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Pirjo Friedrich

VTT Technical research centre of Finland, Finland, Pirjo.Friedrich@vtt.fi

Aino Mensonen

VTT Technical research centre of Finland, Finland, Aino.Mensonen@vtt.fi

Maiju Aikala

VTT Technical research centre of Finland, Finland, Maiju.Aikala@vtt.fi

Katri Grenman

VTT Technical research centre of Finland, Finland, Katri.Grenman@vtt.fi

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“Digital Newspaper Makes My Home Tidier” – Evaluating User Experience with User-Defined Attributes

Pirjo Friedrich, Aino Mensonen, Maiju Aikala, Katri Grenman

VTT Technical research centre of Finland, Finland

firstname.surname@vtt.fi

Abstract

User experience (UX) evaluation is typically based on either open evaluation or predefined measures. In our study, we tested a new UX evaluation method by combining both approaches in a collaborative evaluation. When evaluating a digital newspaper over six weeks, the users were asked to describe the reading experience in their own words on an online platform shared among the test participants. General statements were formulated based on user-defined attributes and rated by all users on a numeric scale at different stages of the test period. This method resulted with quantitative data of even entirely new experience measures that would not have been found in predefined sets of UX categories.

Keywords: User experience; digital newspaper; open evaluation; user-defined attributes; online platform; empirical study.

1 Introduction

User experience (UX) has achieved an important position in product and service design and evaluation both in industry and academia. However, the concept of user experience is neither unambiguously defined nor well-understood, which leads to challenges in UX evaluation. On one hand, there is a need to understand and investigate the phenomenon and build theories around it. On the other hand, there is a need to develop successful products cost-efficiently, which requires UX evaluation methods that fit the fast pace of product development cycles. (Vääätäjä & Roto 2009)

UX evaluation can be based either on open evaluation by users or predefined measures that can be quantified. Many UX researchers prefer open, qualitative evaluation, as predefined metrics do not often embrace all aspects of user experience (Vermeeren et al 2010). However, data analysis becomes harder with qualitative data, which reduces the applicability of open evaluation in industrial settings.

To utilize the benefits of open evaluation and overcome some of its challenges, we developed and tested a collaborative UX evaluation method that combines user-defined, open evaluation and quantitative measures on an online platform. In this paper, we

describe the evaluation method and compare the user-defined UX attributes with pre-defined categories for UX evaluation. We discuss the benefits and challenges of the UX evaluation based on user-defined attributes and conclude with recommendations for further development of the method.

2 Background

The concept of ‘user experience’ (UX) has many definitions due to its multidisciplinary nature. Different definitions are based on some common building blocks of user experience, which include characteristics of the designed system such as usability and utility, user’s internal state including emotional aspects, and use context including social aspects such as self-expression and relatedness (Hassenzahl & Tractinsky 2006) According to Hassenzahl (2003) product features, such as content, presentation, functionality and interaction, affect pragmatic and hedonic attributes of product character, which, together with the context of use, can lead to an appealing, pleasurable and satisfactory experience.

Many researchers have tried to categorize the different aspects of experience in order to take them all into account in UX evaluation. Desmet and Hekkert (2007) have categorized three levels of experience: aesthetic experience, experience of meaning, and emotional experience. Buccini and Padovani (2007) divide the experiences into six categories: experiences related to the senses, experiences related to the feelings, social experiences, cognitive experiences, use experiences, and motivational experiences. Olsson (2012) has used these categories for defining 16 smaller classes of experience, such as empowerment, intuitiveness, surprise and inspiration.

The UX categories may serve as a basis for creating UX evaluation methods with predefined measures. AttrakDiff, presented by Hassenzahl & Tractinsky (2006) and HED/UT, presented by Voss, Spangenberg & Grohmann (2003) are examples of methods that use predefined measures generated by experts. Predefined measures can also be used in the form of statements based on earlier research like in studies of Kaasinen (2005) and Olsson et al (2012), or derived from the results of field studies or interviews like in the study of Väättäjä & Roto (2009).

