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# Developing digital media service value creation by using emotion data

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**Abstract:** Digital transformation is not only changing the way value is created in service encounters, it is also offering new ways to gather and analyse data of customer behaviour and perceptions. This paper studies perceived customer value through a case study of a media company developing its digital services and service encounters. The special focus is on studying the role of emotions in value creation in a data-centric, digitally transforming media context. Through the qualitative case study, this study contributes to value creation research stream by providing rich, empirical analysis of the role of emotions in digital value creation. Both positive and negative emotions co-exist in the smart service encounters and by identifying the drivers for positive and negative affections the service providers can finetune the technological attributes related to the service.

## 1 INTRODUCTION


Digital technologies are breaking down industry barriers and creating new opportunities while destroying long-successful business models. The amount of available data is growing exponentially, offering lot of new opportunities for understanding e.g. customers' experiences and for using real-time data in decision-making. Although many of the past and present management concepts have been largely criticised, and the need for new kinds of interactive, digital business model concepts have been recognised (Freeman, 2000, Vatrappu, 2013), the knowledge and understanding of companies' digital value creation processes and future business model development requirements, i.e. the best practices, remains rather scarce. Unquestionably, succeeding in the continuously evolving digital business environment requires more in-depth knowledge about the sources and determinants of value creation (see e.g. Kuusela & Rintamäki, 2002; Hirvonen & Helander, 2001) and the ways the data from multiple sources can be empowered to impactful solutions and new kinds of business opportunities. Especially there is a need for research that takes also the softer determinants of value perception, such as emotions (Carù & Cova,


2015), into account and understands the role of customer experience in developing innovative digital services and in enhancing service encounters (Lastner, Folse, Manhus, & Fennell, 2016).


The aim of the paper is to empirically examine the role of emotions in value creation in digital service context. This kind of approach will support the business development of companies, which bravely seek for new kinds of innovativeness from the digitalization and are ready to look also the softer side of value even in the middle of digital technologies.

This research is carried out as an empirical case study in media industry. The case is digital service development in a daily newspaper in Finland that looks for better customer engagement in their digital services. The case builds understanding on value creation through following research questions: a) what are the key customer value determinants enhancing customer experience in digital service context, and b) what is the role of emotions in the customer perceived value.

The empirical research is carried out as a qualitative case study. The case company represents media industry, which is one of the industry branches that currently is facing an extensive transformation from analogic world to digital world. The context of

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the case study is mobile news consumption and, more specifically, the use of push notifications for engaging audiences in the digital news. Push notifications i.e. news alerts are messages that are sent from news services to lock screens of mobile devices. At the moment, news organizations regard push notifications as a key channel for building direct relationships with their audiences on their mobile platforms and, therefore, as a tool to decrease the role of third parties such as Facebook as news mediators (Newman, 2016, p. 7). Audience studies indicate that allowing news alerts increases users' frequency of visiting the news applications and their time spent with mobile news, as well. News audiences also generally find push notifications as valuable service; however, they also wish better-targeted messages taking into account of receivers' personal preferences and needs. (Jomini Stroud et al., 2016; Newman, 2016)

## **2 THEORETICAL BASES**

### **2.1 The role of emotions in customer experience and value creation**

In literature customer experience is described in many ways. Quite often customer experience is measured only by evaluating the contact with the customer service or contact personnel (i.e. Tähtinen & Blois, 2010). However, according to Meyer & Schwager (2007) customer experience is about the internal and subjective response, which customers have in any direct or indirect contact with the provider company. In their definition direct contacts are purchase, use and service, and indirect contacts include the unplanned encounters, like representation of company's products or services, word-of-mouth recommendations, advertising, news reports, reviews or an e-mail from customer to another. Also Verhoef et al. (2009) define customer experience in a pretty similar way, stating that customer experience can include aspects also outside the provider company's control. Lemke et al. (2011) point out that service provider tends to focus on understanding and delivering value-in-use by taking into consideration customer's own objectives concerning using services or products. Even multiple features in service don't guarantee a pleasant use or perfect experience, as there are also other aspects that build together the overall experience. In fact, whatever the magnitude, length and complexity of the business may be, when people make decisions, also emotions are involved. As defined for example in Gentile, Spiller & Noci

(2007) emotions form one important component of customer experience. Sometimes emotional experience is even used as a synonym for customer experience. The role of emotions thus should be considered when we want to examine service experience and value creation.

