

Designing interaction models that meet user expectations towards new technologies

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Abstract

Currently, technology is an interesting and expanding field for social and consumer research. Conversely, standard consumer research studies, academic marketing studies, economics or sociology fall short of representing theories and perspectives that ties technology and human needs. New technological opportunities not only create changes in appearance and functionalities of products but it also create change in user expectations and behaviours, which is mainly emotionally driven. Needs and emotions lead people to make judgments about what they would prefer to keep around themselves. This characteristic of human beings forces them to choose among variants and to involve in the design process. Selecting among variants means designing of the environment. In the study of design, the idea of consumer participation offered new horizons to design. This paper focuses on new perspectives to combine technology and human beings and aims to provide theoretical contribution and strategic information to the designers.

Keywords: Emotions and design, user experience, product experience, technology.

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1. Introduction

The first section of this paper focuses on examining theories from the literature for better understanding the user needs and expectations towards new technologies. The main theories are the domestication and activity theories. Defining these theories and setting out their major assumptions will expose the main arguments.

The second section of the paper includes why and how emotions and their engagement in design practice created a paradigm shift from mechanical, object-centred creation to subjective, human-centred one. Also, observations and studies on the presentation of this fairly new concept are mentioned.

The studies in this section mainly focus on various significant studies that discuss the changes in product experience, which is mainly emotion driven, and different expectations from such experiences. One can say that how we emotionally experience objects in our lives is becoming a focus of growing importance in design. The last section of the paper is allocated to discussions and conclusion.

2. Literature survey

As technology is becoming more widespread, designers and theorists are looking at ways to build emotional links with ideas, products, services and brands from a broad perspective. Qualitative research methods, such as in-depth interviews, observations, increasingly becoming part of research and review processes as a way to understand how people use and integrate technology into their lives.

Most theories presume close links between actions, thoughts and emotions (e.g., Berker, Hartmann & Punie, 2005; Kaptelinin, Nardi & Macaulay, 1999; Norman, 2004; Richardson, 2009). This part of the article studies the main theories in the literature that deal with relations between technology, emotions, actions and humans.

‘Domestication Theory’ and ‘Activity Theory’

Domestication theory is about the process of existence and persistence of a new technology and/or a new product in our everyday life. Domestication theory studies the ways users adopt themselves to the existence of technologies, develop innovative using patterns of the products based on these technologies, most of the time never imagined by the designers and never been put on the interaction flow of the product (Richardson, 2009). Thus, if the user’s proceeding towards the technology and/or product is analysed through a prototype during the design process, more satisfying results can be achieved and consumer commitment can be insured.

In the context of domestication theory, one can say that the culture, gender, lifestyle and economic condition of the user play a crucial role in their adoption to technology (Richardson, 2009). By this way, one can find an answer to why expectations change according to users; why some adopt technologies with excitement while the others approach them with caution. The theory also analyses the micro-level effects of these products to the household lives and macro level effects to daily lives (Richardson, 2009).

Another theory offered by current literature is ‘Activity Theory’. This theory focuses on understanding how technologies are being used in certain contexts. While being used in a certain context, there will be a number of new activities, which are connected to that technology, will emerge and both meet motivations of users and arose emotions. Needs and desires behind the motivations trigger the activities (Kaptelinin et al., 1999). Thus, the activities of a user are the indicators of his/her needs and desires. Each user has his/her own way of using a product, in other words (s)he personalises the use of technology. Besides the proposed functions, researchers also need to explore how users might utilise technology.

Kaptelinin et al. do not only focus on the users' activities and the ways they utilise technology; because they are well aware that besides changing products and adjusting them for their specific needs and conditions, individuals also improve their ability to operate a tool and improvise on the ends accomplished with the tool, etc. The reinforcement and/or interference to these innovative utilisations, through the knowledge of the fact, are a part of product design, manufacturing and marketing process (Kaptelinin, 2003). It is obvious that in order to create a successful product or service, designers need to explore the context of activities in which users interact with that of service or product and their emotional motivates in more detail.

The research on our relationship with the new technologies and the products based on these technologies underlined the connection between desire, purchasing decisions and our emotions. As emotions appeared to be one of the main factors for the decision-making process, defining and measuring them have become one of the hot topics of the contemporary literature. Also, there is a growing literature on creating guidelines for designers to meet those emotional expectations and needs (Chen & Chu, 2012; Desmet, 2005; Desmet & Hassenzahl, 2012; Hassenzahl, Diefenbach & Goritz, 2010; Hassenzahl & Tractinsky, 2006).

3. Product to experience

Let's go to about 15 years ago and review the time when the technology has just begun to enter our pockets after encompassing our homes. The first mobile telephones, slightly more than 15 years ago, not intend to be used for enjoyment. It was initially used for communication and business. Only 5 years later, telephones were registered to be a necessity and involve many features. Quite similar developments can be found in the history of popular mass media technologies. Television, radio, movies and watches have witnessed a similar change.

But what is the necessity for having a mobile phone? Any consumer being asked that question may likely to answer with a short emotional story. 'I was on a short trip. In the early hours, my mobile phone woke me up. My mother, who stayed at home, had just texted a sweet 'I love you, have a nice trip'.

