Participatory Design Of Consumer-Oriented Technology-Enabled Services

Arzoo Atiq  
University of Auckland, Auckland, New Zealand, a.atiq@auckland.ac.nz

Lesley Gardner  
University of Auckland, Auckland, New Zealand, l.gardner@auckland.ac.nz

Ananth Srinivasan  
University of Auckland, Auckland, New Zealand, a.srinivasan@auckland.ac.nz

Follow this and additional works at: http://aisel.aisnet.org/pacis2012

Recommended Citation  
http://aisel.aisnet.org/pacis2012/184

This material is brought to you by the Pacific Asia Conference on Information Systems (PACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in PACIS 2012 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
PARTICIPATORY DESIGN OF CONSUMER-ORIENTED TECHNOLOGY-ENABLED SERVICES

Arzoo Atiq, University of Auckland, Auckland, New Zealand, a.atiq@auckland.ac.nz
Lesley Gardner, University of Auckland, Auckland, New Zealand, l.gardner@auckland.ac.nz
Ananth Srinivasan, University of Auckland, Auckland, New Zealand, a.srinivasan@auckland.ac.nz

Abstract
The objective of this research is to investigate the effectiveness of including consumers in the design of technology-enabled services. The distinguishing aspect of our research is the use of an interdisciplinary emerging field of service science, which takes a holistic approach to understanding service system dynamics. We use three complementary frameworks to analyse the research questions. We believe that each of the frameworks that we use has the potential to add a different level of detail to analysis. This paper discusses the research objective and the theoretical foundations along with research methodology that we utilise in this work. The focus of this paper is on presenting the three frameworks for qualitative analysis. Therefore, it draws out the themes that have the potential to be used in the analysis. From this research, we want to bring together the shared aims of these frameworks for studying and improving the system design in service science.

Keywords: Service Science, Service Design
1 INTRODUCTION

The objective of this research is to investigate the effectiveness of including consumers in the design of technology-enabled services. The distinguishing aspect of our research is the use of an interdisciplinary emerging field of service science, which takes a holistic approach to understanding service system dynamics.

In the case of information-based services, the typical “consumer” has traditionally been an individual within the organization that produces information. However, recent interest in these services is shifting toward the layperson who has no functional relationship (e.g. an employee) with the organization that produces the information in the first place. Hence, there is a need to define “consumer-oriented services” from the perspective of a consumer who exists outside organizational boundaries. This research has therefore investigated such consumer-centric and technology-enabled services; IPTV services, broadband services and value-added services in the telecommunication sector. Accordingly, the unit of analysis for our research is “technology-enabled consumer-oriented service type”.

From the above discussion, two research questions emerge: How can organizations facilitate the design processes of their service offerings through consumer interactions; What consumer-provider interactions lead to particular outcomes in services design? It is important to make consumer-provider interactions effective for facilitating the service design process. Therefore, there is a need to investigate, how the generated and shared knowledge resulted from the interactions be developed for facilitation of the service design process (Yoo 2010). Moreover, the author suggests that there is a need to design solutions for a heterogeneous set of people, sharing heterogeneous information, using heterogeneous media. Thus, there is a need to keep in mind these three factors as design constraints in technology-enabled service design especially in the case of consumer oriented services.

In our research, the co-creation of value results from the active involvement of consumers with the firms. Value is therefore, generated from the process of interactions between consumers and firm while designing the service functional aspects (Wikstrom 1996). Moreover, according to Wikstrom (1996), organizations should consider the inclusion of consumer preferences and suggestions as a resource to their organization to achieve better results while designing services with consumers.

This particular work-in-progress paper is around the theoretical foundations and research design used in the research.

2 THEORETICAL FOUNDATIONS

The research constructs include the role of providers, role of consumers, and their interaction in the design of technology-enabled services for value co-creation.

