

Emotional Design in an Online Service: Case Basware Oyj

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Abstract

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The objective of the thesis is to create an understanding of using emotional design in online services which are mainly offered to users in a B2B role. The thesis focuses on the users as humans, who experience service on an emotional level regardless of the role they represent. The case company is Basware Oyj on which the service development in this thesis focuses.

The thesis introduces three separate pieces of research that encompass the research data that is analysed to find emotional features and elements. Emotions were not measured in this thesis with any key indicators, but instead the data was analysed with the objective to create an understanding of how users experienced service concepts that were in a central role in the research. The research was conducted by using the following tools; self-assessment manikin, storyboard, prototype, observation, empathy persona mapping and contextual interview. These research methods were used in the interviews that took place on the participants' premises. Additionally, this allowed further observations to be done. One research part was done using a separate service solution for collecting insights from users in the United Kingdom and North America. There were 17 participants in the research out of which 12 were Finns.

Understanding emotional design and how emotions are processed in the human mind is a central part of the theoretical framework of the thesis. The emotional design framework explains how emotions influence acceptance, decision making and perceptions of the user experience. Further on, the theoretical framework builds the path of service design where emotional design is one approach. Focusing on emotional aspects the development research can help empathize with users and therefore influence the creation of a more approachable service, which appeals to emotions. This is crucial in creating human-to-human experience an emotional level.

Using prototype with the researcher being present on the participants' premises and using prototype following a separate guide without the researcher being present, generated different kind and valuable research data. Related to the service concepts, the research data highlighted the emotionally affective parts of the service that influenced the user experience of the service concept. According to the research results, features, which influence the user's experience from the emotional design aspect in online services, are simplicity, control, avoiding negativity, trust, contrast and behaviour.

Key words: co-creation, digital services, emotional design, empathy, user experience

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Opinnäytetyön tarkoituksena on luoda ymmärrystä emotionaalisen suunnittelun käytölle digitaalisissa palveluissa, jotka on suunnattu pääsääntöisesti yritysasiakkaille. Opinnäytetyö keskittyy siihen, että riippumatta käyttäjästä tai käyttäjän roolista, käyttäjät ovat aina ihmisiä, jotka kokevat palvelun emotionaalisesti. Työ tehtiin Basware Oyj:n palvelukehitykseen liittyen.

Opinnäytetyö koostuu kolmesta erillisestä tutkimus vaiheesta, joiden tuottaman tutkimustiedon pohjalta emotionaalisuuden ominaisuuksia arvioitiin. Emootioita ei mitattu mittareilla, vaan pyrittiin käsityksen muodostamisen kautta luomaan ymmärrystä sille, miten käyttäjät kokevat tutkimuksen keskeisessä osassa olleet palvelukonseptit. Tämä luo pohjaa emotionaalisen suunnittelun merkityksellisyydelle ja jatkokäytölle. Opinnäytetyön tutkimus tehtiin käyttäen työkaluina; self-assessment manikin, storyboard, prototyyppi, teemhaastattelu, havainnointi ja empatia persoona. Jokainen tutkimusosan haastattelu suoritettiin tutkimukseen osallistuvan omassa ympäristössä. Tämä mahdollisti lisähavaintojen tekemisen. Yksi tutkimusosa suoritettiin käyttäen erillistä digitaalista palvelua, jonka avulla kerättiin aineistoa käyttäjiltä, jotka olivat Pohjois-Amerikassa ja Iso-Britanniassa. Tutkimukseen osallistuneita oli 17, joista suomalaisia osallistujia oli 12.

Emotionaalisen suunnittelun ymmärtäminen ja se, miten ihmismieli käsittelee emootioita, on keskeinen osa opinnäytetyön teoreettista viitekehystä. Emotionaalisen suunnittelun viitekehys selittää, miten emootiot vaikuttavat hyväksyntään, päätöksen tekoon ja käyttäjäkokemuksen havainnointiin. Lisäksi teoreettinen viitekehys selventää, miten emotionaalinen suunnittelu on yksi aihepiiri palvelusuunnittelussa. Emotionaalisiin ominaisuuksiin keskittyminen palvelukehityksessä voi auttaa tuomaan käyttäjää lähemmäksi palvelua luoden samalla muistettavampia ja lähestyttävämpiä palveluita, jotka vetoavat emootioihin. Tämä on keskeistä, kun luodaan ihmiseltä ihmiselle käyttäjäkokemuksia emotionaalisella tasolla.

Prototyypin käyttö tutkijan ollessa osallistujan tiloissa sekä prototyypin käyttö erillisten ohjeiden perusteella ilman tutkijan läsnäoloa tuotti sisällöllisesti erilaista ja arvokasta tutkimustietoa. Palvelukonsepteihin liittyen tutkimustuloksina nousi esiin emotionaalisesti vaikuttavia osa-alueita, jotka vaikuttivat palvelukonseptien käyttäjäkokemukseen. Tutkimuksessa palvelun käyttäjäkokemukseen vaikuttavat emotionaalisessa suunnittelussa esiintyvät yksinkertaisuus, kontrollointi, negatiivisuuden välttäminen, luottaminen, kontrasti ja käyttäytyminen.

Avainsanat: digitaaliset palvelut, emotionaalinen suunnittelu, empatia, käyttäjäkeskeinen kehittäminen

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1 Introduction

To gain growth, profitability and success in a constant run is demanding and challenging. The successful business faces challenges in the form of changing environment, changing business needs, individual business needs, changing behaviour of people, and changing needs of people. Not to mention competitors those are willing to challenge the existing main stream solutions with their nimble approaches. Out from several small competitors, it only takes one of them to succeed with innovative solution to become a real challenge even for a bigger company. World has already started its shifting to service business and it is growing every year compared to goods business, regardless if this aspect is viewed globally or nationally.

In Finland service sector represents 65% of all economy sectors (Invest In Finland 2012). This said how you differentiate service business from manufacturing as that industry side has also service aspects integrated (Grönroos 2007, 1). From the service business aspect, there are lot of challenges that are faced in service development phase to create pleasing solutions and the best solution there is. Services are intangible, hard to measure and often process related (Wilson et al. 2012). Most of the development tools used in the companies is heritage of product development. In the service design approach, this thesis is focusing to examine the possibilities and challenges of emotional design as part of understanding the users in a better way and therefore also delivering more pleasurable services to engage users. This design approach has been around long time on product designing (Beltagui et al. 2012) but in the context of online services it is fairly new approach.

1.1 Background of the thesis

Case company Basware is constantly developing new service entity that enables further development of features in the same context. This requires development of the technical layer and software layer that is visible also for the users. This development revealed research possibility of emotional design as part of service development and therefore a chance to write collective findings as thesis work. The areas where the actual research phases were done were related to ongoing service development. The findings of the research phases were shared to development team. There was no separate focus to the emotional design in these developed service concepts.

Approach of emotional design is not yet well acknowledged theme in service design and there is not that much related material written about it, especially related to online services. Emotions and empathy often needs psychological understanding to reveal why they influence in our behaviour as they do. Evaluation and also further analysis of whether emotional design

can be integrated to be part of the service development will help to describe outlines of development tools for the future.

Also understanding the characteristics of individuals and gathering research material for analysis is new approach to Basware. The concept of service design is not yet fully utilized in Basware as such and existing development focuses more to functional solutions than to the user experience design. Therefore introducing new dimensions such as emotional design as being part of service design together with ethnographic or empiric research will hopefully give opportunities to improve existing and forthcoming service development done in Basware.

Besides the case study itself, the main theme around emotional design and its implications in the future service releases is something to follow with interest. Service design itself takes this emotionality into consideration with co-creational aspects of service design, but it is not often separated to understandable entity of itself. There are tools to handle touch points and their importance for the user but it doesn't tell the whole truth about the emotional aspect either specially when there is no actual possibility to use the service. It tells more about the feeling at that precise moment of experienced service encountering. In this thesis we will learn what emotion is in chapter 2.5 which also explains that there is difference in between feeling and emotion.

1.2 Research objective

Emotional design is a human centric approach which ultimately is about human-to-human communication which moves away the focus from the computer (Walter 2012,30).

To understand the user perceptions better, it is important to involve users in the new service development phases and not just in the delivery phase. Furthermore the actual development should be done together and based on the requirements of the real users. This is because the service is created together with the users while service is in use. Here mistakes are often done as the development is done based on internal visions, not based on the actual perception, needs or requirements of the real users. (Wilson et al. 2013,172.)

This as interlude explains the need to do ethnographical interviews with real and potential users around those topics interested to know more about. Emotional features are crucial for decision making which is explained later in chapter 2.5 but it also allows users to enjoy the service usage. Often there is focus to functionalities meaning how something is done in the service and also what the outcome should be after the service has been used. If that path of the service usage is appealing for the user on the first time, it is likely to be appealing in the

future as well. Nevertheless there are no similar service experiences if two different users are asked to describe it.

The existing service development is managed based on the user stories which might be generated by the product owner or internal team rather than involving users/customers to the process of defining what is important to them collectively. This thesis researches the aspect of emotional design as part of the service development for digital services at Basware Oyj. The objective of this thesis is to gather understanding of what kind of emotional aspects can be identified and used in service development. Bringing the real users closer to development is crucial and can enhance commitment and better customer relationship. Further on this thesis hopefully generates discussion for the future how to engage users in service development at Basware.

Thesis research questions are:

Q1: How emotional design could engage users in digital service?

Q2: How can emotional design be approach for better digital service?

Q3: How co-creation and ethnography can help on developing a digital service?

1.3 Limitations and outline of the study

This research is only focusing on research methodologies, their outcomes and analysis of the research data in the given context of emotional design. It does not continue the service development to the finished product, but gives background details of further opportunities and development. This is author's personal learning process to know more about emotional design and making case study research.

1.4 Case company presentation - Basware Oyj

Basware Oyj was founded in 1985 and was identified as a software company offering solutions to the financial tasks. The growth of the company has come from strategic acquisitions done through time as well as generic growth of business. Business growth has followed acquisitions done together with the product development that has focused to procurement and invoice automation. Basware's milestones that present most meaningful events from Basware's history, can be found below:

Basware Milestones

2013 - Over 60 million transactions in the Basware Commerce Network

2013 - Acquired Certipost, the leading e-invoice operator in the Benelux

- 2012 Acquired German e-invoicing operator First Businesspost
- 2012 Accelerated global growth strategy
- 2012 Unified cloud-based B2B platform Alusta
- 2010 Introduction of new invoice automation solution for the SME sector
- 2010 Full Connectivity Services offering for enhanced buyer-supplier collaboration
- 2009 Acquisition of Itella's invoice automation business
- 2008 Acquisition of Contempus
- 2008 Acquisition of TAG Services
- 2007 First to offer EPP solution with full Unicode support
- 2007 Basware Mobile Client introduced
- 2007 Digital Vision Technologies acquired to extend data capture expertise
- 2006 First with Built-in Key Performance Indicator Tool with over 100 predefined indicators
- 2006 Software company Analyste acquired to extend portfolio to payment software
- 2005 5-way matching (business rules based automation)
- 2005 End-to-end purchase-to-pay concept
- 2004 Introduction of true invoice automation
- 2003 First solution for IFRS based group consolidation
- 2002 Introduction of automated workflow
- 2002 Subsidiary in the United States
- 2000 First purchase management software and e-invoicing service
- 2000 Public listing on the OMX Nordic Exchange Helsinki
- 2000 First subsidiaries in Europe
- 1997 Innovation of invoice processing
- 1992 First financial management software
- 1985 Basware founded
- (Basware history 2014)

At the moment company is a global leader in purchase-to-pay solutions with approximately 1 million companies in its network (Basware 2012). Globally company has more than 1400 employees. The employees are spread globally as Figure 1 demonstrates.

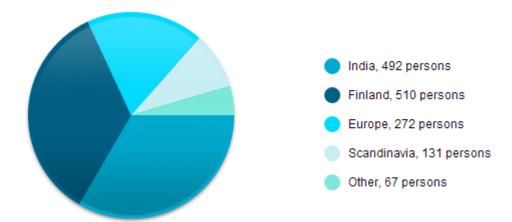


Figure 1: Geographical division of personnel (Basware 2014).

Something that tells the growth of the company is that at the beginning of year 2000 company had approximately 60 employees, in 2010 when author joined Basware there was approximately 850 employees and year 2014 there is over 1400 employees.

From 2010 the company started to approach its business from perspective of a service company instead of being a software company, although the solutions developed in the past also supported this service aspect. There was will to integrate and focus service more into business strategy which in 2010 lead the focus to shift more to change the identity of the company to be a service company providing solutions for procurement, invoice automation and hold the market leader position in purchase-to-pay solutions. (Basware 2012)

The company seeks high quality solutions through constant development of service segment. From the authors perspective this gives good grounds for the service design approach to be used to really understand the shifting and changing needs of the customers and users.

2 Understanding emotional design

This chapter explains the fundamental terms and phenomena of emotional design handled in this thesis.

2.1 Service concept

In the academic literature exists variety of definitions of service and how it is comprehended. Most of the definitions are from the time before 1980's when the actual discussion in the academia tried to define it based on the perceptions of it. How one defines service might be individual perspective but in terms of understanding it as phenomena and as entity discussion is ongoing. Grönroos (2007a, 52) uses a definition which to author can also relate to:

"A service is a process consisting of a series of more or less intangible activities that normally, but not necessarily always take place in interactions between the customer and service employees and / or physical resources or goods and / or systems of the service provider, which are provided as solutions to customer problems."

Lovelock (2007, 15) approaches the definition from the perspective of exchange where customer is seeking for solutions which are expected give value for them in exchange for money time and effort. The value itself does not come from the ownership perspective but from the value-creating elements. (Lovelock 2007, 15.)