The experiential aspect has for a long time been included in various studies of consumer behavior. The hedonistic or emotional component of perceived value is seen one or the main element in several studies. For example already Stone (1954) dealt with the issue. Later on Holbrook & Hirschman (1982) strongly highlighted the issue of experiences and Bitner (1992) included emotional responses in her study of "servicescapes". Furthermore, Bagozzi, Gopinath & Nyer (1999) stated, that "emotions are ubiquitous throughout marketing" and Laros & Steenkamp (2005) presented a hierarchical consumer emotions model. However, the use of the terms of various affective phenomena ("emotion", "feeling", "mood", "emotional", "affective" etc.) both in scientific and in folk concepts is fuzzy and confusing (e.g. Bagozzi et al., 1999; Kokkonen 2010; Scherer 2005). Additionally, counting the number of definitions of emotion is hopeless and there is no answer to the question of the number of emotions (e.g. Scherer 2005). And finally, various approaches have been presented ranging from a limited number of basic dimensions or basic categories to a vast amount of discrete or specific affective terms.

In general terms, affect can be conceived as an umbrella concept (Bagozzi et al., 1999; Kokkonen 2010) and in this paper no particular distinction between for example emotions, feelings, moods or the so called "non-emotional" affective qualities of an experience, such as bodily state (e.g. "sleepy"), subjective evaluation (e.g. "confident"), action tendency (e.g. "hesitant") or cognitive state (e.g. "interested") (Cohen, Pham & Andrade 2006), is made. For the sake of simplicity, the term "emotion/emotional" is used in this paper referring to various affective experiences.

Understanding the emotional experiences and the contexts in which they occur enables better controlling of the customer experience and value creation (Hill 2010). Simply put, value creation is a process during which the customer and supplier interact and the sacrifices and benefits are evaluated in various levels (e.g. Picard 2010; Smith & Colgate 2007).

There are several different kind of manifestations of value presented in the literature. The often mentioned main dimensions are utilitarian vs. hedonistic value (e.g. Gentile et al. 2007). A bit more

elaborate way to describe different types of value is to categorize them as economic, functional/instrumental, expressive/symbolic and experiential/hedonic, sometimes in a form of hierarchy (Figure 1) (e.g. Smith & Colgate 2007).

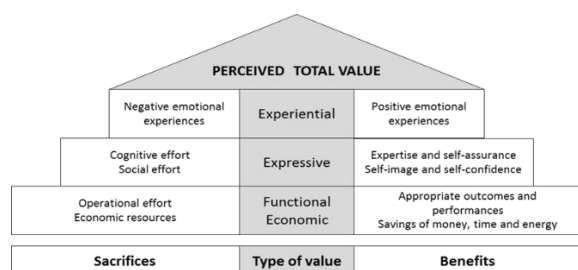


Figure 1: Hierarchy of perceived total value (adapted from Smith & Colgate 2007)

Sacrifices and benefits can be regarded as hierarchically constructed. The sacrifices and benefits in the lower levels are considered being more concrete, utilitarian, conscious, and easier to evaluate and measure than those in the higher levels. In principle, every step of the hierarchy is present in a customer experience and the perceived total value is a result of the whole hierarchy. Presumably, in the case of news services, the functional level values are in general the primary reason to acquire these services, but the other levels can be expected to have their share of the perceived total value as well.

In a similar fashion, Picard (2010) distinguishes three manifestations (or levels) of value especially in the context of news organizations and journalistic content: functional, self-expressive and emotional. In the functional level, the benefits appear in information that helps consumers in their lives. In the self-expressive level, the benefits appear in the possibilities to identify oneself or converse with the news source, or exercise choices about one's preferred content. In the emotional level, the benefits appear for example by providing escape, companionship, senses of belonging and community, pleasure, security and reassurance. Hence, and despite the level, also the content provided by news organizations is in the end valued from its capability to serve as a mechanism to achieve something beyond the content itself. In general terms, value is mainly determined by the value potential consumers attribute to the service offering (Grönroos & Voima 2013).