The research makes use of four major theoretical frameworks in the field of service science. As the research takes a holistic approach in studying the consumer-provider interactions, the four frameworks help in interpretation at a different level of detail. As depicted in figure 1, at the first level and for positioning of the research, the basic theoretical framework of service science is used, according to which, “organizations, consumer, and economies are instances of a service system” (Spohrer et al. 2008). Fundamental to this theory is that the consumer and provider work together and co-produce value. Therefore, the role of people and their interaction in the facilitation of effective design of technology-enabled services formed the basis of our investigation. Subsequently, in order to collect data, two suggestions highlighted in Maglio et al. (2006) are used, in which he initially asked the service scientist to identify the stakeholders and interview them “to look for the problems and opportunities.” Then, “the service scientist has to create a formal model of service system emphasizing on the interactions and their roles within the service system.” Thus, the identification of stakeholders started before the data collection, and they became the respondents in our research. The interview questions asked from different stakeholders are given in the appendix A. The main purpose of these
interviews is to look for the service design through which consumers interact with the providers. These service design scenarios are not as straightforward as like any other company (Ostrom et al. 2010) the case organization also does not have a separate business unit that deals with the service design. Hence, the different processes through which various services are conceptualized in the organization and delivered are investigated. Subsequently, the formal models will be developed in the first level of analysis, in which the themes will emerge from the data.

Subsequently, analysis at the second level will use, “Value co-creation conceptual model” (Gronroos 2011a; Gronroos 2011b) as a framework. This is a Scandinavian perspective on service systems and organisations. This framework provides a basic abstraction layer to value co-creation with the least number of constructs but is powerful enough to capture the essence of value co-creation. The themes are discussed in detail later in the data analysis section of the paper.

At the third level, “SD-Logic for service science” (Vargo et al. 2010) will be used as a framework for analysing this data. This framework has its roots in the marketing discipline. It has been suggested by various service science scientists (Spohrer et al. 2008) for further empirical research and captures holistically all the constructs that should form the foundation of service science. SD-Logic has ten foundational premises (FP1..FP10). These are, according to the authors form a dynamic service-centred context for investigating “exchange-related phenomena” (Vargo et al. 2010).

<table>
<thead>
<tr>
<th>Research Conceptual Themes</th>
<th>Model of Value co-creation</th>
<th>SD-Logic for service science</th>
<th>Metamodel for service design</th>
</tr>
</thead>
</table>
| Role of Consumer           | Focal customers, fellow customers | FP6: customer is always a co-creator  
FP8: service is customer-oriented | Customer, customer participant, non-customer participant |
| Role of Provider           | Employees                   | FP6: FP7: the firm can only offer value propositions  
Organisation as resource integrators | Customers but termed as internal customers |
| Interaction                | Platforms for co-creation   | FP6: value creation is interactional  
FP2: indirect exchange masks the fundamental basis of exchange. | Not explicitly defined but service systems, their immediate relations to and interactions with their customers is modelled |
<p>| Service design             | Service concept uses value co-creating platforms in order to experience the outcome. | FP1: Service is exchanged for service, Interaction, Serving, experiencing | The whole model comprising of all the elements is for service design in operation |</p>
<table>
<thead>
<tr>
<th>Technology-enabled (services) /Resources</th>
<th>Tangible &amp; intangible resources</th>
<th>FP1: application of specialized skills</th>
<th>Participants, technological entities, informational entities, and other resources e.g. office buildings, natural resources etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value co-creation</td>
<td>Value co-creation occurs using interaction</td>
<td>FP10: Value is contextual and meaning laden FP3: goods derive their value through use</td>
<td>In agreement with FP6 and concept of value constellations</td>
</tr>
<tr>
<td>Output</td>
<td>Experienced Service</td>
<td>FP1: service, experiencing, serving</td>
<td>It does not deal with value capture outside of the boundaries of the original service system</td>
</tr>
</tbody>
</table>

Table 1: Mapping of Research themes

However, at the fourth level, “meta-model for service design” (Alter 2011) will be used. This draws from the information systems discipline and takes a system driven view of services. This is of particular interest in this research because it captures elements specific to service design in operations and therefore, provides detailed insights. Hence, the use of these frameworks from various disciplines adds different levels of detail to this research.

Table 1 shows the conceptual themes from where this research started (Atiq et al. 2011) and their linkages to the three frameworks discussed in this paper. It is interesting to note that the three frameworks are very close to the conceptual themes, and yet they add different level of detail to each.

3 RESEARCH DESIGN:

The study design is qualitative fieldwork comprising interviews and participant observation as data collection methodologies. Qualitative research focuses on people and their context (Myers 2009) while the focus of fieldwork is on “a form of inquiry in which one immerses oneself personally in the ongoing social activities” (Wolcott 2005). Place, actors, and activities identify the social situations (Spradley 1980). For our investigation, “place” is a telecommunication organization, “actors” are the employees of the same organization “activities” are the service design processes respectively. Qualitative research has an ability to observe the decision-making process of humans in their context, thus making it suitable for the identified research problem. For the evaluation of processes and the mechanics involved therein, qualitative research methods are preferred over other research methods, to capture the intricacies of the interactions.