Related to the definition itself, service is based on interaction and does not require exchange as such to occur (Grönroos 2007a,53). It is good to acknowledge that not always customer is directly part of the interaction when service operations are done, therefore it does not directly involve customer in the process. The actual interactions not require customer to be present, but do contain interactions at some point. (Grönroos 2007a, 52.)

When the customer is as asked to describe the service, it is often described as trust, experience, feeling, and security. These are such value categories which can't be easily measured, which can be one argument to make service more tangible for the customer to create concrete approach to service. (Grönroos 2007a, 54.)

Grönroos (2007a, 53) suggests that services can be described with three main characters:

- Service consists of activities in the process.
- Services are in some extent produced and consumed simultaneously.
- To some extent customer participates as co-producer in the service production process.

Approaches of customer as a co-producer of services is divided by Fitzsimmons & Fitzsimmons (2008, 77) into three main groups that presents the customers role in the service which contains the customer activity that presents the value-in-use. Customer involvement in the co-producing the service is evident in the **self-service** as the actual activity of the customer creates the parts of the service entity that the customer experiences. This kind of self-service aspects can be seen in the fast food restaurants, check-in points at the airport or where ever customer can through their own activity proceed with service interactions that have influence in their perceived service experience. Customers can also appear as passive co-producers in terms of matching their demand to availability of the service. In this kind of aspect the peaks of the service usage is leveraged with demand and guided through pricing for **smoothing the**

service demand. In terms of customers' ability to add content to the service is **customer-generated content** which appear in the form of adding up information or anything that can reflect to the content of the service in any level. (Fitzsimmons & Fitzsimmons 2008, 77.)

2.2 Background of service marketing

As the most influential writer of his time Smith created grounds for definition of goods-dominant logic when writing the Wealth of Nation stating that skills of a human define the outcome of an item which is created for purpose fulfilling a certain need therefore creating value as the item is used. Services as such were referred as productive and unproductive from perspective of the item. Productivity of the service was measured based on whether it had mercantile value for the product. (Vargo et al. 2006, 30.)

Previously dominant marketing approach has laid grounds using the 4P's, also known as traditional marketing mix; product, price, promotion and place. This traditional marketing mix is seen by Lusch & Vargo (2004, 407) as tactical in its approach on marketing, but do not exclude the meaning or value of traditional marketing mix. They see that there is valuable place for it in tactical perspective. Gummesson (2007) sees traditional marketing mix "as a set of strategies for suppliers to act" (Gummesson 2007, 25). When this is compared with service-dominant logic it presents more strategic approach by identifying; co-creating service(s), co-creating value proposition, co-creating conversation and dialogue, value processes and networks (Lusch & Vargo 2006, 408).

Grönroos suggests (2007b, 185) that the value proposition is a proposition that needs to be followed by offerings to fulfil the expectations created by this proposition. As according to service-dominant logic company can only make value propositions. This is however according to Grönroos (2007b) seeming like a conclusion of goods-dominant logic where the company is not actually involved in the consumption process. In goods consumption goods are consumed by customer alone without being able to influence or changed during consumption. As in service consumption co-production and co-creation of value takes place during the consumption. Both company and customer can be active. Traditionally it has been the exchange that created the value for the customer, as the product created withheld the value created by the firm and where the product is the solution for the customer. This is the 4P's traditional aspect for value creation and that it is based on exchange. Therefore it has been called as value-in-exchange. (Grönroos 2007a, 27).

So called traditional marketing mix has that more traditional approach. For the service aspect more suitable approach is extended marketing mix which takes into consideration additionally to the 4P's; people, physical evidence and process. The extended marketing mix definitions

are presented below. The extended marketing mix is illustrated in the Table 1 to demonstrate the body of extended marketing mix and how the traditional marketing mix is being extended.

	Ä. X	Product	branding, packaging, quality level
10	Traditional Marketing mix 4 P's		
7 P's	rket	Place	Channel type, location
, xi	¥a		
n Br	nal	Promotion	advertising, publicity
etii.	ditic		
narl	Tradi 4 P's	Price	Price level
ed r	er L		
Expanded marketing mix 7 P's	Expanded mix for ser- vices	People	Customers, employees
Exp			
		Physical evidence	Tangibles
	and(
	Expai	Process	Flow of activities, customer involvement

Table 1: expanded marketing mix for services (Wilson at al. 2012,19).

For the people the following definition applies:

"All human actors who play a part in service delivery and thus influence the buyer's perceptions: namely, the firm's personnel, the customer and other customers in the service environment" (Wilson et al. 2012, 21.)

For the physical evidence the following definition applies:

"The environment in which the service is delivered and where the firm and customer interact, and any tangible components that facilitate performance or communication of the service" (Wilson et al. 2012, 21.)

For the process the following definition applies:

"The actual procedures, mechanisms, and flow of activities by which the service is delivered - the service delivery and operating systems" (Wilson et al. 2012, 21.)

Vargo & Lusch (2006) suggests that service(s) are exchanged for service(s) where the service can be intangible or tangible, like an appliance which helps in the desired tasks performing them as self-service. Further on Vargo & Lusch (2006) explains that exchange itself is learning where through the medium seller and also buyer can learn which solution might work best for their needs (Vargo & Lusch 2006, 411).

Prahalad & Ramaswamy (2004) notes that in the traditional concept of market the value is created in the firm to the consumers fitting to their offerings. As modern co-creation term Prahalad & Ramaswamy (2004) introduces DART; Dialogue, Access, Risk-benefits, transparency. Value co-creation according to DART, consumer should have access and transparency to same information as the firm has to have successful dialogue. With the knowledge contained they can do risk-benefit assessment, whether to proceed on their decision making process. (Prahalad & Ramaswamy 2004, 9.)

This said there needs to be extinction between consumer of the service and consumer of the goods. Quite often consumer term is used in business to consumer (B2C) context but consumer could be also the consumer of the service. However, this is often referred to be just user. In a similar approach the service can be intangible or tangible depending on the desired task that user is aiming to do. As Gummesson (2007) clarifies the service-dominant logic is proposing a service being central term which substitutes goods and services.

In relationship marketing, the notion of 4P's exchange being central shifted to interactions being central and more to value-in-use perspective where the true value comes from customer value creating process and customers perceptions. In this process customers relationship with service provider is the intermediate where the customer consumes and uses the service and creates the value in those interactions. (Grönroos 2007a, 27.)

Relationship is something that should be earned by the provider through using relationship marketing in communicating and interacting with customer, but it is the customer who determines whether the relationship has developed. Relationship itself is defined as mutual way of thinking between the customer and service provider with notion of trust. (Grönroos 2007a, 36.)

Relationship marketing is about the specific relationship between the service provider and customer where the value creation process happens through value-in-use. Therefore it is not just another set of tools in the marketing mix. It focuses to customer management and considers customers offering needs as whole, not just partly. Furthermore the mind of marketing is required in whole organization. (Grönroos 2007a, 42.)

2.3 Service design thinking

Service design is multidisciplinary approach that facilitates common language between disciplines like technology and strategy (Stickdorn & Schneider 2012, 110). There are several tools that can be used in service design, and tools that fit any other field can be toned to fit the

purpose of your service design as well. Stickdorn & Schneider (2012) has collected some tools as a toolbox that can be used from their co-creative book *This is Service Design Thinking*.

Service design has over 15 years history and during the time it has become interdisciplinary as it has influences and integrates from other areas such as design, business and several other fields (Stickdorn & Schneider 2011, 54; Moritz 2005, 8). Yet it requires explanatory efforts to describe service design to people that are not familiar with it. However Moritz (2005, 39) has defined it to be combination of strategic and processes related to the experienced service as well as the experienced service itself. Which can be also argued according Stickdorn & Schneider (2012, 28) being still "evolving approach" that doesn't yet have one shared and common definition what service design really is. Moritz (2005, 67) argues that there is relation between how improvement of a product is addressed in the same way as service which has quality problems that have been identified and needs to be improved.

There are available different kinds of principles defined for service design that are loosely connected to the ones presented by Stickdorn & Schneider (2012, 36-45). This is because terminology used may be different but have same meaning or meaning that is closely related. Service design principles define it to be user centred where user is kept closely in the middle of design process reflecting to what and how user will do with the service and what makes it desirable. When keeping user centric approach it is easier to have common shared language when focus is on the service and users own personal history or experiences do not cause possibility for misinterpretation. Co-creative as it requires stakeholders to participate from different backgrounds and roles for brainstorming together where they are bringing the value itself to the designing process, keeping user in the centre. Sequencing is about the phases how the service touch points are presented to the service user. This starts from the expectations of seeing an advert of the service throughout the experienced service. Evidencing is the item user receives from the service when using the service as a memorable item which can prolong the experiences even after consuming the service itself. The possibilities of considering all possible scenarios of the service environment might be impossible, but service design should be holistic representing all views from all parties. Basically what the service provider is presenting its values, employees and whole company image should be considered in a simplest way when designing a service. (Stickdorn & Schneider 2012, 36-45.)

Moritz (2005, 118) makes a note that process models presented in the following sub-section *Service design process model* include four basic elements; discover, define, develop and deliver. This however is seen as too narrow view of what service design and innovation truly could offer. Therefore Moritz (2005, 122) sees most appropriate to categorize elements differently to the following levels; SD Understanding, SD Thinking, SD Generating, SD Filtering, SD Explaining and SD Realizing. These are illustrated in the Figure 2.

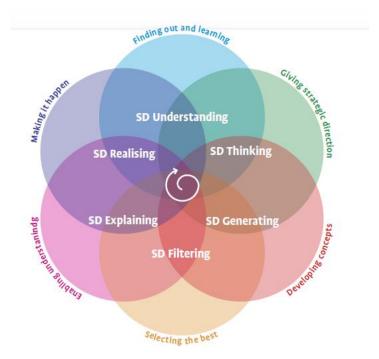


Figure 2: Six categories of Service Design (Mortiz 2005, 149).

This thesis is focusing to the SD understanding or as defined in later chapter 2.4 the discovery phase.

To understand the service design field few words needs to be said about service-dominant logic as well. Parry at al. (2011,25) refers to grounding work of Lusch and Vargo who suggest that services and products both have their value while in use because all products have their means which through the consumer is able to perform something desired or needed.

Therefore while looking into Service-Dominant logic it is valuable to build the understanding of it based on Lusch's and Vargo's academic production. To really understand why service-dominant logic is meaningful today, we also need to gasp understanding of goods-dominant logic which has been a nominative setting for marketing and economics until 2004. Goods-dominant logic in the marketing perspective has the marketing mix or four P's of product, price, promotion and place (Wilson et al. 2012, 20).

Definition difference can be veiling as an example of a book might be first seen as physical product, which then contains information that is shared as a written text. While reading the book or this thesis the need for information and written text merge and creates comprehensive understanding creating value as information. Authors aim is to exceed in expectations readers might have. (Dhaliwal at al. 2011,1-2.)

2.4 Service design process model

Thesis research is constructed of discovery and definition. It does not follow up to the development or delivery. On this chapter the double diamond process model is presented as it gives to the reader an understanding of further steps that the process in a whole contains.

Double Diamond

Double diamond consists of four main stages: discover, define, develop and deliver. It was developed by Design Council in 2005. Discovery contains the actual data collection for the design process to happen. This can be any kind of research, qualitative or quantitative, that you can use to collect data for further analysis and to identify problem. In the Figure 3 is presented the double diamond approach to service design.

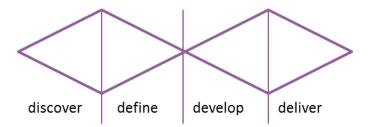


Figure 3: Double diamond process image.

Define phase initially is about identifying the problem from data collected from discovery phase. Defining is like concept designing where all collected data is narrowed through trial and error to get more understanding of the problem reached through the failures. In the Develop phase the defined outcomes with the knowledge from previous step is produced to prototypes and models that try to mimic reality as closely as possible. After prototyping and testing the actual outcome is processed to deliver phase for final development and implementation through testing. It is crucial that at this stage employees are also taken into consideration and the organization is backing up made decisions and staff for successful implementation. (Stickdorn & Schneider 2012,126-135; Design Council 2014; Design Council, 2011, 8-9.)

2.5 User experience with emotional design

Taking closer attention to understanding the user's perceptions and expectations and more over how they emotionally experience services around them, we would need to know how to research or measure emotion. Scherer (2005) states that before to be able to approach research there needs to be understanding of what emotion is and what it is not. How can one then define emotion? As according to Scherer (2005, 696) the definitions given are not often same when people is asked what is an emotion. Plutchnik (2001, 344) brings to attention that

as there is not necessarily ability to describe emotions distinctively, metaphors are used to describe these emotions in the lack of this kind of distinction. Furthermore Scherer defines and explains the differentiation between widely used terminology of feeling and emotion. These as words are pretty similarly understood by people in general but as Scherer differentiate feeling as subjective experience process and emotion as multi-modal component process. Therefore using them as synonyms to each other creates confusion and mixes the interpretation of emotion.

To understand how emotion is related to different neuro systems Scherer visualizes the functions in Figure 4. This shows that understanding and explanation is highly neurological and requires deeper understanding of psychology and also needs to be taken into consideration when approaching emotional design. Then again the concept of emotional design should not be taken as the big white elephant nobody is dared to facilitate in their design.

emotional function	Organismic subsystem and major substrata	emotion component			
Evaluation of objects and events	Information processing (CNS)	Coginitive component appraisal			
System regulation	Support (CNS, NES, ANS)	Neurophysiological component (bodily symptoms)			
Preparation and direction of action	Executive (CNS)	Motivational component (action tendencies)			
Communication of reaction and behavioral intention	Action (SNS)	Motor expression component (facial and vocal expression)			
Monitoring of internal state and organism-environment interaction	Monitor (CNS)	Subjective feeling component (emotional experience)			
CNS=Central Nervous System, NES=Neuro-endocrine system, ANS=Autonomic neurvos system,					
SNS=Somatic neurvous system					

Figure 4: Relationships between organismic subsystems and the functions and components of emotion (Scherer 2005, 698).