According to Lutz et al. (2008) building a customer experience process starts from leadership engagement. The next step is to involve the key players and link customers to the organization.

Listening to customer and generating the insights by using customer data are a good starting point to start visualize and map the customer experience process.

## 2.2 Understanding customer experience in newspaper context

Gaining and engaging paying subscribers to digital services has become a key success factor of newspaper business (see also Nelson & Lei, 2017) and, therefore, is the driver of the digital development as the context of this study. In general, newspapers has diverse sources of audience data including panel and market surveys. The quantitative behavioural user data collected via the digital platforms (the website and the mobile application) is the principal source of newspapers for measuring their success with the audiences currently. In the future, the role of this automatically and passively (Mytton et al., 2016) collected audience data is growing while it will exploited for user profiling and personalization of the digital news services. With the tools the newsroom can follow in real time, e.g. the amount of visitors and the number of page views, how many clicks the individual articles achieve and how long time the readers averagely stay on an article. They can also observe from where the users come from.

In daily practices the analytics may help front page editors e.g. to adjust the headlines and structure the page for attracting the readers in optimal way (Cherubini & Nielsen, 2016, p. 25). The long-term impact of the editorial analytics is that newsrooms have a lot of experience to evaluate what kinds of headlines and stories gain attention from the readers. In journalistic decision-making the main asset for the decision making is the editorial expertise of journalists and news editors. This expertise includes knowing the local and situational objectives and practices of the medium, as well as general standards such as ethics and societal roles of journalism (see Ferrer-Conill & Tandoc, 2018; Hanusch & Tandoc, 2017; Moeller et al., 2016).

In journalistic decision-making two distinctive customer groups need to be taken into account: advertisers and readers. However, the perceptions of the readers are the most critical ones, as the amount of readers as the audience also affects the interest of the advertisers towards the certain media company. Thus it is not a surprise, that the audience metrics of advertising have a strong impact on how the digital footprints of the readers are valued and interpreted in the newsrooms. Also with readers the relevant metrics are "audience currencies" (Mytton et al., 2016; Nelson & Webster, 2016) that are industry-

accepted standards for valuing digital advertising exposure. According to Cherubini and Nielsen (2016, p. 36) the clearest and most commonly agreed definitions and measurement methods in the editorial context are those that serve currencies for digital advertising, especially the most traditional “reach” category that counts numbers of people by clicks, page views and unique users. The least developed category is measuring the impact (what difference the content makes in people’s life) that interests more journalists than advertisers.

The recent discussion of big data has raised demands for more sophisticated means for measuring and understanding audience behavior (Nelson & Lei, 2017; Nelson & Webster, 2016). Attention metrics and user engagement are central topics in the discussion. Big media houses hire engagement editors and engagement teams for improving the data analytics and promotion of user engagement. In relation to audience currencies, it is proposed that engagement is measured e.g. as active engagement time including active user interaction with the content (Cherubini & Nielsen, 2016, p. 36). However, how audience engagement should be defined and measured, is still more debated than commonly agreed topic in the newsrooms. There seem to be a gap between how engagement can be defined and how it can be operationalized into metrics. When engagement is a concept that has strong connections to the societal roles of journalism and reciprocal interaction with readers the operationalized and measurable engagement becomes simplified according analysis technologies and to metrics that are available (Ferrer-Conill & Tandoc, 2018).

The challenge is that the quantitative analytics provide at the present a limited insight for customers’ value creation processes. For improving the services and customer engagement there is a need to know more how readers use and value the content and what is the impact of the content on them. Also the newsroom under the study recognizes the need to acquire more knowledge about their readers’ meaning making processes. However, the available tools for this are still scarce, especially in the context of consumption of push notifications. Therefore, we carried out a distinct user study on the use of push notifications.

