

Involving users in the design of sharing economy services

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Abstract. Involving users in the design of sharing economy services is important to realize the expected growth in this market. However, such involvement may be challenging due to the complexity and networked character of the service context. We present a case study showing how users' online feedback on novel design concepts may represent a viable approach to user involvement. In particular, the feedback provides insight into the strengths and weaknesses of proposed concepts as well as suggestions of relevance to the subsequent design process. On the basis of the case study, lessons learnt are discussed, as is needed future research.

Keywords: Sharing economy, user involvement, online design feedback.

1 Introduction

The sharing economy is expected to see substantial growth in Europe the coming years, with an estimated potential value of 570 billion Euros in 2025 [1]. The European Commission has pointed out the high potential for new businesses in this market [2].

To realize this growth, there is a need for sharing economy services that are seen as attractive and useful to a broad user group, to ensure a sufficient uptake. For this purpose, a user-centred approach is essential throughout the stages of designing, implementing and evaluating sharing economy services [3].

However, involving users in such design and development is challenging. First, the resource demand for user involvement may be prohibitive for involving users sufficiently early in the process of ideation and concept formation. Second, novel sharing economy concepts may be difficult to represent so that they may be tried out directly by users.

In response to these challenges, we have explored the use of online design feedback for novel sharing economy concepts. The work is conducted as part of an innovation project on sharing economy services and business models, specifically addressing online redistribution markets. In this paper, we first discuss the challenges of involving users in the design of sharing economy services. Then, we present a case study of user involvement through an online system for design feedback. Finally, we present lessons learnt and suggest future challenges.

2 User-centred design of sharing economy services

2.1 Sharing economy services

Sharing behaviour has existed as long as humankind. However, with the increased prevalence of Internet-based consumer devices, the sharing economy and collaborative consumption has emerged as a new way of accessing goods and services, where digital platforms are applied to connect the supply and demand side [4]. Botsman and Rogers [5] distinguish three main areas of collaborative consumption, including *collaborative lifestyles*, leveraging sharing of non-tangible assets such as skills and competencies, *product-service systems*, concerning the sharing of tangible assets such as consumer goods, and *redistribution markets*, addressing peer-to-peer distribution of used goods.

Sharing economy services typically concern the utilization of residual value, that is, making use of resources that would otherwise go to waste. Often, but not always, the end users of sharing economy services are non-professionals. With a digital platform connecting users, typically a provider/seller and a consumer/buyer, sharing economy services represent two-sided markets [6].

2.2 The challenge of user involvement in sharing economy service design

The current landscape of sharing economy services is characterized by a small number of large, transnational service providers such as AirBnB, Uber, some established providers dominating specific countries or regions, and a sprawling underwood of newcomer service providers aiming to capture markets shares from the established service providers and target new markets.

While future innovation in the sharing economy may depend on newcomer service providers, these are challenged in terms of involving users in the design process. As opposed to established service providers, access to users is challenging, and resources for involving users in design processes are scarce. Hence, in practical design and development projects user involvement may be conducted too late in the design process - at a point where key design decisions have already been made. The risk of such late or inadequate user involvement may be that novel services fail to address key user needs, are not seen as adding value to users' everyday lives, and subsequently fail in the market [7].

2.3 The challenge of representing sharing economy services

When involving users in the design of sharing economy services, representing these in an understandable manner to the users is critical. However, as sharing economy services typically are two-sided markets where independent user groups are connected through a digital platform, simulating service concepts is often not possible.

Service prototyping [8] is a feasible option in some service areas, such as in-store service provision. A service that implies geographical distance between customers,

non-standard goods or services, non-professional users on both sides of the transaction, or networks of interacting services providers, is more challenging to prototype. In response, other – possibly more simplistic – means of representation are needed.

2.4 Visualizations and idea cards to represent service concepts

Within the emerging discipline of service design, the challenge of representing service concepts has been given much attention. In particular, visualizations have become a much-used means of representing service concepts [9]. Often, rather complex service concepts may be represented through relatively simple visualizations in the form of images.

The use of brief descriptions of ideas or concepts, often including an illustration or visualization, is another approach to represent larger sets of early-phase design concepts in order to process these further as part of the design process. Such idea cards have shown to be useful for gathering feedback from users [10].

2.5 Online involvement of users

Traditional user involvement practices involve face-to-face methods, such as workshops, interviews, focus groups, or evaluation sessions [11]. To reduce the resource demand of user involvement, while also allowing for the involvement of geographically dispersed users, researchers and practitioners have sought to leverage online environments for involving users in the different stages of the design process, through the use of general purpose environments such as Facebook groups [12] or dedicated environments for user involvement in design and innovation [13].

We have previously conducted online user feedback sessions for design processes towards novel interactive systems and services [14]. However, we have not previously tried this approach for services in two-sided markets such as the sharing economy.

3 Research objective: Overcoming the involvement challenge

Building on existing research on the use of visualizations and idea cards to represent service concepts, as well as research on online user involvement in design processes, we in this study aim to explore how these means may be used to overcome the involvement challenge in the design of sharing economy services.