Based on the above description of emotion it is fair to say that understanding the emotion as phenomena is complicated without deeper understanding of psychological processing of human mind. According to Plutchnik (2001, 344) there is not yet definition for emotion that could be accepted by the scientists. Lacking unanimous approach for the definition of emotion reflects the overall understanding of its positioning and role in people's life. (Plutchnik 2001, 344.)

Plutchnik (2001) offers a definition suggestion for emotions as "complex chain of loosely connected events that begins with a stimulus and includes feelings, psychological changes, impulses to action and specific, goal-directed behaviour." (Plutchnik 2001, 345.)

Plutchnik's wheel of emotions which presents the bipolar as opposite emotions as circumplex, was proposed by Plutchnik to include eight basic bipolar emotions in 1958: joy versus sorrow, anger versus fear, acceptance versus disgust and surprise versus expectancy (Plutchnik 2001, 349). Later on in the 1980's Plutchink made famous 2D and 3D models of this suggested model of basic emotions which follows the general model presented below in Figure 5 as wheel of emotions.

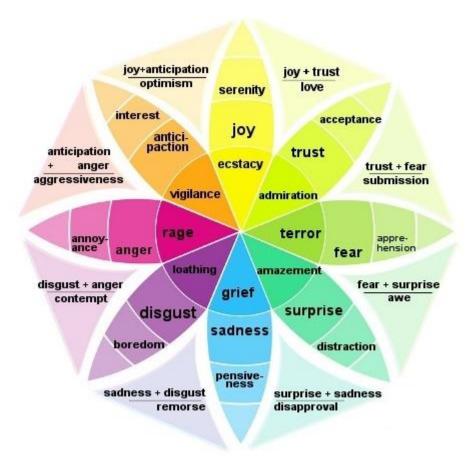


Figure 5: Wheel of emotions by Plutchnik (wheel of emotions, 2014).

Desmet (2002) suggested a model for product emotion which is presented in Figure 6 below. Based on this model, emotion is comprehended as collection of core appraisal which is the visual appearance and how the product appeals to individual. To this core influences stimulus of environment or external factors of the product and individually personal concern of how or what could happen related to the product.

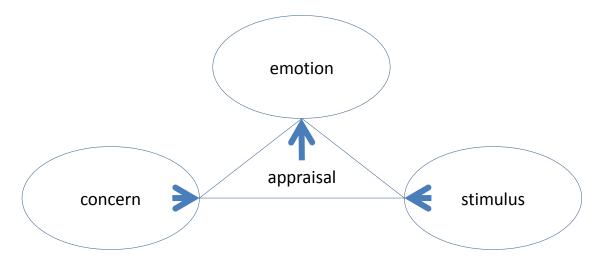


Figure 6: Model of product emotions (Desmet 2002).

This gives grounds for further dialog how Walter (2011,30) handles emotion and emotional design as human centric. Even in business-to-business environment the companies are group of people - those who might love or hate your service. And the feature that is common for all mankind is the ability to emote. How we emote is a born in-built recipe for example to those basic needs we can see from Maslow's hierarchy of needs. It is also further and deeper insight to emotion which is complemented in the perception interpreted by Norman D. (2004) with the levels of processing.

In terms of how emotion effects to the memory Levine and Pizarro (2004) delivered an overview of done research in emotion and memory correlation bringing out some of the findings how emotion correlates with memory. According to their findings emotional memory is not indelible but long-lasting which effects to post-experienced stimulus which effects to how experienced situation is described or remembered. Even so, emotional memories are remembered better than non-emotional memories. (Levine & Pizarro 2004, 533-534.) Walter (2011,12) makes a note that emotion is closely connected to the long term memory which helps us either not making same mistakes again or return to positive memories.

Norman (2004) presents the three levels of processing structure how our brains processes external influences as **visceral** being the level where some individual difference appear but generally behaves in the same way for all people as it is the foundation of survival mode known from the animals, **behavioural** is for controlling mundane behaviour which happens unconsciously and **reflective** is contemplative level which together with behavioral level builds up individually based on experiences and is therefore closer connected to memory. Figure 7 presents graphically Norman's interpretation of the above mentioned levels.

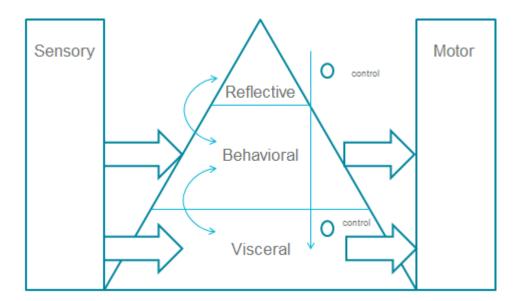


Figure 7: Authors interpretation of Normans Three levels of processing (2004, 22).

As Reimann (2005) moreover tones these levels as presented below:

• visceral motivations: how user wants to feel

• **behavioral motivations**: what user wants to do

• reflective motivations: who user wants to be

According to Norman (2004,19-20) aesthetically pleasing product helps people to be more inventive and imaginative and therefore also to work out more solutions to solve possible problems. In negative effect behaviour turns to be repetitive and it is harder to see solutions for the problem as the only thing visible are the details of the problem. This creates a threat to both to products and services as when the problem has overwhelmed user, regardless of how small the problem to the developer eyes might seem, this will generate irritation, repetition and in the end reluctances to continue usage of the service. Returning back to use the service that once caused those grey hairs creates a barrier of trust. Therefore it would be in immense importance to find a way to measure and react to the feedback received to fix or soften the problem.

From the business aspect measuring performance is the base for improvement, but not everything can be measured straight forwardly. If you can't measure something, it is not therefore important. (Norman 2011,171.)

Even health analysis in hospital is more based on the data analysis and technical computerized tools than direct humant-to-human interaction. Numbers therefore guides the necessary decision making for the patient. (Norman 2011,174.)

But it can be challenged whether you need to have numerical data for comparison for the improvement or could it be verbal data that has more desired direction of pleasing user more than in previous solutions. Obviously pleasure and pleasing are close to each other and in the end, there is possibility to also measure hard numeric data for example in speed of increase of registered users or improved sales. This however requires longer observation time and definition of the KPI's (Key Performance Indicator) to be followed. Imagine the difficulty for improving user experience when it is more difficult to gather measurement data and results are not available in numbers.

From service journey aspect the actual results of user experience is the journey user makes from anticipation through the actual interaction and through this experiences the service provided also creating image of the company providing the service. (Norman 2011,177.) This would mean that when service is for the very first time introduced to the user, it creates founding expectation of how anticipation is built-upon. Therefore it is important for the service provider to clear out how the company or the service would like to be seen and understood from the very first communication towards potential users as it builds expectation. This kind of approach has its problem as individuals may perceive experiences differently than how service provider has designed or anticipates. This gap between staged and perceived experience is presented by Beltagui et al. (2012,129). Figure 8 presents the gap between staged experience and perceived experience.

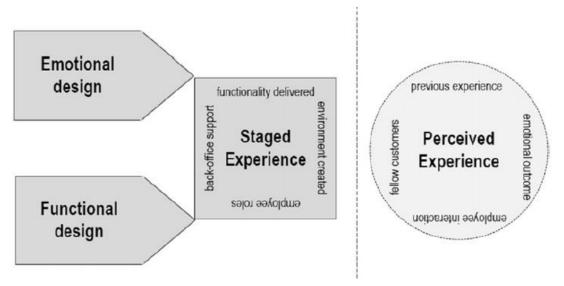


Figure 8: Staged and perceived experience gap (Beltagui et al. 2012,129).

Dhaliwal at al. (2011,8) concludes that experience is set of emotions. Favourable customer experience is the experience that makes you encourage others to test the service or go back where you last time had a memorable lunch. It is about spreading the word out, when one is so emotionally excited to do so. (Dhaliwal et al. 2011,8.)

The human brain is divided into three main areas. Each of these layers from outer layer to the central area layer has their own responsibility. Neocortex handles the rational thinking, limbic handles emotions and reptilian decision making which is also responsible for the animalistic survival. Dooley (2012, 1) suggests that 95 percent of decision making happens under neocortex layer without rational thinking. Limbic answers to a question for what and how emotion is elicit to create in the users mind and the neocortical answers to a question for what business are we in and what services are we providing (Dhaliwal et al. 2011, 11).

When two people experience the same service, their experience might be different when asking in different times. Most cited method for subjective quality of a service SERVQUAL by Parasuraman which presents gaps between perception and expectation of the service. (Parry et al. 2011, 23.)

Emotional design takes a stand for senses through appearance and through the input effecting to the emotions of the user. As Walter (2011, 6) proposes we are usually focused to functional design lacking the effect of the emotion. More and more focus from the field of design is using some level of emotional design as part of their service. Stickdorn & Schneider (2012) also notes that successful and popular services are designed to touch the "hearts and minds of people". This is partly because through creating emotions it is possible to make service more memorable. Service has something that addresses emotions and positive feelings to user, which makes service more approachable and seen as part of users' mundane life.

Penalties and fees are usually to guide behaviour and through that change it. These create negative emotion and as emotion is closely connected to the memory, one would avoid making costly mistake again. In the online service context bad service frustrates or makes the emotional impulse for the user who therefore does not trust or is otherwise not willing to use time to proceed. Walter (2011,68) mentions gut feeling as one of most important component in decision making process, whether user decides to proceed with the service or not. If the gut feeling is turning to negative or equal with cost benefit relation, it signals service negation of threat or un-trust. Emotion can therefore influence and turn the gut feeling positive leading the service to be accepted by the users (Walter 2011,67). Shaw et al. (2010,42) supports Walter's statement based on their own research that people make decision largely based on their gut feeling even on the more rationally seemed decision making.

In creating emotions we also look for contrast. This happens either through visual contrast by evaluating difference in colour or shape and or cognitive contrast evaluating difference in experiences or memories. "When we're surprised, we're experiencing a high contrast situation in which something is not as we expected. A moment of surprise frames our attention, which blurs peripheral elements, and brings the extraordinary into focus." (Walter 2011, 22.)

When we are surprised there is immediate processing happening in the brain to determine how to react to the surprise. As the processing needs to be immediate brain relies on to gut reaction. Right kind of gut reaction, the positive one, diminishes subconscious inhibitions that might courage on using the service. (Walter 2011, 49)

As in the role of the user, customer or consumer we are exposed to environmental atmosphere which we experience with all our senses, consciously and subconsciously. Shaw et al. (2010, 4) states that there are conscious and subconscious properties that occur in every customer experience situation. Conscious level is the immediate observations reflecting to a person through main interceptor by being aware directly of something. Subconscious level feeds signals to conscious level that a person reflects behaviour for. Subconscious signals are the ones a person is not directly aware of. Furthermore Saw et al. (2010, 3) claim that from customer experience over 50 percent is based on feelings, therefore emotions.

According to Beltagui et al. (2012) emotional design has been traditionally more product development focused but as the service aspect integrates more touch points between service and user, emotional design has therefore relevance to service design.

Walter (2011,5) approaches emotional design through Maslow's hierarchy of needs as he suggests that it is in the top level where complete fulfilment occurs and is therefore highly significant also for emotional design. The Maslow's hierarchy of needs is presented in Figure 9.



Figure 9: Walter refers to Maslow's hierarchy of needs (Walter 2011, 5).

Walter (2011, 6) presents interpretation of Maslow's hierarchy for fulfilment of user needs and underlines that when the basic user needs are met, the final part of total fulfilment

would be filling the pleasurable user experience. This hierarchy of user needs is presented in Figure 10.

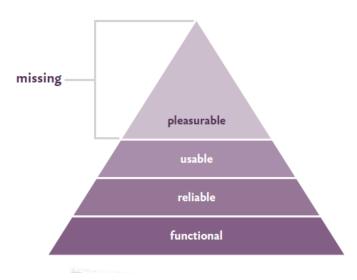


Figure 10: Walter's hierarchy of user needs (Walter 2011, 6).

Emotional design focuses service to be pleasurable to use, Wilson et al. (2008, 66) uses term delight and describes it as "profoundly positive emotional state that results from having one's expectations exceeded to a surprising degree". According to Desmet (2002) pleasure is something personal based on our individual way of perceiving it. Moreover Desmet (2002) presents that pleasure is used to describe positive, exceeding reaction to functionalities or visualisation. It is "emotional benefit that supplements product functionality" (Desmet 2002). Wilson et al. (2012) also argues that presenting delight on the level of service provision could become expensive to the service provider. Additionally Wilson et al. (2008) suggests that the further consideration should take place to think how long time the delight is experienced to maintain customer attention. Competitive implications of delight appear in customer expectations of other firms in the industry failing to match the delight. This increases the customers' expectations. If delight can be copied by the competitor this might lead to increased costs for both parties. (Wilson et al. 2012, 66.)

Why then emotions matter to make service pleasurable? While emotions are part of the limbic system of our brain, it supports greatly in the decision making process. If human for any reason would lack the ability for emotions, their judgement on decision making would not be possible. In this kind of situation human is missing the gut feeling. Furthermore emotions are the core for giving any value for the service as service experienced either excites or fails doing so. (Dhaliwal at al. 2011, 9.)

Pleasures role in emotions is controversial having many aspects and according to Desmet (2002) pleasure can't be emotion and is defined to be more as "pleasant response elicited by product design" (Desmet 2002). This said the actual perception of pleasure is referring to positive experience which can be perceived from visual or functional way. Even though Desmet refers to product, author would claim it to fit also for services in digital context as well.

Emotional design aspect is seen by Knight (2008,341) as valuable for the user experience but also challenging because of increasing complexity by its nature. Even though the emotional design may be pursued as complex and challenging, its nature is to make experiences memorable through emotions. Preferably through surprising and giving positive emotions to users which would engage users with the service.

