

Developing Rural Healthcare Services: How to Create Efficient Services Using Service Design Methods

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Abstract. This paper presents a workshop model that can be used to develop digital healthcare services in rural communities. The workshop model is based on a case study done in South Africa in the context of health-related information and communication services. Participants in this case study were semi-trained home-based health caregivers working in rural communities. The research was structured around design methods drawn mainly from the service design field that enable user participation in the development process and that create a common understanding and mission through increased empathy among participants as well as co-creative flows while working together. The primary outcome from the case study was a workshop model, which focused on investigating and developing solutions to address the most important caregiver needs during a typical working day. This leads to interactions, which increases empathy among the participants. The goal of the case study was to design a mobile application that makes the caregivers' services more efficient. This research is part of the Critical Communication, Safety and Human-centered Services of the Future (CRICS) project, which runs from 2016–2017, and which is funded by Tekes, the Finnish Funding Agency for Technology and Innovation. It was conducted in cooperation with Cape Peninsula University of Technology (CPUT), Cape Town, South Africa.

Introduction

This case study was conducted in two communities, Genadendal/Greyton and Grabouw in South Africa. Both communities are poor rural villages located

roughly 70–140 kilometers from the city of Cape Town. It focused on the healthcare work of semi-trained caregivers who provide basic healthcare services to people in their own homes and who support people suffering from tuberculosis (TB), human immunodeficiency virus infection and acquired immune deficiency syndrome (HIV/AIDS), and other chronic conditions. The main challenges in these rural communities are poor communication and information sharing among caregivers who encounter difficult cases and patients. Health-related information in rural communities is still recorded in paper-based systems because there is no access to computers (de la Harpe et al. 2013). Additional challenges include long distances, weather conditions, and language barriers. Moreover, the caregivers walk from house to house, which makes their working day physically exhausting. This was recognized during the observations and interviews that were conducted for this study. There is a need to develop more efficient healthcare services that can provide better knowledge and quality to caregivers whose skills might be limited, but who often face very difficult challenges in healthcare situations in rural communities. The workshop focused on how to create efficient healthcare services using service design methods. Using the information obtained from the workshops conducted in this case study, the paper will answer the following research question: is the use of the service design method valuable in workshops conducted in rural communities?

The intended outcome of this study was to develop a workshop model for collecting relevant data from stakeholders without disturbing their everyday work flow. The paper does not present the created service concepts; rather, it uses some of them as examples to clarify the outcomes and findings generated by the workshop model. The workshop model was divided into four main phases: 1) fieldwork to better understand the healthcare work being done in these communities; 2) an understanding session, which focused on gaining a more in-depth understanding of the work and the communication and information needs of the caregivers; 3) a service prototyping session to concretize the service needs as an application, and 4) a testing session, where users (caregivers) tried the application demos. More details about these phases will be provided in this paper. As a result of the case study, important and interesting aspects between interaction and empathy were found. The workshop model as a healthcare services development tool also provided a platform for generating conversations, enhancing learning, deepening understanding, and creating empathy.

Methods

The study involved qualitative research with design methods that are mainly used in the service design field. Service design provides tools and methods for human-centered and participatory approaches, and it is used to either improve existing services or create new ones for clients and service providers (Miettinen, 2016;

Polaine, Løvlie, & Reason, 2013; Oosterom et al., 2010). Involving users in design processes is a way to influence the development of services, increase equality during the design process, and increase empathy among the participants through a common understanding. Service design and its participatory approaches (especially prototyping) have an impact on the possibility for transformation and common learning (Kuure, Miettinen, & Alhonsuo, 2014). Mager (2009) noted that the service design method uses co-creation in two ways. First, it integrates users into the design process and adds their expertise to the project; and, second, it adds value to the service delivery process because users play an active role in it.

The case study data were gathered by observing the daily working routines of the participants (caregivers in rural communities), by interviewing them, and by involving them in co-designing sessions. In addition, one researcher kept her own notes in a research diary. Furthermore, a group interview with the participants was held after the all workshops.

The Case Study

The case study involved three separate cases (n=18; n=11; n=14) in different communities, and the workshop model was implemented in all of them. It should be noted that some divergence existed between the approaches used, and the session structures and methods used in the workshop model reflect the different resources and time limits of each of these cases.

Workshop Model

The workshop model was divided into four main components: 1) fieldwork, 2) an understanding session, 3) a prototyping session, and 4) a testing session (Figure 1). It follows a service design research process model (Oosterom, 2009; Mager, 2004; Moritz, 2005), but it has been modified for the needs of the healthcare sector, which usually involves time limits, multi-level services, and processes that use different systems and communication tools.