### **3 METHODOLOGY**

#### **3.1 Case description**

The case organisation is a commercial daily newspaper that develops intelligent push notification system for improving user engagement with its active, subscription-paying mobile application audience. Push notifications are short messages and headlines that are sent from the editor’s desk tools via mobile platform provider’s messaging architecture to users’ lock screens to alert about news. As commercial medium, the newspaper has two main customer groups: audiences and advertisers. This study focuses on audience value creation.

Until recently, the mobile application of the studied newspaper has been a secondary digital platform when compared with the website despite its service being available only for subscribing users whilst the website has also content outside the paywall. Relatively small amount of the total of all the subscribers has used the application. The user data collection and analysis is still limited and not integrated with the analytics tools of the website. However, recent internal sample data analyses indicate increased consumption of digital news via their mobile application. Especially the growth has positive correlation with the use of push notifications. When the users allow push notifications both the frequency of their visits, the clicks and the duration are increasing significantly when compared to users who have disabled them. Thus, the results resonate with the audience studies typically used in media sector (Jomini Stroud et al., 2016; Newman, 2016): push notifications can both create value to news readers and engage them with the news content.

The next step that the newspaper is taking is personalization of notifications based on different user profiles. The main source for this will be user data gathered automatically from the digital platform. Optimising use of push notifications further in our case company means planning and deploying modern data science tools over their user data and news article assets accessible through their publishing infrastructure. On the positive side, their news content has various levels of metadata allowing grouping it to key news categories and keywords. Company lacks understanding of their individual push notification readers’ reading behaviors, interest profiles and reading time window related habits by large, also they don’t have statistically analyzed similarity grouping of their readers. These need to be developed in order to build a push notification pipeline with machine learning based recommendation engine that addresses needs of individual readers or groups as well as analytical needs at the newsdesk and business management. This pipeline will allow gradual automation of push notification publishing -

providing individuals and their context groups optimal reader value. For development of the pipeline the company needs to first gather qualitative user data in order to understand the softer determinants of customer value and experiences in digital service encounters.

A qualitative user study is conducted to provide insights into these “soft determinants” of value creation in the specific context of the case study that is mobile news consumption and the use of push notifications for engaging audiences in the digital news. Furthermore, there is a need to know more how readers experience, use and understand the push notifications sent to their lock screens. This knowledge, in turn, could help the development of quantitative metrics.

### 3.2 Data gathering

The method of the user study is mobile ethnography. Traditionally, ethnography is a field study where researchers personally participate in the people’s everyday lives (Elliott & Jankel - Elliott, 2003; Muskat, Muskat, & Zehrer, 2017). The development of internet technologies have provided new opportunities for ethnographic data collection, such as virtual and internet ethnographies (Hine, 2000; Miller & Slater, 2000) and marketing research oriented netnography (Kozinets, 2002). Mobile ethnography is a quite recent approach of ethnography (Muskat, Muskat, & Zehrer, 2017; Stickdorn, Frischhut & Schmid, 2014) that utilizes mobile phones or other mobile devices for data collection, instead of traditional face-to-face interaction with participants.

Ethnography studies people’s behaviour in their natural environments. The core task of the researcher is to describe and interpret how people act in their everyday practises, and how they understand the practises and interactions, they are involved in (Hackett & Schwarzenback, 2016). Ethnography aims at “thick description” (Geertz, 1973) of social behaviour that builds knowledge about the complex cultural context that impacts on the actions and meaning making of people.

In mobile ethnography, the participants actively report their experiences by using mobile phones. Therefore, mobile ethnography encloses an auto-ethnographic approach that encourages the participants to express their inner states that makes it possible to capture cognitive and emotional factors at the same time (Bosio, Rainer & Stickdorn, 2017, p. 118). What makes mobile ethnography a unique tool

to study experience when compared to interviews, surveys and even traditional face-to-face ethnography is that it allows the participants to report the experiences when and where they occur (Muskat, Muskat, Zehrer, & Johns, 2013).

The approach, mobile ethnography, was selected, because using the same device for reporting that is used for receiving the notifications was seen bringing results that are difficult to achieve by other means. In this respect, the first benefit was to achieve immediate, situational information from the participants. The second benefit of the approach was the opportunity to use screen shot images and screen recordings for reporting to make it more concrete. The third benefit was access to observe the use of push notifications in the participants private multi-site spheres while they were at home or work or moving somewhere.