Company that does mistake and corrects it straight-backed might be more likable than the company that never makes mistakes. In this relation honesty and openness is valued more than try outs to hide the faults. (Norman 2011,164.)

From emotional aspect, the positive emotions help to forgive minor faults like little longer waiting time. Furthermore with positive emotions the experience can be experienced more positively, which means that positive emotion amplifies the experience emotion. Addition to remembering, a memory is also affected through emotions as the whole experience is building as inseparable entity of the service encountering. (Wilson et al. 2012, 40)

Does this then mean that company needs make mistakes? No. But in the light of seeking perfection being selling point, it is more human to the user to understand that mistake might have happened but it is human. Then on the other hand by working on the façade and hide the unwanted failures and mistakes might backfire as the deals and users are moving away.

People are different as they have different personality built by traits lasting sometimes even for a lifetime. We react to confronted situations with emotions that last for a short period of time - less than an hour. Moods are longer lasting from hours to days and are usually outcome of experienced emotions. (Norman 2004, 32.) The experience we subconsciously collect becomes aware of responses as emotions for reflection to experiences.

Emotional design can be seen also as part of interaction design as it was defined by Stick-dordn & Schneider (2012, 80-87) that pleasurability has the emotional aspect together with utility of what and usability of what.

2.6 Summarizing service design and its elements

In previous chapter 2.4 only one service design process is described but even though all process model interpretations vary they all have main schema of discovering or understanding the existing, defining the needs, developing the solutions and delivering the outcome. Stickdorn & Schneider (2010, 122-123) suggests iterative sequence of *exploration*; to find the real problems through ethnographic approach, *creation*; to test concept ideas or design, *reflection*; to test through prototyping and *implementation*; to implement the created service.

This thesis focuses on the sequence presented by Stickdorn & Schneider (2010) to the *creation* and *reflection* stages. In the *creation* phase the concept design is being tested through story-board with contextual role and the *reflection* through using nearly production ready web based prototype. Exploration and implementation are existing phases but not handled in this thesis as the purpose of this thesis is to create suggestions for new service development.

3 Research methods and tools - the case study

This chapter explains the research method and the flow of making a case study based on Yin (2014). To get insights towards service functionality it is necessary to investigate user actions through ethnography (Knight, 2012). The presented methods and strategy are relevant for the thesis and understanding the concept how the thesis research was executed.

Regardless the fact that thesis contains three separate contextually different kind of researches the main research questions remains the same and the phenomena of emotional design is researched in all of them. The case study of the thesis follows the case study protocol presented in the chapter 4.3 for aiming higher reliability.

3.1 Planning the research

Case study approach lets the investigator to investigate in -depth the case in a holistic manor in real life environment but still focusing to the case itself. The distinction between the actual investigated phenomena and the context may not be clearly evident. (Yin 2014, 16.)

Case study is suitable research method when "why" and "how" questions approach the problem. Furthermore exploratory role, uniqueness of the research and which over researcher has little or no control over. (Yin 2014, 14; Ghauri & Grönhaug 2010, 109.)

Even if the question itself is set in the form of "what" can the real question on the background be "how". As in example for the used research question set "What do you think this story is about?" seeks the answers to "how do you understand this presented situation?"

Therefore setting the research questions is the most important phase when thinking about the study that is about to be done. The form of the questions can then help on determine the method to be used.

Yin (2014, 19) presents five actual or possible concerns for the case studies:

- Rigor incautious for following the procedures or letting ambiguous evidence to influence the findings
- Confusion there is possibility to be confused with teaching methods of case study which might more or less initiate to a certain outcome
- Generalizing generalizable for theoretical propositions, not universe
- Unmanageable effort case study research doesn't need to take long time. This is often misunderstood from ethnography research
- Comparative advantage the why and how questions can expand the understanding but there has been discussion on whether it can point the problems directly

These above mentioned concerns are valuable for the investigator to think about before actually entering into doing a case study. Some of the presented concerns might also appear during the researches other steps. It would be ideal to keep these in mind through the research to have better focus while doing the research.

3.2 Designing the research

Yin (2014, 29) defines the case study design as a blueprint of the study explaining logically how the investigator will get from research questions to the conclusions of the study. Further Yin (2014, 29) represents the components for the research design which from three first define the data that is to be collected and the two latter ones how the data is to be handled after it has been collected:

- Case study questions
- Case study propositions
- Units of analysis
- Logic linking of the data to the propositions
- Criteria for interpreting findings

Depending on whether the case study is a single case study research there are five rationales suggested by Yin (2014, 51) who also states that there might be more rationales than the ones mentioned below:

- Critical critical against the theory framework or propositions
- Unusual deviating from theoretical norms of everyday occurances
- Common capture circumstances of everyday life
- **Revelatory** observe previously inaccessible inquiry
- Longitudinal same single case at several points of time

Depending on whether the case study is studying general overall nature it is called holistic design and if the case study's unit of analysis contains subunits it is then called embedded design. These both have their difficulties and challenges as the holistic design might get the investigator off track easily as the case research may shift to other areas the predefined and as the embedded design might get the investigators focus more for the subunits than the main level of analysis.

Based on the classifications given above this thesis case study is holistic single case study which is common by its design.

3.3 Preparing the research

There is a case study protocol that contains four sections to follow. Own protocol for case study is to be used for higher reliability of the case study. (Yin 2014, 84.)

Overview of the case study

General overview statement of the case study explaining what is to be researched and what is the purpose of the study. Overview can contain theoretical details and a good overview explains why study is done, what is the aim of it and in which kind of setting the study takes place. (Yin 2014, 86.)

Data collection procedures

As the study is researching interviewees everyday life in their environment investigator needs to discuss and agree interview times based on interviewees schedule and dominance, not their own. At the time of the interview there would need to be taken into consideration that all necessary tools are present for the interview; such as material at hands, paper for notes, pencil, computes etc. Investigator should be prepared for the meetings and have a schedule

for doing the research activities but also bearing in mind the possibility of changes in schedule of interviewees. This means that investigator needs to be adaptive for the encountered changes. Finally the human subjects should be protected for the actual data collection with a consent letter or other way informing the participants about the risks and conditions of the research. (Yin 2014, 88.)

The consent letter of thesis case study can be found as attachment 1.

Data collection questions

There are five levels of questions according to Yin (2014, 90) which from only level two is most important for the case study research. The level two questions are *asked about the individual case*. This said questions can occur in any of the levels. Levels are presented below:

- level 1: questions asked of specific interviewees
- level 2: questions asked of the individual case
- level 3: questions asked of the pattern of findings across multiple cases
- level 4: questions asked of an entire study
- **level 5**: normative questions going beyond the narrow scope of the study.

Guide for the case study report

The report does not have a uniformed outline how it should look like. Investigator should not worry about the report until after the data collection has occurred. (Yin 2014, 893.)

3.4 Collecting the evidence

According to Yin (Yin 2014, 110) interviews in a case study method are often in conversational form than in actual structural form. Besides this interviewer will have two roles in the interview as there is need to follow own set of questions as well as the ones in more conversational tone following the conversation. In this research the actual interviews were recorded by the permissions given in the consent letter. Recording the interviews gives a possibility for deeper analysing of the interview. Yin (2014, 110) appoints that this is valuable when there is plan to process the recording and the interviewer is regardless of recording the actual interview paying attention to the conversation. In the same Yin presents (2014,110) three different case study interviews;

- Prolonged case study interview
- shorter case study interview

survey interview in a case study

When looking into the length and nature of the questions this separates the usability of these interview styles. Prolonged case study interview lasts longer than 2 hours by one or several sittings and can try to find more details as explanations and meanings to related things.

Shorter case study interview lasts about 1 hour and does not require more time or other sittings sessions. The questions try to look after evidence of things probably already known and not to consider broader aspect to be taken into consideration. Survey interview in a case study is not timely limited but has the survey or questionnaire kind of nuances. (Yin 2014, 110.)

From the presented interview types in this thesis shorter case study interview is used.

3.5 Analysis method of the data

Yin (2014,135) recommends playing with the research data to see and find insights, point of views and patterns that might rise from the data. After investigator has managed to make a connection between the preliminary findings to the research questions a strategy and analysing technique needs to be determined.

The strategy for working from ground-up is supportive strategy for the preliminary results investigator might have noticed. Ground-up strategy gives possibilities to look deeper into data and find possibly more meaningful entities to report.

There are several analysis methods available but for this thesis it was selected to be used pattern matching method together with explanation building presented by Yin (2014,143). In the pattern matching as it suggests from the research data patterns are tried to be revealed. Explanation building is trying to explain how and why some phenomena occur or happens.

3.6 Share the findings of the research

According to Yin (2014, 177) case study reports do not follow any outline or form and therefore it demands some composing to gather the entity to one. Building up the report is a possibility to further find new dimensions from the case study done. Writer needs to be cautious for the presentation as the readers will evaluate the reliability of the report based on the written form of it. There is overall structures according to Yin (2014, 187) that could be evaluated for the form and structure of the report. As this thesis is exploratory by its nature the following structures are available for report use.

- Linear-analytic standard approach for research reports where the issue is studied and prior literature is reviewed. Sequence is linear from descriptions, methods used, data analysed to conclusions
- **Comparative** compares the repetitions explicitly in comparative mode.
- **Chronological** evidence is presented in chronological order. The sequence of chapters might follow early, middle or late phases of a case study.
- Theory-building is based on the each chapter to theoretical argument being made

4 Collecting emotions

This section represents those tools evaluated to be used in the researches. Each research specifies which tool was used to gather data and how.

Scherer (2005, 709) states that there is not one perfect way of measuring emotions. However there is ongoing development and discussion around looking after suitable tool for measuring. Scherer refers to Geneva wheel of emotions (GWE) as one of potential tool for measuring emotions. This tool is being developed still and might offer and be a potential solution for this problem. Example of GWE presented in Figure 11.

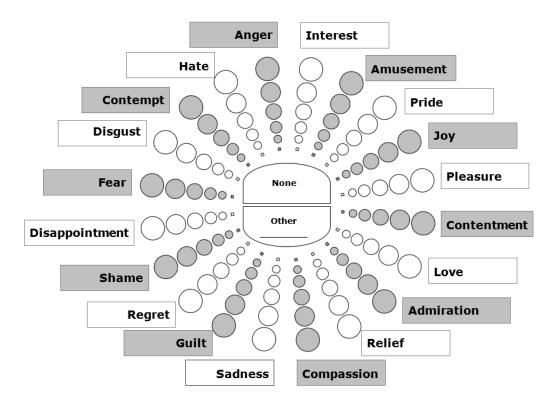


Figure 11: Geneva wheel of emotions (2013).

However this tool might be suitable for measuring emotions, in this thesis Self-Assesment Mannikin (SAM) model is used to map on a higher level of awareness of participants. The fur-

ther analysis is done based on the transcripts of interviews and a word selection method. This was acknowledged and intentional decision by the author. GWE might prove to be suitable for mapping certain user stories in the future when such user researches might be applicable.

There was a decision made to do three separate research phases as the first one tries to find evidence of how potential users would find the service usable and what content and details it would contain. Second research phase tries to go deeper in to the emotional understanding of a created prototype, how potential users would understand the presented prototype while they use it and in which way they perceive it. Third research phase gathers data to form empathy persona mapping through interviewing people potentially using Basware services in a way or another. This decision was based to the initial research questions Q1 and Q2 to gather enough coherent understanding of the user experiences within the concepts. Research questions Q1 and Q2 were:

Q1: How emotional design could engage users in digital service?

Q2: How can emotional design be approach for better digital service?

This compiled and analysed research data then looks the evidence of emotions, emotionality, empathy and feelings. Other findings are presented here as well but in minor role.

Ethnographical research formed the research path and as there was seemingly little or not at all interaction in social media (Linkedin, Twitter and Facebook) with people, this limited the way and role of how participants were recruited and all recruitments were done using telephone and email.

4.1 Self-Assessment Manikin (SAM)

SAM presents pleasure, arousal and dominance (PAD) in a figure form presenting each emotion graphically. Emotions are hard to measure because of their complexity and there are only limited amount of fitting measuring tools to be used that are enough accurate. PAD dimensions were identified by Mehrabian and Russell in 1974 and SAM by Lang in 1980. (Morris, 1995; Irtel 2008). Each of the participants were asked at the end of the interview to estimate assessment of how they felt after they had built their understanding what storyboard could be presenting by marking the best choice from the modified SAM presented in Figure 12. This helped to visually identify how emotionally concept design was perceived and which kind of emotions it raised.

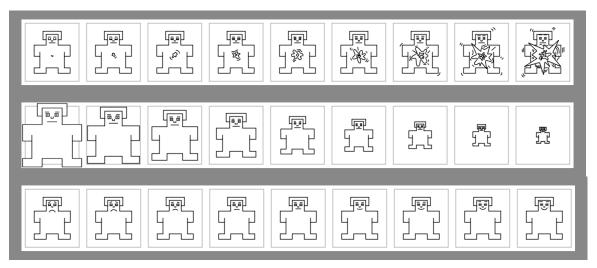


Figure 12: Examples of modified SAM (Irtel 2008).

Reason for selecting SAM for the thesis measurement tool for emotions can be argued, but selection seems valid as Morris (1995) notes that there is no significant difference between storyboard-animatic preproduction versions of commercials when compared to finished commercials. In two occasions differences could be seen in commercial contexts and that was in the food and audio visual category (Morris 1995, 65). It could be argued whether the SAM evaluation is fit to be used in small and separate researches to gain reliable results. The usability of SAM is then separately estimated and analysed in thesis chapter 7.

Analysing the actual results could be done using emotional spaces as Morris (1995) suggests.