This is an explanatory research that investigates relationships and discusses, “how the inquiry may create opportunities for empowerment” (Marshall and Rossman 1999). One of the inherent objectives of this research is to investigate whether consumers can be a part of the service development process. Thus, this research will evaluate the co-design of service processes in the context of an emerging economy. In analyzing current practices, the researcher’s role is to comprehend the useful mechanics of engaging consumers in the service design process.

3.1 Data Collection

In order to collect data, as mentioned above, two suggestions highlighted in Maglio et al. (2006) are used, in which he initially asked the service scientist to identify the stakeholders and interview them “to look for the problems and opportunities.” Then, “the service scientist has to create a formal model of service system emphasizing on the interactions and their roles within the service system.”

Taking these suggestions further, the fieldwork was completed in a telecommunication organization and specifically stakeholders involved in planning, designing, delivering, and consuming of the services were interviewed. The research site is one of the largest telecommunication companies in an emerging country. Its principal activity is to provide telecommunication services throughout the
country. The group provides domestic and international services and other communication facilities like cellular mobile telephonic services in the country. The company comprises of around two thousand telephone exchanges across the country providing the largest fixed line network.

The unit of the analysis is “service types” and the services of IPTV, mobile broadband services and value added services on fixed-line services were investigated. Overall, 28 interviews from the employees within the organization, and 7 focus group interviews from the consumers were collected. Moreover, 98 questionnaires from the consumers were collected to complement the consumer interviews. The primary researcher also completed the data transcription and data translations of all the interviews. At present, the data is being analysed using Nvivo 9, a computer-assisted-qualitative-data-analysis-software (CAQDAS) primarily for data organization and management.

3.2 Data Analysis

In analysing the data, three frameworks will be applied to this data as mentioned previously. Before the application of these frameworks, the first round of analysis will draw themes from the data. It brings fresh perspectives from the data. However, this poses a problem of connecting the findings back to the literature. Therefore, to improve the conceptual power, depth, and comprehensiveness in our analysis, use of theories plays an important role (Bernard and Ryan 2010).

By using three frameworks, the research attempts to bring together the commonalities and differences that should shape any investigation around service design. The objective is to see how these frameworks contribute to answer the research questions proposed within the given context and can be used further to include the consumers in the design of services they are using.

3.2.1 Analysis using Value co-creation Model:

The value co-creation model suggests interaction as a platform for co-creation. The model articulates resources as physical resources, employees, focal customers, and fellow customers. The activities that these resources perform are accessibility effects, which can be mental, virtual, and physical. Other groups of activities are interactive communication and peer communication. Interactive communication refers to the consumer and provider interactions while peer communication is among fellow consumers. Essentially, the model suggests service concept is an input to interaction platform comprising of different resources and activities that result in experienced service. In our research, the technology-enablement comes as implicit resource along with the interaction of consumers and providers.

Figure 2: Themes to be used from Model of Value Co-Creation
Figure 2 depicts an example of the model that is created from the above-mentioned constructs of the value co-creation model. These are stored as nodes in Nvivo project in order to map them to the collected data. The figure starts from a parent node; the value co-creation model, which has then four larger ellipses as child nodes; service concept, activities, resources and experienced services. These four themes have sub-categories that add details to each parent node. Subsequently, for illustrative purposes, the figure is generated through model generation in Nvivo 9, displaying all the themes added as nodes for data analysis.

3.2.2 Service Dominant-Logic for Service Science:

According to SD-Logic for service science, there are five major themes; service, interactions, resources, system, and values as depicted in figure 3. The model again starts from SD-Logic for Service Science and displays the key themes in larger ellipses. Then, in each of these themes, there are sub-themes that are adding detail to each major theme. These major and sub-themes are added in Nvivo 9 as parent and child nodes for data analysis. Subsequently, for illustrative purposes, a model is generated using Nvivo.

As depicted in figure 3, service has relationships, collaborations, serving, and experience as sub-categories. Similarly, interactions refer to collaborative communication and learning via exchange. These sub-themes belong to different major themes, but they overlap because of interaction. Interaction plays an important role in service, communications, and learning.