The mobile ethnography was conducted in February 2018. The participants were reached through the networks of the researchers to facilitate explaining the novel mobile method to possible applicants, to manage their amount and to guarantee that their mobile phone use matched with the objectives of the research. The participants were expected to be active users of mobile devices that allow push notifications and more specifically news notifications on their lock screens. The scope of observing the use of push notifications in the news context was wider than studying only the readers/subscribers of the news application of the case study: the users were asked to report on all the news notifications they received. In addition, they reported the other kinds of push notifications such as sent from social media applications.

Altogether 23 participants reported their use of push notifications during 10 days period. Their age and gender division was as follows: Age 45-54: 7 females, 2 males, age 35-44: 3 females, 4 males, age 25-34 2 females, 1 male and age 15-18 3 females, 1 male. Most of the adults over 25 years had higher education and they worked as expert positions, three of them were students and one recently graduated job-seeker. They all used digital news, but six participants had not used news notifications before. Half of the participants were subscribers of the newspaper under the case study. Most of the other participants used their mobile application and notifications during the study. The four younger participants aged 15-18 received push notifications mainly from their social media applications before the study.

The technical tool of the study was Indeemo (Indeemo, 2018) that offers a mobile application for participants to report the activities and qualitative

research platform for researchers used on the desktop. The tool was used because its Instagram-like application was seen easy and attractive to users, and the dashboard side included functions that help to explore and search the material in different ways and allows researchers to add notes, tags and classify the data.

During the ten days ethnography the participants had five tasks to complete. They were required to describe their general usage of the phone, sum up all kinds of push notifications they received, identify relevant and irrelevant news notifications, report their reactions and actions with news notifications and give tips to develop push notifications in the news context. During the ten days participants sent 610 responses including texts, images and videos. The researchers observed participant activities through the dashboard and sent additional questions to participants. The final sentence of a caption must end with a period.

### 3.3 Data analysis

*Data analysis phase 1: Identification of customer sacrifices and benefits.* The data was analysed by dividing the responses of the participants in the categories indicating sacrifices or benefits related to their usage of push notifications. The analysis was a two-step process. First, for identifying the respondents' own meaning making processes and behavioural patterns an inductive qualitative analysis (O'Reilly, 2009) was conducted. In this phase, different types of emotions, uses, opinions and behavioral models were identified and tagged from the data. The first round showed patterns e.g. when, how and where participants used push notifications, how they justified their interests or lack of interests with news topics, what kinds of problems they had and how they would develop push notifications in a news context. It also revealed an overall picture of emotions expressed. In the analysis the findings were classified into customer sacrifices and benefits in order to describe the respondent perceived value.

*Data analysis phase 2: Emotional experiences.* The emotional experiences expressed in the data were identified and classified using a model and tool, which combines dimensional and discrete emotions approaches (Jussila et al. 2018; Boedeker 2016). Shortly put, in the model emotions are in the main level of sentiment organized in two emotion families (positive vs. negative) according to the dimension of pleasure and in the second level further in four emotion families (elation, serenity, lethargy and tension; see e.g. Seo, Feldman Barret & Jin 2008)

according to the dimension of arousal. In turn, these four families are further divided according to the dimension of dominance to form eight subfamilies, which are each characterized with some illustrative discrete emotion terms (Mehrabian, Wihradja & Ljunggren 1997) (Figure 2).