4.2 Storyboard

Storyboard approach gives a possibility to define scenarios and create additional theme for creating reactions of given details in the storyboard. In this thesis storyboard is done to trigger emotions and descriptive discussion between participants to find out in which presented storyboard stories are experienced more positively. There will be two storyboards for two different scenarios where background details are same but the expected actions for the user to perform are different.

According to Stickdorn & Schneider (2012, 186) storyboard should be as contextual as possible for making it easier for everyone looking at it to understand relation of the service in given contextual environment. It makes it possible to get different aspects of using the service while following the storyboards scenario and this also allows the experience reflection which is expected and built upon storyboard. This way designer can get perceptions of different scenarios and differentiate which way and what service should take into consideration.

4.3 Prototyping

Prototyping can vary much in its form, but is a way to test intention of service solution that is going to be offered for the users focusing to the user experience (Stickdorn & Schneider 2010, 192). Often prototype is understood as example piece of something quite finished product, but it can also be raw prototype just to collect feedback in the early stages. Prototype can be a presentation of interactive service or paper structured example, there is large variation of which type of prototype is used and when.

Prototyping in this research was in the form of clickable PDF file containing path of actions presented together with supportive text what participant would need to do. Prototyping was conducted in different manor to find out if any differences could be identified and how the results would vary depending on which approach is used. Manors ranged from person-to-person approach to self-guiding participation. Person-to-person situations where participant was leading the behaviour and had possibility to ask from interviewee if there was a doubt of anything related to the presented information. Self-guiding where there was no help available for the participant and they needed to act based on the pdf prototype details and additional tasks that were needed to be done in the prototype.

4.4 Contextual interviews

Interviews are usually information rich way to gather details of phenomena or getting deep inside to the topic of interest. Contextual interviews bring the interviewer at interviewee's premises to allow better reflections of specific details that might otherwise be forgotten to mention by the interviewee. It might also be less stressful for the interviewee that researcher comes to them and interviewee does not need to leave own business location. This also enables researcher to build an understanding of social aspect and the environment where the interviewee does the work. (Stickdorn & Schneider 2012, 162.)

This requires taking into consideration the schedules of the participants and that researcher does not intervene interviewee's important tasks. Therefore it also requires more attention and takes more time considering that locations might be long way apart and that sometimes it is more convenient to be at the premises than doing interview using computer communication tools. On the other perspective, the potentiality of gathering more in depth data should be considered.

In this thesis contextual interview perspective is used in all research phases in the scale that is possible.

4.5 Observation

There are different levels of observations. In this thesis observations are direct by nature to observe how subject positions, what kind of gestures are made in different situations and how subject interacts with service design tools provided in each research. The general environment where the working takes place as indoor and outdoor premises, are included in the observations. Direct observations can be done along-side the fieldwork, depending on the case study. This way it is possible to gather observations of the environment in which the interviewee is working and how these surroundings might reflect to the interview itself. During the interview the interior observations may continue to explain the working conditions or working habit. (Yin 2014, 113.)

4.6 Empathy persona mapping

Persona is a collection of features that present a target groups specific features collected into one. This helps engaging with those specific features and therefore takes them into consideration in design process. The target group's specific features are usually collected for the persona at the research phase. (Stickdorn & Schneider 2012, 178.)

Empathy persona mapping helps the design team to gather more in depth understanding of how users feel and think as it focuses to attributes what user do, feel and think. (Knox 2014)

5 Research phase descriptions

This chapter explains the research phases that was done as accurately as possible. The following time line presents the researches done in relation to thesis work.

The research questions and the content to which the research participant was introduced to were done and agreed with Basware R&D. The need to gather understanding from the potential users and get feedback to each research was also interest of R&D. Due to that, storyboard research and interview research findings were shared right after the researches were done. There are challenges and few issues that need to be addressed also in this thesis but that is done in the separate upcoming chapter of research problems.

Participant recruiting was very difficult as there was a will and need to use such users that are not necessarily part of Basware clientele. There were no ready channels or database of the users to participate. This proved that there is missing channels to users, to those who are connected to Basware business already and those who are potential adapters of Basware solutions. There was some luck to reach willing participants for the research phase 1 as there

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were previously some research activities which from participants for the research phase 1 were recruited.

5.1 Making research phase 1: Storyboard interviews

To the first research phase participated four external companies that represented small, medium and large business. Interviews of six participants were held at the participant companies own premises on following schedule:

21.3.2014: large

22.3.2014: start-up

24.3.2014: medium

24.3.2014: start-up

27.3.2014: Basware employee

28.3.2014: Basware employee

Each session was described as 45 minutes sessions but it was not set as limiting to the research itself. If the session would've needed to be extended, it lasted as long until there were no additional inputs to be given which then concluded interview.

Additional research interviews were done with internal stakeholders at Basware Oyj as it should not matter who potential users might be. Interviews included two participants that were not working directly or indirectly related to the thesis service. The research data was analysed using the same process as with the four main participants.

The storyboard (see attachment 2) was set into context where certain role was given for the interviewee. The role itself worked in the context of storyboard but it also evidently was very close to participant real role in the company. This and other analysing of the research data is handled and revealed in chapter 6.1. Interview was done as unstructured theme interview as the main target was to gather input for what service could be or how interviewees structured the presented storyboard as they perceived it. Participants for the first section of the research presented local Finnish companies in small and medium business size.

Research phase 1 questions used:

- What do you think this story is about?
- What can you do here?
- How do you benefit from what you see?
- How this could be clearer?

- What kind of information do you want before you take any action? why? (reveal missing content)
- What should be here that isn't here? (reveal missing interactive elements)
- What appeals to you most about what you see? Why? Rate emotional reaction on a scale.
- How likely would you use this service? Why? Rate on a scale.
- How likely are you to tell a friend or colleague about this? Rate on a scale.
- Do you have any questions for us?

As the participant's reactions, answers and behaviour were dependent of individual itself, not all questions were necessarily asked as the answer was already presented by the participant.

As these interviews were done personally, some notes were also taken from each interview.

5.2 Making research phase 2: Prototype interviews

In the research phase 2 prototype was built to match on-boarding and registration to the service. In this phase the meaning was to gather usability, behavioural and emotional feedback. In this kind of storyboard prototype testing, there is intention to collect usability reflections of how understandable the service is to use and whether it is adequately self-guiding. The prototype is built as clickable pdf file which is then tested while in use. Prototype is presented in short as attachment 3.

The solution for clickable pdf was forced solution as there was no additional help for making interactive new production website which would have beta testing features. This created limiting possibilities for what could be tested and how. Here the how is more meaningful as participants might have been aware of prototype testing from the past experience and it also had effect to how other parts of the clickable pdf prototype could have been experienced. Existing clickable pdf had restrictive possibility for interaction which also narrowed down the measuring of pleasurability and emotions directly comparable for real usable web site. Nevertheless it did work as prototype which provided data for further to be analysed. These were analysed from the recorded audio and video.

Prototype interview

In the research interview situation the participant is asked to describe out loud what he or she is doing while service encountering is being recorded as video through in-built webcam. The purpose of the webcam recording is to collect facial expressions, hesitations, concentration and everything else which could be retrieved from facial expressions. Analysing facial

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expressions should reveal such meaningful data which would be unfiltered reflection of expe-

rienced situation.

Additionally each participant will need to describe element positioning of the service's user

interface as:

as which element attracts them first

which element attracts them least

which element attracts them most

if they would need to change something what they see what could it be

how they perceive the tasks they would be doing in the prototype

what feelings they initially get right away when they see each section presented

The interviews were guided through dialog with the participant, therefore the content and questions varied between each participant. For the whole content influenced which kind of

individual participant was and what kind of experience participant might have.

Interviews were held on:

30.4.2014: Large company

3.5.2014: Small company

6.5.2014: Large company

Participants also did SAM evaluation at the end of the interviews to describe their position on

experienced situation.

usertesting.com

Usertesting.com is a service which is dedicated to recruit participants for testing purposes and to give surroundings for organizations to perform any kind of user testing desired. In this case, same clickable pdf was used with same guidance than what was used in the person-toperson prototype research. In this case, there was no one present while users took the tests. When participant took the test, their screen and audio was recorded which were then accessible for the researcher to access and evaluate. Participants only had the script and pdf from dropbox.com service. Dropbox is a cloud based service where to users can upload and share

desired files which can be made synchronized with other pc's.

The reason for using usertesting.com was to evaluate the service which gave possibility to benchmark also the research method between usertesting.com where participant is all alone with guiding and contextual interview where participant and interviewer are both present.

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This kind of service made possible to get wider aspect globally for the prototype research as the self-recruiting the participants was difficult and time consuming. This seemed as a possibility to test whether this kind service as usertesting.com could help with user recruitment or be helpful in the future testing opportunities.

Usertesting.com prototype testing was done by the three US participants on 30.4.2014. Instead of answering directly to the interviewer they were eligible to answer to short question-naire which was following their actions on the prototype. Recorded screen was evaluated by the moves of the cursor and by their audio description what they were doing and looking for and recorded audio was then further analysed by content, emotions and determination.

Second part of usertesting.com testing was done by two UK participants who used exactly the same clickable pdf prototype with exactly same path of tasks to perform. These two UK participants participated on the 2.5.2014.

Unlike prototype interview, usertesting.com participants did not evaluate their feelings with SAM evaluation.

5.3 Making research phase 3: Contextual interviews

Interviews were conducted at user premises at Jyväskylä. The purpose of the interviews was to clarify who are potential users, which kind of tasks they do and which kind of surroundings they have to work in. The data collected helped to create emotional persona which helps developers and other stakeholders to empathise with their end users treating them as real people and not just as made up personas. Interviewing participants at their premises also allowed observations to be taken for their surroundings, behaviour, personality and reactions.

Interviews were done as presented below:

3.7.2014, Jyväskylä: 1 accounting company

2 property management companies

Participants were the ones who agreed taking part to the research based on survey done using telephone calls. All participants received $50 \in gift$ card for their time and participation as compensation.

Interview asked the following questions:

- Who are you and what do you do?
- What kind of problems you usually face at work?
- How do you process incoming invoices (paper/einvoice)?

- How happy you are for your current tools?
- How happy are you for presented portal.basware.com?
- How your tasks are split on a work day?
- What makes you happy or what you like at your work?
- What you don't like at your work?
- What have you worked before?

Besides the actual interview the participants were asked to estimate their perception of existing tasks how they experience it and also similarly to estimate their experience of presented service. To understand the daily routines and what participants really work with they were asked to map their activities to 24 hour clock template indicating what they do, when they do it and for how long time they spend for what they do. This gives understanding of when different tasks are done, which kind of situations might occur during the day and what might effect to their emotional experience during the day. With help of the research data is possible to gather insights of how expectation is built and what might affect to the experience and attitude while encountering service.

Additionally this research made possible to gather such data that could be used for creating emotional persona for the development to get insight of real users they are developing service for. For this photos were taken to support the emotional persona. Emotional persona is explained in chapter 5.6 emotional persona.

5.4 Summary of used methods and tools

The research phases done were qualitative and holistic case study interviews. Even though there were three different research phases, all of them are considered to bring additional value to the thesis main research questions. The data or evidence from the research was analysed, categorized and reported. Data from the research phases presented, that all participated individuals represent professionals in business to business or business to consumer's company scheme and are potential service users. There was no connection between the participants and researched service. Only one of the participants represented company that was using Basware Oyj service in general, but still it was not related to the researched topic.

At the beginning of the research it was intended to be as global as possible to collect more heterogenic results for all research phases. As the end result this found to be extremely challenging as there were no existing collaboration with existing clientele or channels to recruit participants to different kind of researches. Therefore the recruitment happened for all research phases through social media and contacting organizations that had existing contacts to certain business groups. At the end of the year 2013 there were first usability testing re-

searches done and few contacts were willing to participate to the future researches as well. These participants were all from Southern Finland which narrowed the focus to capital area of Finland representing only small part of local participants and therefore generated the participation to be quite homogenised for the storyboard and prototype interviews. Usertesting.com gave little insights to US and UK user's perceptions, but not necessarily in the scale that was wished for. For the future user and customer integration to development processes needs more focus.

It was extremely difficult to recruit through social media as Linkedin and Twitter or even to get internal stakeholders to recruit participants to the research, not to mention the companies outside Finland. The problematic is handled closer in the conclusions chapter to come. As attachment 1 is presented the information letter which was sent out. All participants needed to agree to the letter of informed consent which protects their anonymity and also gives consent to record necessary research details during the interviews. This allowed participants to be open and share their opinions without being labelled for it or being afraid their sayings would be used outside of context.

6 Research findings

This chapter represents the findings from the analysed research data. The findings are presented first in perspective of each research and further conclusions are explained in chapter 7. Conclusions and suggestions .

In general it should be noted that there are services for consumers, services for business and then the services serving both clientele. This influences the nature and purpose of the services emotional design features and scale. Nevertheless when applying emotional design to the online service, consideration of design features explained in chapter 2.5 User Experience with emotional design can be helpful.

6.1 Findings of the making research phase 1: storyboard interviews

Interviews constructed data that contained written comments and notes together with recorded audio that was transcript and analysed. Based on this analysed data the constructed understanding of the concept was built. Storyboard focused to the scenario including features, functions, presentation and the service flow. When the actual process for the participant was explanatory by nature, the notions of emotional responses and signals that appeared during the interview sessions were on the authors focus. All storyboard interviews research data is analysed and processed as one research data. Based on the findings from the data analysed results can be divided into four categories which are:

- Simplicity
- Control
- Negativity
- Evaluation by users

As the storyboard was same for all participants, it was up to participants themselves to create the entity around their own understanding based on the given background details presented on the storyboard. This helped the participants to create such understanding that was close to their expectations, desires and also exclude such features which were less expected or desired.

