Discovering Service Variations through Service Prototyping

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Abstract: Designing services require embracing the variability that makes it unique. This paper investigates how the use of a service prototyping technique enables participants to explore the variations inherent in services. The video data are analyzed using qualitative content analysis and the articulated variations are abstracted as categories. The resulting categories are then mapped across the service logic framework and the corresponding provider, joint and patient spheres. This paper aims to contribute to research on service prototyping by augmenting the use of prototyping methods to gain an understanding of the sources and possibly types of variations in a particular service. It clarifies how prototyping a service allows people untrained in design to diagnose variations that may occur in a future service and the decision-making process in accommodating variation. Further, the knowledge gained enables improved value co-creation opportunities in a service.

Keywords: Service Design, Service Logic, Service Prototyping, Variation, Value co-creation

1. Introduction

Imagine dining frequently at your favorite restaurant or visiting the healthcare center for your routine check-ups. How similar have each of your visits been? Do you consistently have the same experience? Quite often they are more different than one would imagine and these differences could be attributed to heterogeneity in services. Heterogeneity has been described as a distinct characteristic of services, in contrast to the nature of goods (Zeithaml, Parasuraman, & Berry, 1985). The challenge of dealing with variations is an everyday reality for most services, particularly those such as healthcare. The heterogeneous nature of services has been attributed to difficulty in standardization related to outcomes, production performance, time and predominantly the participation of customers (Moeller, 2010). Customers have been identified as the source of variations arising from arrival, request, capability, effort, and subjective preference (Moeller, 2010). While operations management theory rooted in manufacturing thrives on the elimination of variability, services require embracing the variations that make it unique (Frei, 2006). Recently, there has been a shift from a goods-dominant logic of service to a service dominant logic (Vargo & Lusch, 2004, 2008) and service logic (Grönroos, 2011). The design for service perspective acknowledges the
inability to completely plan services, but considers the potential to create the right conditions for interactions to take place (Meroni & Sangiorgi, 2011). Designing with variations in mind, has to some extent been captured by a few design tools and methods. For example, personas are used to model stakeholders and represent the different goal-oriented target groups (Holmlid & Evenson, 2008). They are then used to drive scenarios, which aid the value co-creation for a specific target group. The service blueprint is a tool that allows firms to map their service processes, physical evidence, contact actions from the customers’ perspective, and the underlying support processes, and accommodates fail points in a service (Shostack, 1982, 1984). As a tool for mapping an existing service, it is an abstract and diachronic technique (Diana, Pacenti, & Tassi, 2009). However, as a tool for prototyping a new service, it is a definite, static representation (Blomkvist & Segelström, 2014) that does not allow for emergence of phenomena. Therefore, it is less open to improvisation based on participants’ experiences, and to quick and agile experimentation with variations.

We suggest that the desktop walkthrough, as a service prototyping technique, is more conducive to exploring naturally occurring and/or deliberately introduced variations in service process. This study uses a qualitative approach to identify variations and maps the sources of arising variations using the service logic framework (Grönroos & Voima, 2013). This paper aims to understand the variations that participants introduced in the scenarios and how they were identified. Further, we examine how accommodating participants were in their perception of variation occurring from patients.

This paper aims to contribute to research on service prototyping by augmenting the use of prototyping methods to gain an understanding of the sources and possibly types of variations. It clarifies how prototyping a service allows people untrained in design to diagnose variations that may occur in a future service and the decision-making process in accommodating variation. We expect that actively prototyping with service variations would further enhance the benefits and help strategize to enhance value co-creation.

The next section provides a brief overview on service prototyping and service logic literature. The third section describes the method followed by a discussion of the findings. Finally, conclusions and future research avenues are presented.