The other alternative for UX evaluation is open evaluation, in which participants are asked to describe their feelings freely. According to Vermeeren et al (2010) it allows a more comprehensive picture of UX in comparison to predefined measures that cannot cover all aspects of UX in a specific case study. However, according to Väättäjä & Roto (2009) the predefined measures are more practical for industry applications, as they produce quantitative data that can be easily analyzed.

The goal of our research was to create a method that efficiently combines the benefits of open evaluation and quantitative measuring. We explored if quantitative measures could be generated case-specifically by the users and if the user-defined attributes covered the different UX categories that had been defined in previous literature. We chose the categorization of Buccini and Padovani (2007) and Olsson (2012) as a basis for comparison, since they divide UX in small enough elements in order to check the similarities and differences with user-defined attributes.

3 Method

We tested the new UX evaluation method in a case study where a Finnish media company tested the digital edition of a newspaper in two rural areas. The publisher of Lapin Kansa wanted to provide better service for readers living in rural areas of Finland by providing them with a digital version of the newspaper. The product was already on the market, but the company wanted to explore how the users in new target groups experienced it in comparison to the traditional paper edition of the same newspaper.

The test was made in two areas, where the daily newspaper is normally delivered in the afternoon instead of the morning. The discussion topics were chosen in co-operation with the publisher, and they were focused on usage and the experienced benefits of the digital newspaper, in order to learn how to market the digital product to people that are unfamiliar with digital devices and services.

3.1 Context

In order to understand the motivation for this study, it is relevant to note that the daily newspaper has an important role in the everyday life of an average Finn. Finns are the third most enthusiastic newspaper readers in the world, and daily newspapers have a circulation of 396 per 1,000 adults. Only 13 % of newspapers are bought separately, with most readers (69%) having their newspaper delivered at home usually before 6.30 a.m. (Sanomalehti liitto 2013). Reading the newspaper at home in the morning is an important part of the daily routine for many Finns.

While Finns living in densely populated areas receive their newspaper early, the same level of service cannot be offered in remote areas. Long distances in the rural areas of Finland make it impossible to deliver the paper version of the newspaper early in the morning, when people often prefer to read news. Therefore the opportunities for digital delivery were investigated.

3.2 Data Collection

The test was conducted during a six-week period in April – May 2013. 60 people participated in the test, during which they got a tablet device and free access to the digital edition of the newspaper, which is a facsimile version of the printed newspaper. They also got free access to the Internet. Some of the participants had had an Internet connection in their village only for six months, so they didn't have much experience with any digital services.

The test participants gave feedback through an online platform by answering weekly questions, commenting on discussions, giving feedback on the content of the daily paper, and taking part in polls. Discussion topics were added on a daily and weekly basis; the journalists got instant feedback on the daily news topics and new research questions were added on Mondays. Table 1 presents the discussion topics for each week.

Week	Discussion Topics
1	Preferences for the time of newspaper delivery. Situations where the traditional newspaper is read. Preferred device for reading a digital newspaper. Experiences of reading a digital newspaper for the first time.
2	Expectations towards the digital newspaper.
3	Reading habits of the traditional newspaper. Situations where the digital newspaper is read.
4	Effects of the experiment on daily routines. Comparison of reading habits between traditional and digital newspapers.
5	Obstacles preventing the use of the digital newspaper. Pros and cons of the digital newspaper. Recommending the digital newspaper to others. Interest in local news.
6	Willingness to pay for digital news.
7	The arrangements of the experiment. Experiences of the collaborative testing process.

Table 1: The topics of the weekly questions.

In addition to the weekly discussions, there were more specific questions about the user experience. During the second, fourth and sixth test weeks users were asked to describe their reading experiences using their own words (See Table 2).

Week	UX Questions
2	What kind of feelings does the digital newspaper evoke? Describe your experiences.
4	Write at least three adjectives that describe your reading experience with the digital newspaper.
6	Think back to how it felt to read the digital newspaper for the first time. How has your experience changed? How would you describe it now?

Table 2: The questions for the experience attributes.