![Figure 3: Themes to be used from SD-Logic for Service Design](image)

The theme of value has value co-creation, value-in-context, and value proposing. SD-Logic proposes, “value co-creation is the driver of interaction”. Value-in-context, however, emphasizes on the time and place dimensions for value creation. Similarly, value proposing refers to the inability of the provider to provide value, as they can only propose value propositions to the consumers.

The study of systems according to SD-Logic essentially “incorporates the exploration of networks and the relationships and resources that establish links within and among them”. Resource integration then refers to the integration of networks of resources, multiple actors, their relationships in order to create value networks. By symmetric information, SD-logic emphasizes the impact of symmetric exchange of information and resources for the benefit of contributing parties.

There is major emphasis on resources, which comprise of operant resources and resourcing. Resourcing is an activity of creating value by the application of potential resources. It further divides into creation of resources, integration of resources and removal of resistances. The operant resources, however, refer to knowledge and skills, which are generally intangible in nature. In SD-Logic, “the customers, employees and other stakeholders are operant resources, as they act of other resources to create value”.

3.2.3 Metamodel of Service Design:

Figure 4 depicts all the themes that will be used from the metamodel of service design for this research. The model starts from Metamodel for service design, and has six child nodes depicted as larger ellipses, making six key themes in our analysis. There is some overlapping in the sub-themes of the model, which emphasize that the major themes if intention, structure, service systems, value constellations, resources, and service activities affect each other in the creation of effective service design.

This model adds more details to the analysis by focusing more on service design in operations. This model has also the potential to illustrate the existing service design processes of the organization. It works around three levels of detail within itself. The outermost hierarchy deals with the environment, strategy, and value constellations. The second level takes an overview of the service system, while the third level dives into the service activities and other operational details.

![Figure 4: Themes to be used from Metamodel for Service design](image)

The metamodel suggests design thinking to be implemented from enterprise level to service system along with relevant value constellations and their environment. Moreover, the consideration of available human, informational, and technical infrastructure is important for managing the service system. At the service system level, the customer groups, products/services produced for those groups, the processes and participants involved, and the information and technological entities form the basis of analysis. Service activities are about the role of actors in the service system and the resources that are used for each activity. The metamodel emphasizes the interplay of resources, structure, and intentions. A strategy encapsulates the intentions related to the stakeholders of the service system, while structure refers to enterprise, organization, and value constellations.

4 CONCLUSION AND FUTURE RESEARCH PLAN

The paper presented three complimentary frameworks’ usage for the purpose of qualitative data analysis. It has extracted the themes from each of the framework that will add different level of detail to the data analysis. From this research, we want to bring together the shared aims of these frameworks for studying and improving the system design in service science.

This is an on-going research and therefore, future research plan is actual mapping of the data and the extracted themes.
References


Gronroos, C. 2011b. "Value Co-Creation: Towards a Conceptual Model." Otago Forum-3, from marketing.otago.ac.nz


Appendix 1:

INTERVIEW TYPE ONE WITH MANAGERS:

This interview is targeted to learn about the managerial practices with respect to their services planning and implementation. It also tends to explore what managers want from their designers. Specifically, these interview questions would look at the interaction level of managers with their designers and top-management, the communicating practices involved and how they engage their designers in any new services and who initiates a new service and how services are maintained and enhanced? And what level of interaction they offer to their consumers.

1. Who initiates a new service? Do the businesses approach you for launching any personalized service for their organization?
2. How do you interact with your clients/consumers?
3. What methodologies do you employ for maintaining and enhancing a service?
4. How do you formally implement any constructive feedback from the consumers of the service?
5. Which services do you think are responsible for generating revenues?
6. How you communicate the requirements to the designers? Are there any formal methods?
7. How the new ventures are taken by the top management?
8. How much time it takes in Pakistan for people to adopt a new service?
9. How many designers work on one service?

INTERVIEW TYPE TWO WITH DESIGNERS:

The intention of these interviews is to get the in-depth knowledge of designing, and implementations of mobile services in Pakistan. It is intended to look at their methodologies and compare them with the past literature. These interviews will be the initial step for later observations as well. It would give me a chance to better observe the practices in the later phases.

1. Who initiates the services? If businesses communicate you their requirements, what methodologies do you usually choose during requirements gathering phase?
2. Do you interact with your consumers before designing any new service for mass production (not for businesses)? Any scenario generation before proceeding with a new service?
3. How do you work on the interaction points with the consumer when you are re-designing a service?
4. How do you formally implement any constructive feedback from the consumers of the service?
5. What difficulties do you face when designing a service for mass production? And for organizations?