2. Theoretical Background

2.1 Service Prototyping

Traditionally, prototypes in various design domains refer to physical, tangible representations of objects and artefacts. In that respect, service as a design object is unique due to its intangible, heterogeneous, inseparable and perishable characteristics (Zeithaml et al., 1985) as well as its relational and interactional nature. This makes prototyping services more challenging in comparison to other design objects, necessitating the creation of prototyping methods and techniques specifically suited to services. Blomkvist (2014) has attempted to adapt existing knowledge on prototyping in different design streams and transfer its applicability to service design. Adopting a situated cognition perspective, he positions service prototypes as surrogate situations representing future situations of service. The surrogate situation exists in a liminal or temporary state where design options can be explored. The imagined future situation, which is an approximation of the actual future situation, is used to evaluate and understand the talk-back from the surrogate. Prototyping refers to the activity of creating prototypes or a mindset, whereas prototype refers to the manifestation or representation of an idea or concept.
In this study, the desktop walkthrough method was used to prototype the healthcare service. Desktop walkthrough has been described as ‘a collaboratively constructed miniature of a service, and of which a set of artefacts (e.g. LEGO®) is used in the construction’ (Blomkvist, Fjuk, & Sayapina, 2016, p. 154). Desktop walkthrough as a design tool allows for the participation of people from diverse backgrounds. The use of LEGO for representation significantly reduces the skill level and/or specific knowledge required to conduct a walkthrough. They can be quickly arranged and introduced, and participants’ contribution can be more or less equally distributed. While the technique requires some kind of starting point (e.g. a scenario, a problem, a question etc.) the end point is left open. The outcome is an abstract, small-scale representation of a service and the knowledge generated during the activity. Desktop walkthroughs do not have any specific rules, however the time allocated for the exercise influences the end point (Blomkvist et al., 2016). This makes it an attractive technique to use, as participants require no prior knowledge to use it.

2.3 Service Logic

Within service marketing literature there has been a shift towards a service dominant logic (SDL) (Vargo & Lusch, 2004, 2008). Emphasis is laid on value co-creation between different actors within the network. Edvardsson, Gustafsson, and Roos (2005) posit service as a perspective on value creation and state that value creation is best understood from customers’ perception of value in use. In this study we utilize the service logic framework of value co-creation put forth by Grönroos and Voima (2013) (See Fig.1). In this framework, the customer, joint and provider spheres characterize the respective customer and provider actions as well as actions undertaken jointly. This distinction allows for the differentiation of roles and actions of the customer and service provider in the value creation process (Grönroos, 2008, 2011). The spheres express both direct and indirect interaction, which in turn lead to varying forms of value creation. The framework also underscores the opportunities for value co-creation through direct interaction.

The firm is responsible for the production processes and creates resources for the customer’s future (value in) use. The activities undertaken in this sphere enable customer’s value creation and are controlled by the firm. Thus, the firm assumes the role of value facilitator by providing potential value in use (Grönroos, 2011). In the joint sphere, the customer takes the lead in value creation. However, the provider may engage with the customer through direct interaction to impact their value creation and don the role of value co-creator. Value co-creation cannot occur in the absence of direct interaction (Grönroos, 2008; Grönroos & Ravald, 2011). Firm engagement with the customer may impact value creation positively, negatively or may have no impact on value creation at all. Uninvited engagement efforts from the provider side may actually result in value destruction activities.

Research shows that the interactive value formation process involving the customer and the firm may lead to not only value co-creation but also value co-destruction (Echeverri & Skålén, 2011). In order to switch from value facilitator to co-creator, the provider needs to develop a nuanced understanding of the customer’s resource integration for creating value in use. Value creation in the customer sphere takes place independently (Grönroos, 2011). This sphere is closed to the provider and the provider is once again relegated to the passive role of value facilitator.

Grönroos and Voima (2013, p. 142) define the customer sphere as:

"the experiential sphere, outside direct interactions, where value-in-use (real value) emerges (is created) through the user’s accumulation of experiences with resources

\footnote{Italics in original}
and processes (and their outcomes) in social, physical, mental, temporal, and/or spatial contexts.”

However, it must be noted that the spheres are dynamic and that value creation does not occur in a linear fashion.