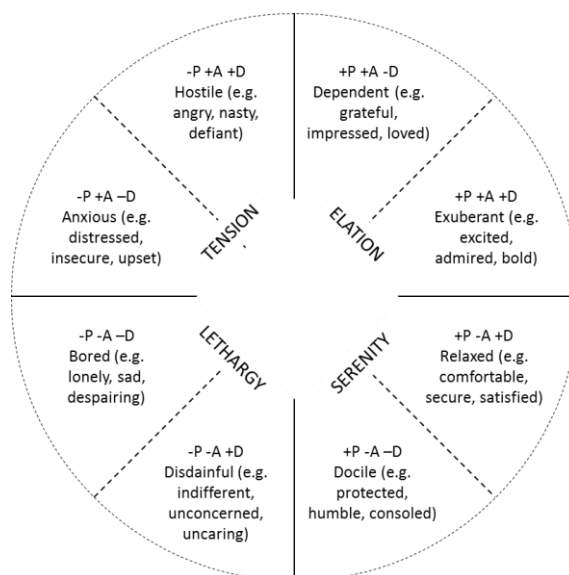


Figure 2: Pleasure-Arousal-Dominance-based emotion families

With this tool each emotional experience indicated by the respondents was identified as such and by the emotion family. In the end, individuals use discrete emotion terms with different personal meanings and granularity, and in the absence of further enquiry into the subject, an emotion family level interpretation may offer the most suitable understanding of the characteristics of the emotional experience. For example, without knowing any deeper meanings attached to the expressions of joy and delight we still know, that both belong to the same emotional family of elation and subfamily of exuberance (+P+A+D). Though there are various lexicons containing broad spectrums of words and their associations with emotions (see e.g. Mohammad & Turney 2010), the identification was primarily based on the particular emotion words found in the responses (e.g. "joy"). When necessary and possible, support was derived from other expressions (e.g. "hurrah!").

## 4 EMPIRICAL FINDINGS

In the analysis four main categories were identified from the data to describe the sacrifices and benefits experienced by the respondents while using push notifications (Table 1). Both functional, expressive and experiential levels of customer value were discovered, however, in the ethnographic data these levels were mere twined together than separate entities. In general level, the results are in line with previously mentioned findings (e.g. Jomini Stroud, Peacock, & Curry, 2016; Newman, 2016) while notifications are considered valuable but they should be better targeted.

Table 1: Customer sacrifices and benefits

Sacrifices	Benefits
<b>Significance</b>	
Push notifications are not interesting, relevant or trustworthy, or are painful or contradictory to customer’s opinions. <ul style="list-style-type: none"> <li>The topic is not personally interesting</li> <li>The customer already knows the topic</li> <li>The topic is irrelevant as personal push notification or not considered as news.</li> <li>The topic elicits negative emotions even if it was considered important and relevant.</li> </ul>	Push notifications are meaningful and relevant. <ul style="list-style-type: none"> <li>The topic is personally interesting.</li> <li>The topic is new.</li> <li>The topic is generally relevant locally, nationally or internationally (e.g. breaking news).</li> <li>The topic generates positive expectations.</li> </ul>
<b>Sufficiency</b>	
Push notifications conceal or deceive and are time-consuming. <ul style="list-style-type: none"> <li>The message catches clicks by concealing the information.</li> <li>The message does not match with the content of the article.</li> <li>The message requires attention but doesn’t give anything back.</li> <li>The message is not</li> </ul>	Push notifications are self-contained and time-saving. <ul style="list-style-type: none"> <li>The message alone provides sufficient understanding of the topic.</li> <li>The message match with the content of the respective article or the article even exceeds expectations.</li> <li>The message encourages action (e.g. reminder).</li> </ul>

understandable (e.g. too complex, detailed or long). <ul style="list-style-type: none"> <li>The message comes at the wrong time.</li> <li>There too many notifications about a same topic.</li> </ul>	<ul style="list-style-type: none"> <li>The message comes at the right time.</li> </ul>
<b>Information flow</b>	
Push notifications cause information overload or are sent in unsuitable moment. <ul style="list-style-type: none"> <li>The important messages are hard to separate from the exhausting data stream.</li> <li>The topic is not suitable for a certain time of the day (e.g. not considered as a pleasant morning news).</li> <li>A “messy appearance” of the lock screen caused by notification overload.</li> </ul>	Push notifications keep the customer tied up and informed about the world. <ul style="list-style-type: none"> <li>It is possible to know the important things and events just by peeking on the lock screen.</li> <li>Notifications can be easily scrolled on the lock screen.</li> <li>Notifications can be saved for later use.</li> </ul>
<b>Personalization</b>	
Push notifications cannot be customized and personalized. <ul style="list-style-type: none"> <li>Not being able to manage your own lock screen by any other means than disabling the push notifications.</li> </ul>	Push notifications are or can be personalised <ul style="list-style-type: none"> <li>Messages about interesting topics at the right time.</li> <li>Not receiving messages about uninteresting topics.</li> <li>Easy customisation and automatic personalisation.</li> </ul>