Every other week (weeks 3, 5, 7) researchers formulated statements based on the users' answers. At first, all expressions describing the reading experience were identified. These expressions were then grouped based on their meanings, and the eventual statements were formulated to represent these expression groups. The wording of all statements was chosen carefully in order to ensure their unambiguity and general tone. All users were asked to rate the statements on a scale from 1 to 5 (I don't agree at all – I totally agree). Based on these evaluations researchers were able to discover how important and meaningful the participants found the attributes. After giving own answer on the online platform, the users saw how others had rated the same attributes. Users

could also comment on the attributes and those comments were visible to other users already before they gave their rating. Each attribute received between 4 and 11 comments that were generally very short but clearly indicated the opinion of the comment author.

The challenge in this kind of iterative approach is how to proceed efficiently in a reasonable time frame. In our study we utilized a sophisticated online tool for interacting with users. We found this or a similar tool as a prerequisite for efficient user experience evaluation. The method used is essentially an online focus group, and in comparison to a traditional focus group interview it has the distinct advantage of allowing everyone to have an equally loud voice.

3.3 Data Analysis

After the study, the researchers categorized the statements using the categories of Buccini and Padovani (2007) and Olsson (2012). All four authors of this paper participated in the categorizing process, during which it became apparent that there were only a few statements that could be unambiguously mapped with the predefined categories. Most of the statements could belong to multiple categories and some new categories were required as well.

4 Results

Most of the UX attributes derived from the users’ own comments could be matched with the predefined attributes by Buccini and Padovani (2007) and Olsson (2012). Users mentioned several instrumental experiences that were related to the usability of the device, reliability of the service and efficiency (connection speed). Sensory experiences were related to the device and its outlook (e.g. “The digital edition looks to be of higher quality than the paper one”). Cognitive and epistemic experiences were mostly related to the content of the newspaper (interesting news, visibility of ads). Behavioural or motivational experiences consisted of statements such as “The digital newspaper inspires me” and “For me it is important that I can take the tablet with me and read the digital newspaper when doing other things”.

Emotional experiences consisted of being positively surprised with the digital edition and enjoying the reading experience. The aspect of feeling privileged was new in comparison to the UX elements defined by Olsson (2012). Some users felt privileged to be able to read the newspaper in the morning, which was not possible with the paper edition that was delivered to many of the participants only in the afternoon. The opportunity to receive fresh news in the morning led also to changes in the users’ daily routines. Some users woke up earlier, to have more time in the morning with the newspaper. Users’ media habits changed as well; more time was spent with the newspaper, less time with TV morning programmes and other news services. They felt they were more equal with people living in cities.

Some of the UX statements related to the users’ lifestyle and could be seen as user characteristics that affect the experience but are also a part of the experience. Examples of these are “For me it is important to receive fresh news” and “I don’t have time to read news in any form”.

The digital edition also caused changes in the daily life and the surroundings, such as “My home is tidier thanks to the digital newspaper”. Users thought it was convenient that there were no longer piles of old newspapers on the table. The digital format also led to expressions such as “For me it is important that the digital edition does not cause allergic reactions” and “The digital newspaper is more ecological”. These can be seen instrumental (caused by the technical device), sensory (experienced reactions) or emotional (felt effects) experiences.

This shows that many of the user-defined attributes can be interpreted in multiple ways in relation to the predefined UX categories. For example, “Digital newspaper is part of the future” can refer either neutrally to the change in technology or, in a more evaluative way, to the benefits of a modern reading device (instrumental); or to the new habits of readers (behaviour). “I spend more time reading the digital than the paper edition” may be either positive (it is more interesting to read) or negative (it is slow to use). The notion that the digital edition is more ecological can be seen either as an emotional or cognitive experience, depending on whether the user has enough information about the real state of affairs or whether the feeling is based on a subjective emotional reaction.

5 Discussion

User-defined experience attributes contained not only service-related aspects, but also aspects covering a wider context with the devices, users’ habits and lifestyle. Researchers were surprised by some of the user-defined attributes, such as non-allergic, tempting, fresh, uncomplicated, and clean home, seeing as they wouldn’t have chosen those from a predefined set of questions.