In the whole the storyboard was understood as; tool to have right contact person to reach out in the case there would be any problems that would require contacting; environment to have a valid electronic invoicing address for the recipient; network to connect with business partners and exchange information and do business with; a place where all my agreements are. This showed that there is strong will to be aware of the personal human aspect which brings people closer to each other in a sense that contact persons are reachable and might be able to help in problem situations. Findings showed additionally that the service as expected by the participants would still have such functions which would need them to contact other party by phone. The above mentioned perceptions also showed that there were somewhat similar thoughts what the service could be about.

Challenges for this research appeared to be in the expectations of how to participant should work their way through the storyboard. Most of the participants did not want to "mess up" the printed storyboard or do anything with the pencil. Only one of the participants was directly willing and enthusiastic to work with the storyboard.

6.1.1 Simplicity

There were evidence of social media in the form of experience from social media which worked as a benchmarking aspect for ideation of the functionalities and visualization. This created expectations for how features as search, login, registration or contrast with fields would appear in the service. Such social media's which were mentioned were Linkedin, Facebook, Twitter, Yammer and Foursquare.

Some of the extra content presented in the storyboard divided the opinions into two groups as one thought of having such details would support their valuation of the service and the other

part saw additional details and information un-relevant to the service and their perception of core function of the service.

6.1.2 Control

Most of the suggestions participants had, were related to solving their own problems they might have had faced before or things they would've been willing to improve. This in general created easier acceptance when reflecting to solutions and the service in the whole. Acceptance was estimated by scale of how likely they would recommend such a service to colleague or how likely they would self be using the service. From six participants five could give estimates for above presented acceptance criteria's. On the secondary result, they could see benefits and purpose for connecting to buyers and suppliers.

The features that would appear more appealing were more controllable by the user where the content and frequency of presented information or news would be selected by the user. The information that could be delivered to the user was described as feed which would contain information user could easily go through or ignore those which are not specifically interesting. Other option for feed is push notifications that would work as feed.

There were concerns of losing control of the information and trusting that information is correct and up to date. This was mentioned to need some kind of assurance of when the information has been last time checked or updated.

6.1.3 Avoiding negativity

Repeatedly appearing annoyance of unwanted information was explained as spam mail in terms of amount of mails, the way information is presented and sequence for getting mail. Explanation for annoyance was based on existing mail volumes where the focus and attention do not always meet the user. Important mails might not be noticed and there might be behaviour where certain types of mails are discarded by the user. It also sets information notifications to competitive position of attention with all other mails.

Terminology used appeared to confuse or created remarkable negative reactions which prevented to ideate solutions or create understanding. The confusion was noted in presented scenario on those sections which were not obvious to understand or include in their perception of the service how participants understood it. Negative reaction was annoyance or anger which was based on the own personal experience that appeared when using the word "Portal". This negative experience is constructed from people relationship related to the term and the extra work required in the context of the term.

6.1.4 Evaluation by users

From the six participants five were able to do assessment as one did not manage to do so due to own decision. The result scale only presented the scale of each assessment area as follows:

The average calculations from the answers given by the participants:

Activity: 3,2 Control: 7,4 Valence: 7,2

Based on five given individual self-assessments which to the average is based are presented in the graph below in the Figure 13.

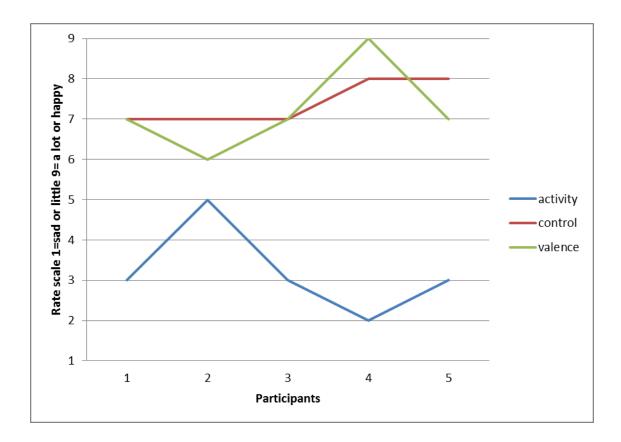


Figure 13: SAM results graph for storyboard.

Example of how participant used storyboard while creating understanding and explaining the features expected or believed to be in the service can be seen in the Figure 14.

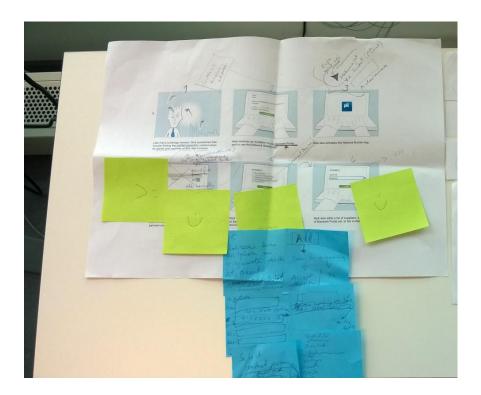


Figure 14: Result of storyboard interview.

6.2 Findings of the research phase 2: prototype interviews

Interviews constructed data that contained written comments and notes together with recorded video that was transcript and analysed. Based on this analysed data the constructed understanding of the concept was built. Observing the participant and the behaviour brought most of the insights of emotional triggers that appeared during the interview.

Based on the findings from the data analysed results can be divided into four categories which are:

- Trust
- Contrast
- Behaviour
- Evaluation by users

Findings are explained below on each category on upcoming sections.

6.2.1 Trust

When it comes to new service that is related to payments and finance, which is provided by three different companies that all have specific role in the service, the key feature named was trust. Trust and seeking trust happened through seeking any information from the proto-

type provided that could enhance trust and therefore make the user feel secured. As the prototype revealed its content one step at the time, the level of trust that was presented to the participant changed during the usage of the prototype. At the beginning the level of trust comes from explained service value and what the service is all about presented by the service provider.

Also overall image of the peripherals of the service such as backgrounds format and it's colouring has influence on how users mind values the trust and generates opinion of whether to trust the service or not. This does not yet tell the trust level of the user for the provider itself. This service provider trust valuation was proposed to happen through estimating the conspicuousness with given details especially when it was not clear who the service provider really was and participants did not have experience from the provider. Even if the presented details would be valid, there would be a seeking out process which includes seeking confirmation for the first impression from unbiased source which, as explained by the users, is done using internet search engines or social media to find users who already use the exact service or are using providers other services. This was specifically explained as searching unbiased opinions. Recommendations on the service sign up page did not convince the users because those were thought to be unbiased because they didn't know who the recommender was and they value more if the seeking out process is done by them.

Further on, after sign up process comes the application form which contains those details required for applicant to fill to get the service agreement enabled between provider parties and the user. The significant difference on the following step showed that research phase had four participants from Finland, two participants from the United Kingdom and three participants from North America. In the application form was asked to upload image of passport, deliver passport number, date of birth name, validity date of the passport and bank statement. From participants from Finland one pointed out that there was not mentioned this kind of requirement until it was presented by the form and why the passport is even needed. All participants from USA started to doubt the intentions and security perspective of the service as to them the risk of identity theft was evident. Therefore those three participants would've not sent, as they claimed verbally, the application until they've got confirmation that what they are doing is secured and they know how the application information is stored after it is sent out. This task and reaction appeared at the end part of the prototype, meaning that it has a greater risk to create doubt, frustration and unwillingness to finalize the task of filling and sending application form. All steps before this phase would've need to gain so much evidence of trust that this would not form to be a problem. However, it can be debated whether this kind of trust level can be achieved without conducting communication with the user directly.

As a global service, service provider needs to take into account the emotional effect to secure these trust levels. For the existing customers of service provider and the ones already using the service entity to which to the prototype is part of was not researched as participants did not have direct service relationship with service provider.

6.2.2 Contrast

The general appearance of the service presented in the prototype entity was accepted as business suitable with light colours.

In the sense of visual contrast as the background in the prototype was decorated with images and coloured with light colours, the highlighted green colour guided the user in most of the cases. If user clicked a button that was green and after clicking was asked to explain why they clicked the button the answer was "because it was green". This implicates working contrast that tells what to do and guides the user onward and gives "permission to be clicked".

The presented sign up page contained appealing layout where participant attention focused to Mastercard logo, visualized steps of the sign up. Mastercard was noticed because it created contrast to other page elements and visualization because it appeared to tell to the user the upcoming steps which ensured user what to expect. Page contained also Basware logo, but it was not as noticeable as the Mastercard was. This also relates to trust as Mastercard was more known company to participants than Basware.

Sometimes contrast also works against the emotions and creates a chance of doubt. As the service notifies the user with separate notifications when the confirmation mail is sent and when the confirmation is made, this notification area was not noticeable for the users. As they did not see the notification and other elements on the page did not change, there started to be doubt that whether they performed something wrong. Alternatively that the system did something unexpected, but mostly there was a doubt of user error. This for the user appears as searching look over the screen shown and trying to comprehend what just had happened.

Also on the application form page the contrast was too big in terms of activity based fields to be filled out versus other page elements. This lead to that only one participant read the additional information above the fields to be filled out which explained that confidentiality is protected and that service is provided by three different providers (their roles were not explained anywhere). Besides the form fields, page has other elements that can be seen in the Figure 15.

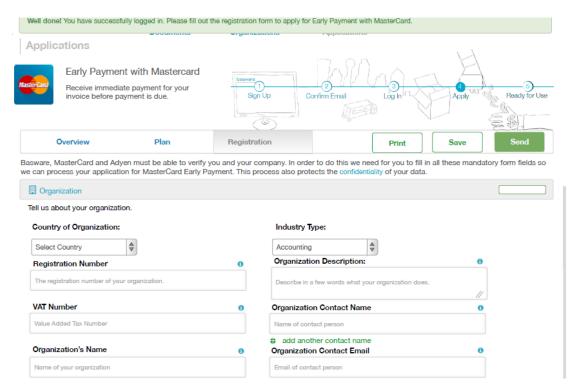


Figure 15: Registration form from the prototype.

6.2.3 Behavior

As the prototype was to be followed based on the script and guide by the participants located outside Finland, it created some interesting points what can happen when there is no support for the user and they are by themselves. The prototype format being a clickable pdf which did not work properly for the participants showed the following behaviour. First of all one participant managed to totally lose the focus of what was to be done because the clickable buttons that should've been working were not working. As this continued it created a snowball effect where another guided click failed and fed the uncertainty and doubt of the user. This happened even in such a scale where user by mistake ended up to Dropbox programs sign up page. Participant ended the test by concluding that "I would definitely need help with this". The reaction was not directly due to how service was presented, but more closely how prototype was presented. It did provide proof of how in failing actions the only thing that can be seen is the problem itself and not the solutions.

Other observation was that in case of one UK participant followed through the test from the beginning to the end by understanding that the site is presented as a pdf form. Every time there was an action to be performed, participant noted that it can't be done because prototype was pdf file. Regardless of this fact, there were some clickable areas that actually worked. In human mind we are se focused to understand and see that sometimes successful actions are disregarded with attention. Also proves that some decision making is done unconsciously and we work in "automatic mode". Participant clicked few working clickable areas

but did not make any kind of note for it, but right after the successful clicks mentioned to other task not to be able to perform the action because this is a pdf file.

6.2.4 Evaluation by users

The average calculations from the answers given by the participants:

Activity: 4,25 Control: 7,75 Valence: 8

Based on four given individual self-assessments which to the average is based are presented in the graph below in Figure 17.

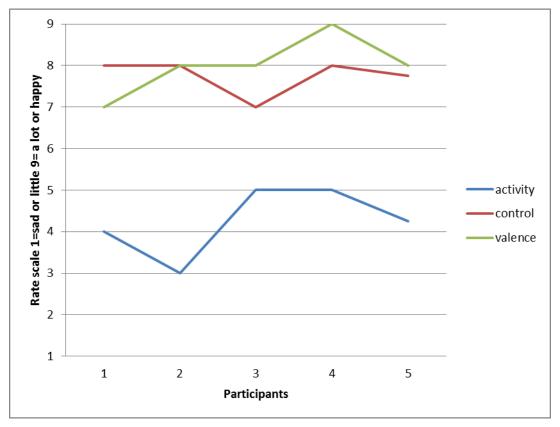


Figure 16: SAM results graph for prototype.

Surprise elements

Those elements of the prototype that raised emotions as reactions in such a scale that it can be interpreted as surprise for the participants were varying between the individuals. These reactions varied as positive reactions and negative reactions. In more detail the surprise ele-

ments can be divided into two categories as fulfilling functional needs and visual presentation of information as shown in the Table 2.

	negative reactions	positive reactions
visual appearance of information	recommendations, who is avden	Steps of registration what to expect, general appearance is business like, hot buttons to guide actions/selection, consistent appearance, early payment status with one look
fulfilling functional needs	normal business expectation of payment, what do I need early payment for, too risky with too much individually sensitive data to deliver, I would need to call for support to fill the form, There is no support contact information presented (telephone number, chat, mail),	amazing to get the payment sooner, I can select to which invoice the service is used, as a small business owner this would help me, long payment terms/times are history

Table 2: Positive and negative reactions.

6.3 Findings of the research phase 3: contextual interviews

Interviews constructed data that contained notes together with recorded audio that was transcript and analysed. Participants also had to estimate how their day is built with tasks, how pleased they are with their existing tools and how pleased they are for Basware's service. Based on this analysed data the constructed understanding of the concept was built.

When entering to the space of the participant, they were little reserved in terms of anxiety or nervousness. This appeared as narrower and shorter answers in explaining what they do and how they do it. Also body language revealed nervousness. As the nature of the meeting was beginning to become clearer for them, it was easier to open discussions and talk about in more depth of their tasks and perceptions. One participant was reserved during the whole interview as there was a fear of revealing something business critical not open for the public use. As the author observed, this didn't reveal as much real issues dealt or bring depth to the personality traits owned by the participant.