The “significance” category collects factors related especially to respondents’ meaning-making in relation to the content of the push notifications. Significant notifications were both personally and societally meaningful messages that aroused many kinds of positive emotions. On the other hand many messages were not found interesting enough, relevant, new or even trustworthy and they aroused a variety of negative emotions. There were also messages that were not irrelevant as such according to the respondents, however, they were irrelevant as push notifications.



The “sufficiency” category refers especially to how push notifications waste or save customers time. The responses under this category indicated that push notifications alone need to provide sufficient information for customers that they can evaluate whether messages are worth for reactions. Sacrifices were caused e.g. by notification messages that were difficult to understand or messages that withheld information for achieving clicks.

In the “information flow” category knowing about events of the world - staying-up-to date - was a crucial benefit experienced by the respondents. They also valued an opportunity to scroll the push notifications and save some of them to later use. However, in the same category there were also a lot of sacrifices when too many push notifications were sent from news services. The respondents felt that important messages were difficult to separate from unimportant messages that some led to ignorance of the whole flow. There were also messages that did not fit with the situation of receiver, e.g. messages that were not pleasant in the morning. Some topics such as animal ill-treatment and school shootings collected contradictory responses in relation to should they be notified or published at all.

The “personalization” category refers to the customer ability to manage the service. During the 10 days study time the respondents reported that they started to reflect their use of push notifications more than they usually did. The majority of respondents valued opportunities for customization and personalization push notifications. Especially they would have liked to manage the amount of the notifications on their mobile screens and block some topic areas such as sports or celebrity stories. The push services that already offered customization and personalization features were found more satisfactory than the services without these functions.

A significant share of the responses were emotionally charged when altogether 324 interpretable emotional expressions were identified in the 610 responses from the 23 respondents. The granularity of the expressions was relatively low as roughly 3/4 of the expressions referred simply to emotions of “interested”, “indifferent”, “irritated”, “curious” and “pleased”. In a way, this is quite understandable, since the respondents were, among other tasks, assigned to describe relevant and irrelevant news notifications. However, all the four main emotion families (elation, serenity, lethargy, tension) and even all the eight subfamilies were represented in the responses. In sum, notifications seem to elicit emotions with the whole emotional spectrum. In this data, roughly half of them were in

the main level of positive and the other half of negative valence. The arousal related emotion families (elation, tension) were both with a wider granularity and more often present in the responses. Additionally, emotions related to the family of serenity were clearly least expressed.

When coupling the four identified key value determinants (significance, sufficiency, information flow, personalization) with the different emotional expressions, we are able to see that significance is the most emotionally charged value determinant with biggest variation of different emotions according to the PAD framework analysis (see Table 2).

Table 2: Emotional expressions related to value creation determinants.

Sacrifices	Benefits
<b>Significance</b>	
Push notifications are not interesting, relevant or trustworthy, or are painful or contradictory to customer’s opinions. <ul style="list-style-type: none"> <li>• Related key emotions:               <ul style="list-style-type: none"> <li>▪ indifferent</li> <li>▪ sad, disappointed, gloomy, bored</li> <li>▪ puzzled, bewildered, doubtful aghast, anxious, upset, frustrated</li> <li>▪ irritated, annoyed, indignant</li> </ul> </li> </ul>	Push notifications are meaningful and relevant. <ul style="list-style-type: none"> <li>• Related key emotions:               <ul style="list-style-type: none"> <li>▪ curious, surprised, respectful, grateful</li> <li>▪ interested, pleased, delighted amused, enthusiastic, excited, joyful</li> <li>▪ relieved</li> </ul> </li> </ul>
<b>Sufficiency</b>	
Push notifications conceal or deceive and are time-consuming. <ul style="list-style-type: none"> <li>• Related key emotions:               <ul style="list-style-type: none"> <li>▪ disappointed, frustrated</li> <li>▪ irritated</li> </ul> </li> </ul>	Push notifications are self-contained and time-saving. <ul style="list-style-type: none"> <li>• Related key emotions:               <ul style="list-style-type: none"> <li>▪ curious</li> <li>▪ interested, pleased, delighted enthusiastic, joyful</li> </ul> </li> </ul>
<b>Information flow</b>	
Push notifications cause information overload or are sent in unsuitable moment.	Push notifications keep the customer tied up and informed about the world.