In addition, it was impossible to place some of the user-defined statements into the categories Buccini and Padovani (2007) and Olsson (2012) used. The results indicate that new categories are needed for different application areas. This research suggests adding a category such as “experience influenced by the service”, which stands for experiences that are due to the service but do not happen while using the service. Our example is the tidy home; the new service made the home tidier, because there were no more newspapers on the table. The experience was influenced by the service but not during usage. This indicates that user experience is context-specific and some important aspects of experience might be ignored if we concentrate solely on predefined measures.

Another new category could be described as “lifestyle”, and it stands for user characteristics affecting the user experience. For example the statements “Digital newspaper is a good fit for me” and “For me it is important to receive fresh news” refer to some characteristics of the user based on which the certain service is suitable for her.

An example of a statement that does not directly refer to user experience is the sentence “I miss the paper edition of the newspaper”. Even if it does not directly state the reasons for preferring either way of reading the news, for the service provider it gives more concrete information about the actual behaviour and possible changes in consumer choices than many predefined measures, such as pleasure of the reading experience.

It is important to note that the user-defined attributes in this study were not totally unaffected by the researchers. The researchers initiated the discussion by choosing the weekly discussion topics. It is possible that the users would not have mentioned certain adjectives if there hadn’t been any previous discussion related to them.

6 Conclusions

The predefined categories used for example by Buccini and Padovani (2007) and Olsson (2012) are good guidelines for planning UX evaluation, because they force the researchers to take all the views of experience into account. Our study, however, shows that the users defined UX attributes that didn't fit into any of the categories used in previous studies, or the attributes were more practically oriented and combined many different aspects in one sentence. If we hadn't asked users for the experience attributes, we would have missed relevant aspects of how the new service influenced the users' daily life and how it had a positive effect on their daily life even when they weren't using the service. Reading the news is an integral part of many people's daily life. People don't divide their life and routines into neatly separated slots that contain individual activities happening in succession. Most people are experts at multitasking but don't necessarily realize it. If we had asked only predefined questions about news reading habits, we wouldn't have been able to see all the changes the experiment brought about in the everyday life of our participants. If we use only predefined measures in our research, we easily end up excluding all things that fall outside the scope of those measures. Our results suggest that user-defined attributes are a good approach for generating context-specific UX measures that can be evaluated quantitatively. In our study, we did not use the predefined UX categories at all, but focused only on user-defined attributes in the evaluation. According to our view, participants of a collaborative experience research study must have the same role in the value chain and have a similar relationship with the service that is evaluated, i.e. the object of the experience. This ensures that the participants speak the same language, and the discussions are productive and lively. If the participants have very different roles in the value chain (a user and a developer, for instance), there is a risk that real experiences will not emerge from the discussion and the developers will act based on their preconceptions of the service and how it is supposed to work. In our opinion, best results are achieved when developers take more passive role as followers while researchers or some other objective party facilitate the discussions as well as interpret the results to other parties of the value chain. Further experimentation is needed to compare the UX evaluation results when using either user-defined or predefined sets of attributes. Another remaining research question is about the effect of collective evaluation. The influence of other participants' comments on the users' own reported experiences should be further examined.

Social technologies suggest that more public forms of participation are becoming the norm. Studies have shown that content posted by other people is often used as a source of inspiration. More contact between the users during the research process is expected to contribute to a better user involvement and participation in the study as well as richer user feedback, because users can comment on others' comments and discuss these among themselves. Using social media tools in the design processes also make users more willing to contribute their time. Even normally shy people can participate more freely online, when they have time to really reflect on what they are saying, edit their comments carefully and participate anonymously

The online platform enabled a cost-efficient way of combining open evaluation and quantitative measuring over a longer period of time. However, it required a lot of researcher work to choose and formulate the sentences to be evaluated by all users. The

method could be further developed so that it would be more straightforward to formulate the experience statements from the users' free-form text.

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