![Service Logic framework for Value Creation. Adapted from Grönroos and Voima (2013)](image)

3. Method

3.1 Workshop setting and Data

The ideation and prototyping workshop was organized as part of an ongoing healthcare project. The workshop was held with healthcare personnel from different primary care centers. The goal was to promote patient-centered care and enhance services aimed at chronically ill patients. It was spread over two days and was planned by the project team consisting of two project leaders and a service designer. The authors and one other researcher were invited as observers and to inspire participants by sharing past experiences. During the workshop the authors observed the participants during the idea generation and service prototyping phases, where the desktop walkthrough technique was used. However, none of the researchers played an active role in facilitation.

There were a total of 19 participants excluding the researchers and the project team. 17 participants were healthcare personnel, all of whom deal with patients daily in some capacity, spread across four primary healthcare centers (PHCs) (See Table 1) and two participants were from the county council administration. The participants worked with insights gathered over the first six months of the project to generate ideas for new ways of providing or improving care for chronically ill patients. This included interviews, observations and survey data from patients at their respective PHCs. They were asked to come up with at least three ideas. The next day participants were invited to select one of their ideas and try out prototyping their service. They were introduced to the desktop walkthrough
method and were provided with LEGO®, polystyrene figures, pens, sharpies, paper, straws and other material to help construct their prototypes. They were given a total of 1.5 hours to create a prototype and then present it to the group.

The presentation of each walkthrough and the ensuing discussion and feedback were video recorded using a mobile phone. This resulted in four videos corresponding to each PHC (see Table 1). Center C and Center D have been excluded from this analysis. Center C presented a desktop walkthrough using a metaphoric concept of a boat. This was different from the others who presented journeys through their own PHCs. Center D was excluded as one of the authors partook in the development of the walkthrough due to the small size of the group (only two participants). Further, both Center A and Center B have chosen to tackle the same illness i.e. diabetes in this project.

3.2 Analysis

Qualitative content analysis based on the approach of Graneheim and Lundman (2004) was used to analyze the video data. The analysis deals with both manifest content i.e. obvious, visible components and latent content, which refers to the underlying meaning of the communication unit (Downe - Wamboldt, 1992; Kondracki, Wellman, & Amundson, 2002). This allows a coding process of the explicit intents as well as analyzing the implicit meanings. The analysis started with the transcription of the video data by the author. This was followed by reading the text, which elicited a comprehensive understanding of the data. The next step was to divide the written text into meaning units. A meaning unit contains features related to each other with respect to the content and could be a part of a sentence, a whole sentence or a paragraph (Eriksson & Svedlund, 2007). This primary analysis was corroborated by the co-author. In the following step, the meaning units related to manifest content were condensed in to a description, and those related to latent content were interpreted and abstracted at a higher, yet still logical level (Graneheim & Lundman, 2004). The meaning units were coded objectively. Emerging categories were identified and meaning units were sorted into related categories accordingly. Once the categories and sub categories crystallized, they were then mapped according to the service logic framework.
4. Discussion

4.1 Results

We present our findings of the articulated variations within the purview of the service logic framework. The framework indicates the sources of the variations where the healthcare provider sphere corresponds to the provider sphere, while the patient sphere corresponds to the customer sphere (See Figure 3).

HEALTHCARE PROVIDER SPHERE

From the provider perspective two categories emerged: organization-related and employee-related. Transfer of information is one of the organization-related sub-categories. Participants discussed the need to provide information consistently to patients. To them, this was an important step in patient care. A1 elucidates “What's the problem now is that it sometimes can be a bit of information there than if you come there or if you come there or if you are talking on the phone. And then confused, the patient does a little as they wish to.” However, they were critical of how internal communication of information is managed. As a result, variation in the informational content received by employees and subsequently delivered to patients may arise. They acknowledged that strategic decisions, of who delivers internal and/or external information when, had to be made prior to rolling out any service. Another point of variation they expressed was the impact of differing management styles. Participants also aired the difficulties experienced due to misunderstanding terminology used by their colleagues thus illustrating a variation in language used.

