care sector based on a case organization's newly established digital health-care services. While this study illustrates the transformation of value creation to value co-creation through digitization, it is limited in terms of which kinds of services can be established in digital format. Future research could illuminate the process of how services are currently selected for digitization. Second, the paradigm shift of service logic and service-dominance logic is a complex development process that has been enabled by digitization. While this study may open the discussion and bring new aspects to value co-creation through digitization, as a new approach it leaves numerous possibilities for investigating the paradigm's internal changes and development in the context of digitization. Third, this study refers to customers in the health-care sector as active players, without segmenting them. Future research on health-care customers' roles and changing expectations through digitization and empowerment will have enormous and interesting opportunities in opening up the health-care environment to the customer relationship (or even to health-care consumer) thinking. Fourth, a further expansion of the theory of value co-creation into service ecosystems would be relevant. The health-care sector is a vast ecosystem unto itself that consists of smaller ecosystems that are critically connected. This means that future research has numerous possibilities, especially given the emerging reforms of the public health-care and social-care systems in many countries. Fifth, this study has the approach of the service provide, which was a practical and conscious decision. A deeper understanding of the customer expectations for digital health care services can be obtained by focusing on the customer through customer i.e. patient involvement by interviewing or by other means of data gathering.

This research introduces several valuable insights into the increasing popularity of developing digitized health-care services. These findings and insights will have important implications for health-care service providers and for players in the field who are now developing these digital solutions.

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