<ul style="list-style-type: none"> <li>• Related key emotions: <ul style="list-style-type: none"> <li>▪ gloomy</li> <li>▪ irritated, frustrated</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Related key emotions: <ul style="list-style-type: none"> <li>▪ interested</li> <li>▪ pleased</li> </ul> </li> </ul>
Personalization	
Push notifications cannot be customized and personalized. <ul style="list-style-type: none"> <li>• Related key emotions: <ul style="list-style-type: none"> <li>▪ irritated, frustrated</li> </ul> </li> </ul>	Push notifications are or can be personalised <ul style="list-style-type: none"> <li>• Related key emotions: <ul style="list-style-type: none"> <li>▪ delighted</li> </ul> </li> </ul>

## 5 DISCUSSION

Based on our empirical data, emotions were clearly present in the usage of notifications. From the experiential dimension of value point of view, both value creation and destruction seemed to occur. In a general level positive emotions created and negative emotions destroyed respondent perceived value. However, the perceived total value cannot be interpreted solely based on the emotions experienced. For example, the customer received personally important information (in the level of functional value) but at the same time, this information elicited sadness, or it came at inconvenient moment and elicited annoyance (in the level of experiential value). The “significance” category seemed to elicit emotions with a wider scope than the rest of the categories. This might be partly explained with that these issues presumably are, in the end, the primary reason to acquire this kind of services and thus the most sensitive category.

We should notice that the two key value determinants, significance and personalization, are rather close to each other, even though they were differentiated by the users. When looking these two from the viewpoint of the newspaper and development of the push notifications as a digital service, these two determinants go hand by hand, however. As significance was waking most of the emotions, this should be the area where the newspaper should focus on when developing the service. Significance can only be created if the customers are understood well enough, and for this the gathered ethnographic data gives first steps, but in the future there should be more focus on the development of automated personalization based on big amounts of user data. Customer specific significance identification based on analyzing the user data from the push notification system is the next

step of the development, and leads towards automated personalization of the push notifications.

This is not an easy or a quick step, however, as in some cases, it was hard or impossible even for a human (the researchers) to conclude, if the notification itself, the story behind the notification, the delivery (moment, frequency) of the notification or for example, the technical features of the app or the mobile device (e.g. the possibility to “like” or to watch a video) were the primary source of the emotion(s). In some individual cases push notifications merely elicited solely emotions without any further explanation, e.g. “amusing (or stupid) headlines”. However, the customer does not necessarily separate the origins of the experienced emotion when evaluating the perceived experiential value in general. Therefore, for example a positive emotion of curiosity aroused with a notification might be destroyed in the end with a boring or disappointing news behind the alert. This was especially salient for example in the so-called click headlines.

Altogether, the provider can manage some of these value creators and destructors in a general level. For example, they can easily reduce the number of negative emotions by sending fewer notifications per day. On the other hand, some of them are so personally determined, that it requires a personal level customization of the service. To do this, service providers are already developing user profiles based on the expressed emotions.

In overall, this study showed, that this kind of ethnography approach can be used to collect and empower rich, emotionally charged data in order to create value in digital service context. With this kind of reflection inducing intervention it might be even possible to teach consumers to act with a desired way. The limitation of this study is the number of the informants (23) and the rather short period of the data gathering (10 days). Longer and wider user studies would build more solid base for the development of automated user profiling and personalization of the news content. This study thus needs further empirical data, and also more studies on the hard data that the digital system can automatically create.

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