Hence, the research objective of this study is to gain experience and knowledge on how simple, visual representations of service concepts may be used to elicit feedback from users when designing sharing economy services, and how such design feedback may support the subsequent design process. On the basis of these experiences, we should be better equipped to discuss how newcomer sharing economy service providers may establish user involvement in their design and development process.

4 Case study: Involving users in design for online redistribution markets

In response to the research objective, we conducted a case study [15] where a range of concepts for an online redistribution market were identified and presented for user feedback. In the following subsections, we present the case context, the identification and representation of design concepts, how users were engaged in evaluating the concepts, and the nature of the design feedback that was gained.

4.1 Scoping of the case study

The case study was carried out in January 2017 in collaboration with a provider of a relatively new online redistribution platform. This online market platform is designed through a "mobile first"-approach, mainly oriented towards local-area transactions, and with the aim of providing a highly simplified process when selling and buying used items. From preliminary user insight studies, we had learnt that the cumbersome part of the service experience was the transaction process involving both the seller and the buyer, from their first contact until the item is sold. Key phases of this transaction process are (a) matching the prospective seller and buyer, (b) communication between the seller and buyer, (c) handover of goods and money, and (d) post-handover rating for social filtering. Challenges include easy filtering of irrelevant matches, e.g. due to geographical distance, inefficient or incomplete dialogues between sellers and buyers, transportation and handover challenges, and challenges motivating users to provide honest feedback following transactions. The case study involved the development of innovative concepts addressing these challenges, and gathering design feedback from the users.

4.2 Identifying and representing the design concepts

A team of four researchers within the field of user-centred design individually drafted concepts targeting the identified challenges of the transaction process. The research team then discussed and negotiated the design concepts on the level of specific wording and illustrations for representing each concept. In addition, an external designer was invited to comment on the representation before finalizing the concepts.

The design concepts were elaborated in the form of digital idea cards, with an easy to understand illustration and a brief text motivating and outlining the concept. In total, a dozen design concepts were drafted; six of which were selected to be included in the study. An overview of the six concepts is provided in Table 1. An example design concept is presented in Fig. 1.

Table 1. Overview of design concepts

Transaction phase	Design concept
Matching	D1 – Entry of multiple pick-up points for better geographical matching
	D2 – Map-based search accentuating local area opportunities
Communicating	D3 – Standardizing seller-buyer communication for efficient interaction
Hand-over	D4 – Fast, flexible, and environmentally friendly delivery service in local area
	D5 – Custom packaging for convenience and personalization
Feedback	D6 – Feedback through emoticons on different aspects of the transaction

4.3 Involving users in online design feedback

To involve users in the design process, an online environment for design feedback (<http://recordlivinglab.org>) was used. The environment offers an easy way to gather user feedback from a broad set of users that are geographically dispersed. All participants were encouraged to provide feedback on each design concept in the form of comments in discussion threads. One discussion thread was provided for each concept. The participants could choose to make stand-alone comments, or make their comments as replies to other participants' comments. The participant feedback was monitored by two moderators. The role of the moderators was to follow up on the comments and engage users in discussions, through positive acknowledgement of constructive comments and follow-up questions to gather more in-depth understanding of a comment.

SUGGESTION 1: AS A SELLER, YOU CAN INDICATE SEVERAL PICK-UP POINTS



To make it easy for the buyer to find a convenient pick-up place, you can indicate different locations where it is possible to pick up the item. For example at your home address and at work. You can also indicate what time it is possible to pick up the item at the different locations.

Please, comment on what you like or dislike in this suggestion, or how it can be improved.

You can provide your feedback either in the comment field below, or as a reply to one of the other participants' comments. You can also click "like" on comments that you agree with. When you are done commenting, click "Next"

Save comment

PREVIOUS NEXT >>

COMMENTS: 77

Fig. 1: Design concept (D1) in the online environment.

Whenever a participant received a reply on one of their comments, the participant received an email notification with a link to the discussion thread to reply. Previous studies have shown that the presence of a moderator in asynchronous online feedback session increases the quality of the participant feedback [14].

In total, 103 participants were recruited to the study through a market research company. Of these, 89 provided one or more comments as feedback. The sample was balanced on gender, and mean age was 39 years ($SD = 13$, min = 18, max = 74). All participants had experience in online redistribution markets. The study was conducted in English, and the feedback period lasted for two weeks.

4.4 Users design feedback

Users' feedback to the design concepts was overall rich, providing comments to all designs. After the end of the two-week period, the study moderators extracted the data from the online environment, removing person identifiable information (e.g. email addresses). The two moderators independently coded the comments in a content analysis, applying three main codes: positive comments, comments containing negative issues or problems, and suggestions. The interrater agreement indicated good reliability in the coding (Cohens kappa 0,6 – 0,8 for the different categories).

An overview of the participant feedback is presented in Table 2, illustrating how the design feedback was useful to the team. First, the design feedback supported prioritizing of the concepts, second, the design feedback served to identify strong and weak aspects of the concepts, and third, the design feedback provided suggestions as to how to move forward in the design process.