Set of tools in this case is constructed of computer, softwares required to do the work, telephone and working environments other necessities which varies between the participants. Participant feelings and emotions are highly influenced by the nature of the external influencers as incoming telephone calls than the actual work with existing tools. This is explained by two participants that when the nature of the telephone call is a complaint or negative feedback, it creates frustration and feeling of inadequency. Even more so if there was no real grounds recognized by the participant for the feedback received. Then again this represented also the pleasurability of the work done to have direct connections with customers and possibility to assist in any kind of issues. The pleasurability was explained as being in contact with people and being in assisting role when customer had problems to solve. Nature of the telephone calls may turn the overall feeling of the day to negative or positive.

Visually the tools available are following the old visual schema of ERP (Enterprise Resourcing Planning) systems which have dominating colour of gray and box like in shape. Functionalities are modular and require often to have modular windows opened inside the ERP system. Based on the data, this is functionality driven for the users and they consider the tasks to be done more on the focus than anything else. In the same there is indications for problems using existing tools to actually perform on daily tasks which in some cases creates frustration. Frustration from the tools are caused because there is either a certain tasks that needs to be done in different tools or software to do the task and if the task at hand can't be done with the tool or software. Visually these tools are experienced as adequate and task driven, sometimes even boring and unsurprising. All participants had several softwares in use for each task they were performing. One had one program where certain types of invoices were done to their customers and the other program for maintaining their masterdata. Other had two different kind of software because in the other one the report could created and gerenerated as a template to be run when desired and in the other program the report results could be retrieved for further processing. In the latter example the software was produced by the same program provider. They experience this to be mundane and already have got used to the set of tools and way those work, for this reason they could not articulate exact problems that might be appearing when using the tools. Problems that were mentioned between participants had to do either the bigger process functionalities, missing or inadequate integrations, manual work and some minor issue with the softwares they were using.

Those persons participating had varying working methods which was observer at their work desk. Two participants had clean and neat desks with hardly anything available which would've not be needed. For one participant the desk was full of piles of paper and for the observer it seemed as difficult to manage. However, we are all different in terms of behaviour. Even the unorganized looking pile of paper might be very well organized and in control by the employee itself. This however reflects to the personality of individuals where

some wants to clean the desk and finish tasks at hand, other might be more flexible in terms of finishing task before leaving work and therefore it might be easier to return to continue the task on the next day possible.

Estimation of a so called normal workday caused problem for the participant who did not have clean desk, as during the day things happen in uncontrolled times and as they needed to be done. The two other participants involved with clean desks were able more precisely articulate tasks and explain what usually could happen during the day. Then again to this also effects the other peripherial tasks that each individual does and doesn't do. Their work role was so different as where the one who could not articulate the normal work day scenario, that participant also had most peripheral tasks involved like meeting the customer in annual meetings. The other two participants did not have this kind of peripheral interaction with their customers, except the ones that arrived their office space. This difference might also explain the differentation between the participants normal work day estimations. This also exposures the participant with more face-to-face customer interactions to more influential emotions.

Based on the collected data, it seems there is no such actions which would generate surprise and delight through the tools they are using. At least there was no highlighting of such actions. This can represent how participants have got used to use the tools what they have in a way they use them.

In the Figure 18 can be seen on of the one of the participants making normal work day estimation task.

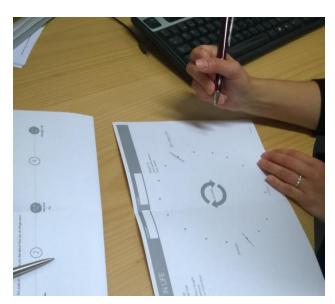
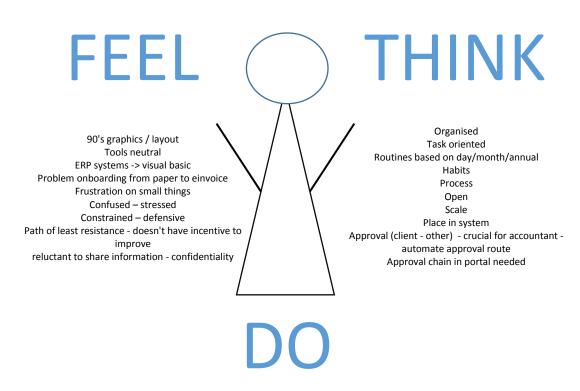


Figure 17: Participant estimating normal work day.

The findings were laying the base layer of information which was used in creating empathy persona mapping - a collection of features from real users that were combined to a persona that focuses to what persona is seeing, feeling, doing or even thinking. Empathy persona mapping was done in a workshop environment where the contextual interviews data and findings were reconstructed into more coherent and emotion focused persona that would be used in the development phase. This workshop was held in 7th of July 2014. The actual photo of the empathy persona mapping is presented in the Figure 18. This canvas was created based on the discussion and notions to keep in mind during the development phase. When this canvas was taped to the wall it was also supported with photos and memoirs written taken during the interviews. This in all create empathy persona wall to remind there is real people with real environments reflected to the empathy persona mapping. Due to securing the individuals privacy, thesis does not contain a photo of the empathy persona wall.



Do their tasks without understanding the context of domain.

Didn't understand Basware

Reporting (financial)

They want to improve process but they don't feel that they can control it, don't have say about what they do Efficiency might mean less work for them. Getting rid of manual steps but not their job

Figure 18: empathy persona mapping workshop held in 7th of July 2014.

7 Conclusions and suggestions

The actual outcomes of the findings revealed the different steps or levels of user needs that was layered by the Walter (2011,6). When the positive findings are placed in to the corresponding levels in the Figure 19 it shows which levels at present can be identified.

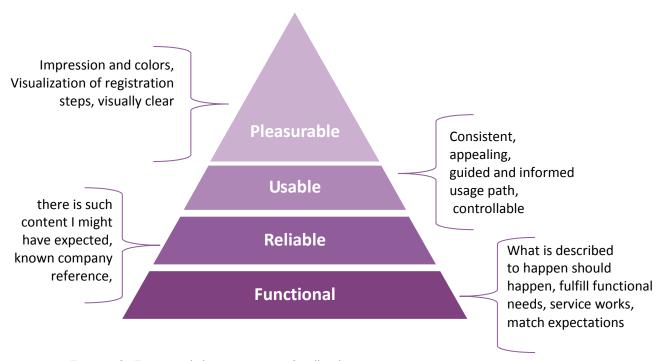


Figure 19: Emotional design positive feedback.

Then in the Figure 20 is presented when the same user needs pyramid is used to map the challenges that are pointed based on the findings.

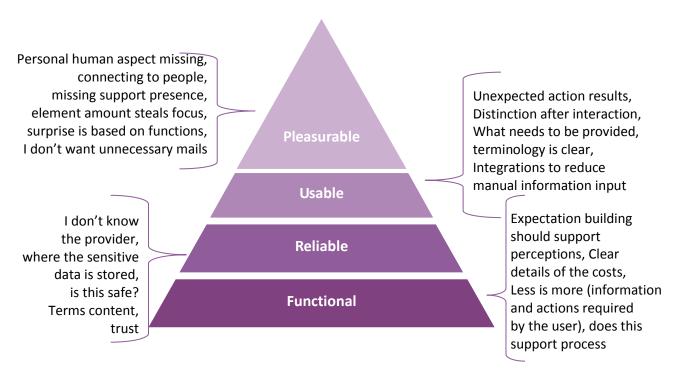


Figure 20: Emotional design challenges.

The following findings are reflected to the research questions.

Q1: How emotional design could engage users in digital service?

The commitment to users should be evident from the gathered feedback and there should be open dialogue between the users and the service provider's development team. Less visibility makes the process dubious as open visibility creates trust and loyalty. The functionalities that are apparent for the service company might not be understandable by the user using the service. This kind of issues could be avoided in co-creational aspects of service development.

In the essence of the user to gasp the first insights towards service is often gathered from the marketing material of some kind or immediate interaction with the service itself. In some cases more background details are searched by the users to determine the quality of the service and level of trust of the company. These aspects are crucial to present what the service is about and who is providing the service. In the later scene of interactions with the service, the supporting information should encourage user perceptions to create trust towards the provider and trust for what user is doing. To this the general reliability and functionality is base which belongs to so basic expectations that service is available and follows properly interactions as expected by the user. These above mentioned steps are the basic trust features which also are related to service quality dimensions.

By knowing service users, their experience and perception and integrating these into service development process in perspective of emotional design can be engaging. In thesis research findings this however was not evident directly as it was hard if not even impossible to gain aspects from users against prototype and storyboard which are not the same thing as live service online. Therefore in upcoming prototyping it would be preferred to have service online so that real hands on experience can be collected from the users. There were indications of smaller elements that influenced positively to users perceptions, but as real service situation did not occur reflecting these positive perceptions further on using the service was difficult.

Wilson et al. (2012, 83) explains four different stages which effect to user perceptions in cases where no problems occur on online service.

- **Efficiency:** for user to find necessary information with minimum effort and access the site effortlessly.
- Fulfilment: how well the described service promise is actualised by the user
- Reliability: functionalities and availability are working as they should

Privacy: Individually sensitive data is not stored and interactions are properly secured.

Furthermore in general service quality aspects Wilson et al. (2012, 79) explains the reliability as keeping the promise which company as service provider makes including those promises related to costs, usability and functionality. As there is not necessarily interactions with people from the service provider the trust creation is to be acknowledged by the provider in the aspect of the user. Wilson et al. (2012, 79) describes trust as assurance which is important in services where users might perceive the service usage uncertain or risky. Especially trust and assurance were identified in such situations where the service provider is not known; therefore additional assurance process is often done by the user which can diminish the trust and assurance created by the service provider.

Wilson et al. (2012, 67) explains that exceeding customer expectations is "delighting and surprising them by giving more than they expect". Then again this approach does not take into consideration that it is not always known what user expect as expectations are personal aspects formed by experience. There is also a chance of no expectation to be present as the pure curiosity drives the user forward until it is satisfied either positively or negatively.

There are four dimensions related to the expectations building which are according to Wilson et al. (2012, 61):

- Explicit service promise: service promises what to expect.
- Implicit service promise: costs and other cues reflecting to quality.
- Word-of-mouth communications: unbiased perceptions of the service provider or the service itself.
- Past experience: previous encounters of the user with the service provider, service
 or other similar services across the industry

These dimensions are eliciting of expectation and these should be carefully considered for the service entity so that it present unified service image for the existing and potential users.

Q2: How can emotional design be approach for better digital service?

When looking into these presented insights at the beginning of this chapter, some positive elements are already in place regarding the service being developed. Despite of this, there are still some elements that might become an issue later on if those are neglected. In terms of emotional design these would be missing human, personal aspect of the users and their interactions with approach towards the service and support options which would bring the

service providers employees closer to user. This aspect emphasizes the empathy that assures the user that there is someone to support nearby if any kind of hesitation begins to build. This was evident in the research findings that missing direct contacts for support in any form will increase hesitation, makes frustration possible and this diminishes or can diminish pleasure. Support function would need to fit into service provider's strategy how support is organized to support users, especially when global service and global user requirements need to be matched. In many web sites already today is chat functionality to contact support where user may receive support within minutes or even seconds after contacting. There should be options for the users to select the contacting channel they feel comfortable for using. This gives the idea of how users are seeking help today. There is no will necessarily to send a mail, wait for hours or even in worst case days or weeks before the actual actions will be taken and original mail gets answered. Here mail means e-mail.

In the research findings, the respondents who articulated the reason for the telephone call approach to suite them when contacting support, they exaplained that they are people persons who are more willing to directly talk to someone and have help. Approaching support using telephone also meant faster assistance for caller's inquiries. There were no indications for using social media tools as immediate support request tool to use, nevertheless this approach would require also organizational strategy to enable this kind of support to be given and also raises the risks of failure if the users do not receive any feedback or help. One of the popular feedback channels on the consumer side at least has been Facebook. If something doesn't work for the consumers, Facebook will be used to contact service provider about the failure. Reason for this is the same as in above described, to get help in a fastest way possible but in addition also share the problem with others as there can be other hesitating whether or not I am the only one with issues.

As findings showed the mistakes, contradiction between information which the user needs to follow and what really happens in the service can create frustration and hesitation rather than assurance and trust. This kind of gap needs to be removed from the production development of the service. Reason for removing the gap is to build confidence and trust for what user is doing. What is described to happen should happen and if there are any actions requested, it should not have too many options for the user to get lost.

It was also evident that it would be more preferable for the service provider to use visually clear and unified graphics to illustrate information, what to expect and keep the information presented as visually appealing as possible. Simplest thing can make a difference for understanding. General appearance is to be smoothened by avoiding too much elements in such places where important information is located. Other option would be to bring the important

information visible by using the consideration of how to emphasize the information in a proper way. These possibilities would be contrast and visualizing the information.

When any kind of input is required by the user, the amount and types of information related to the user as a person or the company on which behalf the information is filled, could be predefined by some company identification or retrieved using banking credentials.

For creating service personality that is wanted to be perceived by the users helps on for the future to engage relationships with users. As in this thesis was mentioned the one of the largest influencer of relationship is trust which has to be won from the first introductions. Further implementation of emotional aspects in design should be further investigated how to take it to the development process together with proper user research to reveal relevant findings. Those researches needs to involve potential or existing service users depending on how it has been planned and what is the aim of those researches. There is reason for this, as from authors experience through this thesis researches, those participants closer to investigator are less likely to contribute un-bias answers and research data. They might not be fully involved in such processes that are relevant for the research. Therefore author recommends further development of relationship to users that might be willing to participate in the service development process can participate. Another suggestion is to try out in small scale the emotional design elements and gather feedback from user to either improve it or to remove it for further development.