One of the explanations of information disparity could also be attributed to the diversity of the staff i.e. full-time, part-time and temporary staff. Participants articulated the variations in staffing that can occur at any given time thereby affecting the provision care. The roles of the part-time and temporary staff are less defined and they may lack knowledge of what is available and how can one support the patient. A2 clarifies, “we have set up a new routine too, so that one of the doctors actually shows the new doctors or temporary doctors. They'll get the same information about how the processes are.” The educational schools of personnel also contributed to the variation in care giving and understanding of employee expectations. As A1 states, “The classes that we have every other week, repeating to get consensus. There are different schools of course, we cannot cast all in the same mold.” One of the latent variations uncovered was the attitude of the care giving staff and how this might impact the service outcome.
JOINT SPHERE

Three partially overlapping variation categories emerged in the joint sphere due to the collaborative nature of the activities: process-related, patient-related, and information-related. Participants used the service prototype to exhibit the ways in which a patient can become part of the care process. A1 explains, “For only when we drew it up, we saw that it was quite troublesome to go through all these steps. And it is possible that they do not want to go (through) all these steps.” They accounted for variance in the process in terms of new versus returning patients. They created different points of entry for the patient to choose from and recognized that the actors in the service at different stations may vary. They also showed that variations may occur in the way touchpoints are ordered by allowing patients to undertake self-assessments either before or after the consultation. Further, a latent variation in terms of tone and delivery of consultation was implied. Center A also demonstrated variation as occurring at a particular physical station. Here they stated the patient could use the provided iPad to collect information, book appointment times or perform assessments. One latent aspect of variations highlighted vis-à-vis goal setting and evaluation for the patient was if the practitioner sets the target or if the practitioner and the patient undertake the target setting activity collaboratively. B2 explains, “We also talked about how to measure the goals... and we diabetes nurses look at diabetes, etc.?“ A3 compliments this with “one can always think about, can they do it together with health professionals in some way. Could it be done with a relative, is there such a solution? There’s obviously ways that one can go.” One participant also stressed the variations in patient experiences as being good or not good.

Difficulties in communicating information to the patient spilled into the joint sphere as well. A4 specifically asks, “How do I know it’s the same information as a patient?” Thus, highlighting the consideration for the patient. Some participants also underscored the importance of understanding patients’ varying capability of literacy and how information should be communicated to those who cannot read or write. Another information-related source of variation mentioned stems from the dispersal media. Some of the examples of information outlets are website, waiting room display screens, and iPads at different stations/rooms.
PATIENT SPHERE

While no clear categories emerged from the meaning units related specifically to patients, the red thread appears to be related to patient mindset and behavior. B1 reflects on patient ability, “some patients they may be hooked onto this at once and will not need to go ahead and meet someone else but they might get their physical activity on prescription. While there are others, that are more difficult, who do not have it as easy.” Patient (non)compliance to prescribed treatments is a bone of contention plaguing healthcare personnel. They discussed how patients continue to smoke or not follow a recommended diet, although they know it is harmful. This implicitly points to variations in patients’ motivations. Moreover, their motivation also affects how they plan their follow up times for consultations. Participants explicitly brought up the variation that occurs in the follow up time between patients. The discussion on patient capability, prompted further dialogue on the external support a patient receives.

4.2 Implications

Service prototypes are used to prototype and represent current and/or future situations of services (Blomkvist, 2014). Service prototyping is an iterative process where whole services or parts of a service are tested in order to refine the quality of ideated solutions (Blomkvist & Segelström, 2014). Blomkvist and Segelström (2014) adopt a distributive cognition perspective to enunciate the benefits of prototypes as external representations. The results of this study concur their findings that the desktop walkthrough technique supports inferential reasoning, facilitates re-representation and serves as shareable objects of thought. However, the prototypes not only helped the teams articulate insights but also allowed them to address the variations inherent in the service both explicitly and implicitly. Consequently, participants were able to engage in dialogue and reframe parts of or whole service journeys based on the variations they came across. For example, they discussed having different points of entry and an introduction to the treatment procedures specifically for new patients. For existing patients, they suggested creating support groups including healthcare personnel to guide them through their treatments. Thus, having an external representation and prototyping their ideas also afforded the teams foresight to plan for the variations in service.