Table 2. Overview of participant feedback to the design concepts

	D1	D2	D3	D4	D5	D6	Sum
Positive	40	33	50	32	5	18	180
Negative / Problem	16	21	6	34	44	24	144
Suggestion	13	11	17	3	5	8	57

Prioritizing concepts. The users design feedback provided a useful basis for differentiating between the concepts with regard to which ones to take forward. It may be noted that the mainly positive feedback for design concepts 1 and 3, as observed in Table 2, suggests that these resonate with a perceived user need, whereas the rest of the concepts raised mixed comments and many concerns about their implementation. In particular, design 3 should be prioritized in further development. The participant comments served to underscore and substantiate reasons for likes and dislikes, as exemplified in the comments below.

Very good idea! This will make it easier for both parts, and shorten the discussion back and forth. (Participant comment, D3)

I do think the emoticons makes it look kinda childish. (Participant comment, D6)

Identifying strong and weak aspects in the concepts. The design feedback also provided useful insight into the detailed strong and weak aspects of the concepts. This is useful in the subsequent design process, when deciding how to refine or move forward with the prioritized concepts. Such aspects could concern context of use, assumptions concerning the target users and possible future use, as well as design issues, as exemplified below.

I like this suggestion as it is. To me, a lot of people seem to assume that everyone has a car available for pick up, which is not the case at all. Also, a lot of people get too locked on the idea that they need to do their deal from home. (Participant comment, D1)

I do not like to give too much information in the ad about who I am and where I live. I do not want my name/address to come up in a google search. I prefer to give more information when I have a buyer. (Participant comment, D1)

Gathering suggestions to drive the subsequent design process. Finally, the participant comments served to gather suggestions on how to move forward in the design process. Such comments are particularly useful for the designers, as they may serve as means to get needed creative input in the design process. Interestingly, it may be noted that the design concepts receiving the most suggestions were also the ones receiving the most positive comments, indicating that suggestions are driven by participants' enthusiasm for the concepts.

The suggestions concerned specific changes to the concept, as well as suggestions on which contexts the concepts would be particularly suitable for, as exemplified in the following comments.

Should be possible to save your work address, in addition to your home address, in your profile [...]. Then both could automatically be suggested as regular pick up places. (Participant comment, D1)

Good idea, but not too many pick-up points at same time. Better with a neutral pick-up point, I don't like to give my home address to everyone. (Participant comment, D1)

5 Lessons learnt and way forward

5.1 Lessons learnt

The presented case is interesting in that it demonstrates the viability for user feedback on early design concepts even for services as complex as those of the sharing economy. While practical user trials of such concepts are challenging in an early phase, if not impossible, due to the complexity and networked character of sharing economy services, it is highly useful to see that users are able to provide qualified feedback on concepts, even on the basis of just an illustration and a high-level description.

While the applied approach to online design feedback was found useful for differentiating between concepts, the qualitative character of the feedback also enabled the exploration of strong and weak aspects of the concepts as well as concrete input on

how to move forward with the design. As such, this means of user involvement may be a valuable complement to the design process.

The approach of presenting the design concepts in the form of digital idea cards with an illustration and a high-level description text was useful in the sense that it allowed feedback from a broad range of users, while at the same time enabling differentiation between concepts and relevant input to design. It may in particular be noted that the more positively perceived concepts were also the ones gathering more design suggestions. This indicates the need to represent the concept in text and illustrations that are not only clear and precise, but also that serve to engage the participants by highlighting issues assumed particularly valuable for the user.

The format of the idea cards, with their relatively low level of detail, may also encourage participants to keep an open mind to challenges and opportunities in the concept. Possibly more so than if highly detailed concepts or prototypes are presented.

The digital idea card approach also enables participants to provide feedback on a range of concepts, as the low level of detail does not require too much time for assessing a single concept. Hence, this approach allows the exploration of concepts covering the entire transaction process, rather than just a single stage.

5.2 Future challenges and the way forward

Sharing economy services are complex and in constant change due to a number of factors. The rapid advances in information technology in our digital age leads to a perpetual emergence of new communication channels. New business models emerge as service providers outsource parts of their service systems, forming service delivery networks [16]. Digital platform providers may engage in multi-sided markets for example by adding financial or logistics partners. From a business perspective, turning collaborative consumption services into multi-sided markets may increase efficiency and reduce costs. However, in such a changing landscape it is challenging to provide coherent and flawless service experiences. Interest in service research is spreading globally, and methods to measure and improve service experience has been identified as a research priority [17]. Finding efficient ways to engage users in early stages of service design is thus of high importance.

While the presented approach seems promising for efficiently involving users in early phase design of sharing economy services, the complexity of the sharing economy likely require a broader range of practices for user involvement in innovation than what is presented here. One possible direction, given the recent advances in artificial intelligence and automated agents such as chatbots, could be to explore the use of such technologies for user research and involvement. For example, to consider how online feedback session could be improved by the use of moderating chatbots, or how user input could be analysed through machine learning approaches, where user insight could be abstracted from much larger datasets than what are practically feasible to analyse manually. Taking advantage of technological advances in user involvement activities may support innovation in the rapidly evolving areas such as the sharing economy.

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