If in any point user is prepared with information what is about to happen and what to expect, surprising requests might alter the experience of trust due to contrast of sensitivity or contrast of actions needed. Any personally sensitive inquiry is analysed by the person as a threat if the inquiry is appointed from unknown party with no previous relationship, and even if relationship would've been engaged, the level of it might not be enough for the person to trust.

Emotional design brings the people closer to people in the world where computer is only intermediate and tool for interactions. Acknowledging of connecting to other people is one of the reasons why social media services as Facebook, Linkedin and Twitter has succeeded. Secondly the users are able to create content to their service and share that to others. Thirdly it is a channel for communication. Therefore in the future development of the service, the existing or new ones, there should be taken into consideration how the service is wanted to be perceived by the users emotionally. Developing solutions for functional needs and mapping the missing functionalities fills the service features development. Those functionalities might or might not be usable for the users globally.

Service business does not only limit to service firms as customers are additionally not only looking for the core product, whether it is a service or physical good, but also requiring service offering considering their complementary needs. Taking into consideration these complementary needs it is more meaningful for the customers than the core product itself and that might be the competitive advantage when compared with competitors offering. (Grönroos 2007a, 31.)

Focus is on the specific service but for gaining competitive advantage also requires that hidden services should be considered. Hidden services represent those functions and tasks which have not been considered to be done to customers, but rather for the provider company for some specific reason. This kind of hidden services or non-services are financial, administrative and technical routines which can be remarkable possibility for customer management. (Grönroos 2007a, 3.)

There are also challenges on how to implement those emotional aspects in the existing layout of the service. In many cases there might be business identity which is designed by marketing or layout designer and it is then difficult to take into consideration all adjustments that might have found to support the emotional experience. This aspect needs to be taken into consideration because when there is no personality designed for the service, the focus and implementation might not become as planned. Also expectations of what is business approved emotional design that can be applied without destroying the other elements of the service experience might become an issue. Then again, the most emotional depth can be achieved when the entity touches the emotions the most. Best situation would be to do the personality mapping of the service and build a persona which company wants to present to the users. Then combine research steps to redefine and develop the end result to the service through trying it out small scale first. Therefore suggestion is to see whether small elements could be implemented to the service for a trial period and then do the valuation whether it needs to be redefined based on the feedback. Often services become very general due to focus on functionality and visualization.

Q3: How co-creation and ethnography can help on developing a digital service?

Nowadays there is active existence of social media channels that users use for their personal usage or for the company usage. This can be seen as influencer to expectations in terms of simple and clear way of interacting with different kind of online services. There are also already made networks which users would like to, at least in some scale, use for their benefit in the online services whether it is B2B or B2C role. Basware facilitates Facebook and Twitter as the marketing channel to inform current new details of events, services and other infor-

mation. This could be worthwhile of investigating whether more facilitation and activating users would bring discussions and insights to further develop service features.

Emotional design gives power to win users for the service. We are after all emotional beings that reflect environment and all input we can gather or what we receive from others. It is part of the overall perception of the service and of the service provider, therefore missing the secondary influencers might become an issue for the core of service. This then would reflect to word-of-mouth reputation or / and increasing incident feedback to the support. In perspective of service failure, 45% of customers complain about the failure to the service provider. From those who complain, 1% to 5% complain to company headquarter and against each complaint exists 20 to 100 other customer that have faced similar issues than the one who complained. Except, from these 20 to 100 none have made a complaint. (Wilson et al. 2012, 340.) These are about service delivery failures, so these numbers do not show the implication of mollified service experience. But these above presented figures imply which kind of scale customer feedback can be in relation to the ones who never give feedback. Also those who do not complain directly to the company might agitate to present the feedback through the social media which appearance reaches people in multitude of scale.

As the findings in this thesis showed, people tend to get used to less attractive software because "this is how it has always looked like" or "this is how I have always done this" or even "I cannot influence the appearance, this is how it was designed". As the functionalities might work just fine, the overall experience is not pleasurable. But since everything works and user can perform tasks required, there are fewer disturbances of the other elements for the user. This also is experienced as a feature where to users can't influence through normal service feedback channels therefore it has become a normative. From this perspective, visualization is such a feature where surprise elements can be implemented and has a chance to create pleasure, especially when interaction is combined with visual presentation.

From the service design aspect the service co-creation makes the service emotionally responsive as users are in the middle of the development and design process. This however does not always bring the necessary depth to the emotional aspects of the service. From this thesis such elements to look for is humour, trust, positively surprising visualization in interaction, surprising content in a simplest possible way presented. There are different aspects of co-creation and those actions in this thesis are just one way of involving users to development project. It is important to remember, that involving users in service development can enable content to be richer and help the provider to gather insights and understanding. Someone might comment "I would've figure that out by myself" or "this must be important and usable for other users/customers if this one big customer requests this". The better way companies as service providers can involve willing individuals to their development, the wider and deep-

er understanding can be gained. This would require channels, platforms, ways of working and somewhat strategy to handle this as entity and use the input in the development process. It is also important to understand where the user is coming from and which dimensions are affecting to their actions and emotions.

Stimulus and concern needs to be presented for the user in such a way that appraisal and emotion can be positive. Based on these thesis findings, stimulus needs to be clear in intentions removing those individual concerns that might be experienced based on the explicit or implicit effects that influences user. The commitment for better service does not only involve service and service users, but also the organization in the background and its employees.

It was difficult for the participants to describe missing elements or functionalities. Further on surprising was that identifying problems seemed to have diminishing valuation between participants or that there was no trust and therefore enough reliable relationship between the author and the participants to encourage the openness. Emotional reactions are very hard to analyse and more so emotional reflections to the presented scenarios. In this kind of research entity, there are a lot of information that is recorded and observed but also a lot of silent information. It seems that there is little bit of "magic" which consists of all the things mentioned above and little bit of bravery which the service provider has to utilise to take the step out from the conventional shoes. Conventional shoes are nice and comfortable, but does not necessarily create "wau!" effect.

8 Further considerations

Doing the research for this thesis revealed that there are is not yet such tools that could be easily used in the user research to reveal the emotional impact for the users. There are tools to map emotions such as the Geneva wheel of emotions but implementing it to the user research needs adjustments to fit for the purpose in digital service context. There are other touch point based tools which often are made to fit best to past experience and not on going experience. Open research data is rich in content but challenging in analysis to identify emotional themes. The user experience reflects through emotions to actions and decision making process. For this reason it would be important to get preferably continuous results, feedback, and do try out development to see what is really working. The future discussions could include more focus on which tools are more eligible for tracking emotional reactions. The general schema around emotions is intensively focused to psychology and product design, still missing further discussion for online environments. There are some articles of consumer emotions in online service, but specifically to consumers.

In this thesis the participants were business connected in the b2b category, so role of consumer needs more investigating whether it is consumer or user. The web sites that Walter (2011) gives as examples in his book can be results of good design or just happy coincidence to achieve those delight and surprise emotions. However, when the positive outcome has been achieved, it usually triggers further discussions between people online and offline. At its best, it creates the valuable word-of-mouth to spread along people and that creates further discussions that might also be turn taking for selling the service and creating meaningful relationship between service provider and users.

In the service design approach there is combined ambition to solve problem or create new service using co-creation to make service easier to be accepted by the users. This helps to make the service to look as it is wished and to function as it is wished by the users. These results then often are integrated the way company wants to be perceived. Listening the users and doing active user research is valuable for Basware and other companies. The value comes from listening and observing how users really behave and how they experience the service. There should be resources to do the user researches and therefore also budget for compensating participants, in a way or another. From research phase 2: prototype interview it was evident that researcher would get different kind of results when at the premises with participant when compared to remotely done scripted prototype testing. Both seemingly are valuable approaches but represent different kind of results that supplement each other. The cocreation and ethnography gives grounds for understanding and grounds for future development in terms of understanding the user.

There should be considerations how to involve existing users and potential users more easily to participate in ideating process and development of the services. When there is no ongoing involvement with users in this level, it creates problems to recruit users to the research. This appeared to be difficult also for the thesis research as even the participating users were rewarded, their decision making to participate was a balance of consideration of spending their time and effort and gained benefit from the research. The research results should be visible proof in the service which would show how well users participating to the research has been understood. There are few challenges also. The company is global and local research only gives local results. The implementation of global user research strategy for the service development would be required to understand emotional needs of the users globally. Good example of success and failure is the car and its control switches and displays. The traditional approach for the car controls has been to have a manual switch for each function represented. In modern cars these functionalities are in growing depth placed into cars own electronic control system, which is controlled through display. If user is able to perform necessary tasks easily, without losing focus of driving, it doesn't confuse with its usability. Simultaneously user can be delighted for the convenience of how easily car approaches with available controls which are easily managed. If the electronic control system is designed without any user research focused only to have all necessary controls in the system, it doesn't create the entity which user could enjoy. Same approach applies for other digital service aspects. There needs to be adjustments to meet user in half way to show what options are available in certain steps and not to confuse with difficult placements of information or functions. Understanding how user is performing and listening the feedback, there is potentiality to improve existing service quality.

For the further discussion it is worthwhile to ask how does the service users perceive the service emotionally and which kind of consequences or concerns those emotional reactions might raise. These found reactions then can support the service personality, if such has been defined. In this aspect to have defined personality of the digital service, would greatly help development of the service to also keep in mind how done adjustments and new features are fit to the existing service environment.

For the framework, there are limited amount of articles and books and most of them are focusing to psychology. Academic discussion around emotions and defining those keeps on iterating in the academia in the future as well, but the incorporation of it to the service design in the form of emotional design is a path that would need more definitions or tools. All aspects of emotional experience in the service are also relevant to interaction design, content design, graphics design and service design. Therefore emotional design can be a combining theme amongst these design categories.

In certain situations the approach for emotional design would need to bravely, through trial and error, find the most suitable comfort zone where the service can surprise the users. As of now, b2b users are approached with quite formal and non-surprising digital services that usually only serve the functional need more than surprise through especially appealing appearance. Special appearance could be function that is triggered by the user which creates positive surprise of any kind. This could be thought as a special effect in the movies which either excites us and enhances the movie experience or fails to do so. Researching the user reactions based on the changes done to the real usable service concept would help to define whether a certain special effect would work or not. For a fluent discussion between users and the company there should be foundations for communicating and trust for the relationship. Rewarding those who would actively involve in the development phase would engage the commitment to involve in the development again later on.

Emotional design would need clarification on whether the same measuring or investigating techniques could or should be used related to the services as is used in the psychological field. Should all emotions to be treated similarly regardless which triggers them? What trig-

gers emotions in digital service user and can the influence of the service change the expectations of the user? What do the b2b users expect? These are just few open questions that might help further on developing digital services that could delight the users.

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Table 1: expanded marketing mix for services (Wilson at al. 2012,19).

Table 2: Positive and negative reactions.

Appendices

Appendix 1: Letter of consent Appendix 2: Storyboard Appendix 3: Prototype

Appendix 1: Letter of consent

Letter of Consent Basware Ovi Laurea University of Applied Science, Leppävaara Tero Byman, Service Innovation and Design Master's Degree, 2014

Purpose of this study

The purpose of this study is to learn about how you would use and choose right set of tools out of user task that will be presented. Your feedback will help us to create functionality and content that appeal to our customers. We are testing how our concept would work, not how you perform. The research is part of the master's degree thesis work.

Information we will collect

We will ask you questions related to picking right set of tools to send invoices. We will observe how presented situations would work. Notes and pictures collected will be used to inform our design.

Permissions

We will take handwritten notes, record audio, collect made notes of the participant and digital photographs. By signing this consent form, you will give us permission to use your verbal statements, taken photos, made notes and recorded audio to illustrate, demonstrate and evaluating research findings internally as well as confidentially in thesis work.

Confidentiality

Research is fully confidential and no information about you or the company you work for will be presented publicly. Only gathered data as presenting user perspective will be used in internal design and thesis work.

Non-disclosure

We may discuss ideas with you on not-yet-announced plans, concepts, products and services. We are doing this so we can get your feedback only. By signing this form, you agree not to tell anyone about this or provide information about these ideas to anyone outside this study.

Freedom to withdraw

You are free to withdraw or refuse from the research at any time.

Questions

If you have any questions feel free to ask at any point of the research.

Compensation

You will receive EUR 60 compensation as an incentive for participating to this research session. After
reading this form, if you agree with these terms, please show your acceptance by signing below.

Signature of the participant	Date and place
Printed Participant name	

Appendix 2: Storyboard





Like many business owners, Nick sometimes has trouble finding the correct person to contact when he sends and receives orders and invoices.



Nick receives an invitation to join Basware Portal and to use the Network Builder App.



Nick also activates the Network Builder App.



Nick starts setting up Network Builder. He selects how often he wants to receive news about his business partners and his industry.



Nick can see which of his business partners are already at Basware Portal. He invites them to send him business documents.

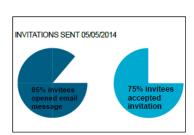


Nick also adds a list of suppliers, who are not members of Basware Portal yet, to the invitation.

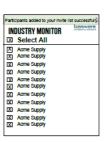
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Nick sends out invitation.



Nick views the status of his invitation in his dashboard.



Later, when Nick receives his industry monitor news feed, he can invite suppliers directly from his personalized news feed.





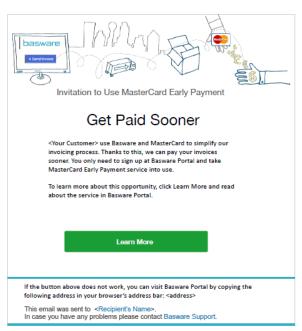
Nick now sends and receives only electronic documents from his rapidly expanding network.



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Appendix 3: Prototype







Benefits

- Optimize your cash flow by accepting early payment from your buyers.

 Pay less than a 2% service fee for access to early payment.

 You choose which invoice you accept for early payment.

 Early payment history is stored and is visible from Basware Portal.

User Guide User Requirements Service Terms

Show Me How



Recommendations