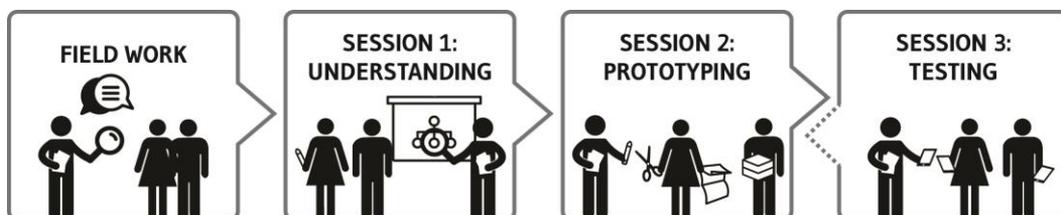


Figure 1. The workshop model

The fieldwork session consisted of observations and interviews to help the researchers (who were also service designers) understand the normal workdays of the caregivers. The aim was to identify the five main phases of the workday, starting from the morning and ending in the evening. It is obvious that the needs related to specific tasks/actions (also known as jobs to be done) diverged during the day. Thus, these five phases enabled us to identify the main needs in more depth in the understanding session.

The understanding session focused on visualizing the big picture of the healthcare professionals' working day. In this session, a template was used to make it easier to effectively facilitate the process of understanding. The five main phases of the working day were used as the core of the template. For each of the five phases, the participants visualized their existing communication links. The aim was to clarify the person or people they are calling, mailing, and/or talking to during each phase. After this, the participants used sticky notes to write their comments about tasks/actions, touchpoints, communication and information needs, existing cooperation or applications that work well, and pain points, as well as their ideas and aspirations related to each of the five working phases. The last step of this session was to define the emotions that each of the participants felt in each of the five phases. This was found to be a strong tool for gaining a common understanding about their needs and empathy for their experiences because the participants realized how similar their feelings were (mainly sadness and anger). They started to discuss more about how they felt; through that interaction they somehow empowered each other. After this, the main design challenges of the working process were identified. These design challenges were solved in the subsequent prototyping session (session 2). The visualization also helped provide a deeper understanding of the features and actions that were needed to support the caregivers' everyday work life, such as a smartphone and digital applications.

The third phase, the prototyping session, involved more hands-on work. In that session, the participants built and concretized a prototype of a digital application with minimum viable features based on the visual process picture and the main needs that were previously identified. Prototypes, also called probes, should be as simple as possible, and they should have a single, main function. Basically, the participants created five different application layouts suitable for each of the five work day phases. As an example, in one case the first phase was waking up, and the caregivers often felt very stressed about home visits and weather forecasts. Based on those needs, they created a layout of an application designing how it would look when they opened the phone and what they would first see when they viewed it. Consequently, the application home page showed symbols of existing weather forecasts and a list of patients, so the caregivers could prepare themselves beforehand for home visits, and in doing that, they could provide the best possible healthcare services to their patients.

The primary aim of the final phase, the testing session, was to test the usability of the concepts developed and to obtain feedback from real users. In this case study, information technology (IT) students from Cape Peninsula University of Technology (CPUT) developed application demos based on the concepts obtained from the prototyping sessions. The students coded applications with more functions, which enabled better feedback for the digital services. The feedback helped the students further evaluate the effectiveness of the applications.

Findings and Conclusion

The fieldwork done for the case study helped the researchers get to know the participating caregivers in the two rural communities that were the focus of this project. This made it easier to work with them in the co-sessions. It also played a crucial role in enabling the researchers to perceive details about the five phases of the caregivers' typical working day. The understanding session showed that, through visualizing the process and mapping emotions, it was easier for the caregivers to identify and discuss their personal challenges, ideas, and aspirations. That discussion led to an intensive group conversation where the participants learned that others were facing the same challenges. That was a good starting point for the co-creative flow, where everyone was motivated to develop their processes and services with greater efficiency and better quality. According to the researcher's notes, the sessions increased the level of empathy and empowerment among the caregivers. This strengthened these communities and the relationships within them. This is the value of service design in the workshops done in rural communities in South Africa. It is important to note that, after every workshop, the participants asked if they could apply the template used in the understanding session to other health-related challenges.

Based on the feedback collected through interviews after each of the cases, the participants were satisfied with how they could influence the service concepts from beginning to end. The understanding sessions increased the caregivers' empathy and empowered them in their work. The prototyping session was difficult for them because they felt that it was hard to create visual layouts based on design challenges. However, they were very surprised at how the IT students created the application demos for the test sessions.

The workshop model provides tools for improving the efficiency and effectiveness of healthcare services, which can improve quality of care whether the services are provided in cities or in rural communities. The values of this model are its service design and its co-creation and visualization tools, which were used in the understanding session. By first dividing the working day into five phases, and then focusing on identifying the main challenges and determining the most important information and communication needs for each of the phases, it

was possible to conduct effective sessions and create applications for efficient ways to communicate and obtain and share health-related information.

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