In terms of variation, prototyping the service facilitated partial expression of at least four out of the five types of variability (Frei, 2006) introduced by customers, in this case patients. Arrival variability corresponds to the patients (in)ability to space their follow-up appointments. This is perhaps because patients themselves cannot foresee their need for timely treatment. Patients’ capability variability has been discussed in terms of patient literacy and how information dispersal might be modified for those who cannot read or write. Patient motivation to set and meet targets is a reflection of the effort variability arising in a healthcare setting. Further, patients also vary in their opinions of how they experience the treatment or consultation. This may be good or not good leading to a subjective preference variability. While request variability was not explicitly expressed, it can be accounted for in the somewhat monopolistic nature of the public healthcare system. Here, personnel are required to cater to all patients irrespective of their needs and preferences. Participants also articulated variations arising from the organizational process and its employees. This is consistent with findings in extant literature that attribute heterogeneity to outcomes (Beaven & Scotti, 1990; Lovelock & Gummesson, 2004) and the production performance of different persons (Lovelock & Gummesson, 2004; Zeithaml et al., 1985). However, Moeller (2010) suggests that customer resources should be the reference object of heterogeneity. She recommends that organizations focus on this rather than the consequences, such as heterogeneity of outcomes. In the light of our findings this appears somewhat logical. Participants adjusted processes in order to accommodate the variations arising.

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from their patients, which led to the development of differing patient journeys. However, the variations in the provider sphere cannot be ignored. As our findings show, employee mindsets and organizational flows can also be sources of variation. While these variations cannot necessarily be reduced, understanding them can help create more meaningful encounters with patients.

From the value creation perspective, this study maps the articulated variations to the specific spheres within the service logic framework. Thus, it provides a sense of the actions that need to be undertaken by the healthcare providers to:

- Facilitate value creation for the patients by creating the right preconditions in their organizational processes and by building shared understanding among the employees.
- Co-create value by positively engaging with the patients during the joint activities such as consultations, treatments, and support groups.
- Gain an understanding of the activities in the patient sphere to influence and facilitate value creation outside the joint sphere.

Grönroos and Voima (2013, p. 142) suggest expanding the joint sphere towards the provider sphere by including customers in the earlier phases such as design and development of services. This workshop did not comprise any patients as participants thus restricting the value co-creation opportunities. Further, they emphasize the value of direct interactions in the joint sphere and gaining access to the customer sphere (Grönroos & Voima, 2013, p. 147). The patient sphere indeed seems to be a grey area for healthcare personnel. There seems to be little understanding of the patient outside of the joint sphere. Voima, Heinonen, Strandvik, Mickelsson, and Arantola-Hattab (2011, p. 4) conceptualize customer ecosystems defined as “systems of actors related to the customer that are relevant concerning a specific service”. This conceptualization becomes particularly relevant in understanding patient ecosystems, specially those patients whose capabilities are reduced. In such cases, it is imperative to understand the support systems that patients rely on in order to provide them with appropriate resources for their value creation. We expect that actively prototyping with service variations would further enhance the benefits and help strategize to enhance value co-creation. However, proceeding with caution is advised as mismanagement of interactions could lead to value destruction (Echeverri & Skålén, 2011).

5. Conclusions and Future Research

This paper contributes to research on service prototyping by augmenting the use of prototyping methods to gain an understanding of the sources and types of variations. It clarifies how prototyping a service allows people untrained in design to diagnose variations that may occur in a future service and the decision-making process in accommodating variation. However, this study presents findings in relation to only one prototyping technique in a specific context. Future research could investigate the usefulness of other prototyping techniques in uncovering variations and how they might differ in terms of knowledge generated. Further, research across different sectors could provide deeper insights on the type of variations that can be uncovered.
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