This is an example of a positive meaning by fulfilling a need relationship and intimacy. The mobile phone is an instrument to create this experience, but the positive emotions and the meaning are evoked through the fulfilment of a universal psychological need, a need for feeling close to relevant beloved one. Not the mobile phone, need-fulfilment is what makes an experience pleasurable. Mobile phone was used as a tool for creating a relatedness experience. Actually, the mobile phone is not adapted to this but it leads to the creation of the experience. It can be said that what matters is enabling (designing) an experience that can create a story between the user and the product.

Hassenzahl (2013) presents a striking example on his recent interview with the Interaction Design Foundation. As follows, Madonna's Confessions on a Dancefloor album sold 1.6 million but the world tour left about \$200 million profit. Average ticket price for a concert in the US in 2010 is about \$64 and a CD is only \$13.99. Of course, illegal download sites may have affected sales. But instead of listening to music in the form of materialist CD record, wanting to have a live experience can be a reason of situation. Hassenzahl (2013) describes this as an experiential orientation from a materialist approach and argues that today music is important, not ownership. It is evident that people now think that it is more valuable to have experiences that can't be bought from anywhere. Emotions and experiences have begun to take place as important criteria for people's desire to buy. Designers are looking to explore how emotions and experiences can be integrated into technological products or services. Therefore, the discourse on the potential of existing technologies and how they will meet with the users are an active contemporary area of research and publication. As a result, it is evident that good design isn't about the good industrial product, multi-touch or fancy interfaces. It is about transcending the technology and material. It is about creating an experience through a product. The

following chapter investigates experiences and emotions to a product or/and service design more detailed.

4. Experience and emotions

Since the early stages of human–computer interaction related product, the efforts converged to achieve products, which functions in accordance with its manufacturing goals. The properly functioning of the product has been assumed as the indicator of proper design. However, the recent literature puts increasing emphasis on the hedonic aspect of interactive products as well as the pragmatic aspects of them (Hassenzahl & Tractinsky, 2006).

To summarise the hedonic and utilitarian benefits; in the literature, hedonic benefits are generally defined as aesthetic and experiential benefits and are considered within the scope of luxury. However, utilitarian benefits are defined as functional benefits, which respond to more to needs and necessities (Batra & Ahtola, 1990; Chitturi, Raghunathan & Mahajan, 2007; Dhar & Wertenbroch, 2000; Strahilevitz & Myers, 1998) For example, while the car's engine power or transmission is utilitarian benefits, charm in terms of comfort, form and colour can be considered hedonic benefits. Investigating these two benefit dimensions and investigating the relationship with purchasing has been an active research area in recent years.

Chitturi, Raghunathan and Mahajan (2008) argue that the consumption experience is determined by the emotional content, and therefore, it is important for designers to understand the benefits of a product they design. Hassenzahl and Tractinsky (2006) mentioned that it is important to take the users' circumstances into consideration while creating and assessing design options and opportunities. According to them, consumers prefer the design of a product only to the extent that it confirms with the expectations, needs, motivations and emotional states of themselves. In addition, they emphasised that the success of the product is directly connected to the environment that it will be used because the social relations and fulfilment of the desired activities of the consumer are the key elements of product preference (Hassenzahl & Tractinsky, 2006). As stated by Norman (2004), the objects in our lives are more than mere material possession. We take pride in them, not necessarily because we are showing off our wealth or status but because of meaning they bring to our lives. With his own words 'Through our designs, we transform houses into homes, spaces into places, things into belongings' (Norman, 2004).

The consumer's desire of possession will be emerged through designing for the context that leads him/her to this emotion, rather than reflecting that of emotion through the product itself (Hassenzahl & Tractinsky, 2006). Therefore, we can say that today emotions are being designed as well as the objects.

Lately, Desmet and Hassenzahl (2012) have been promoting a new concept, built on the necessity of designing for a pleasant and good life. According to this design approach, the goal must be shifted from problem-solving to possibility creating. This approach will open up new horizons to more humane solutions. Once again the ancient philosophical questions about the meaning of happiness and different paths of living a happy life get on the stage, craving innovative answers (Desmet & Hassenzahl, 2012).

Nowadays, one might find technologically compatible products in the similar price range, so the only decisive factor appears to be product's design that determines the purchase decision. Therefore, the consumers' preferences are determined by their emotional approaches and previous experiences, as discussed in the literature.

People increasingly want to spend their hard-earned money on experiential services and products that can help improve their emotional well-being rather than products that are functionally useful. To put it another way, today design can be defined as the creation and staging of the new and interesting story that people will practice.

Although the existing literature made it clear that the emotions and experiences are key elements of product selection, there are only a few studies on how and with what kind of interactions these emotions arise and how it is possible to measure them properly.

Chen and Chu (2012) offered a method to provide a guideline for the designers, namely FASE Index. FASE as a word stands for the four major dimensions of the contemporary design, which are features, association, social-esteem and engagement. These dimensions frame the crucial elements of a proper product design. Figure 1 indicates the 13 evaluation criteria of the FASE Index (Chen & Chu, 2012).

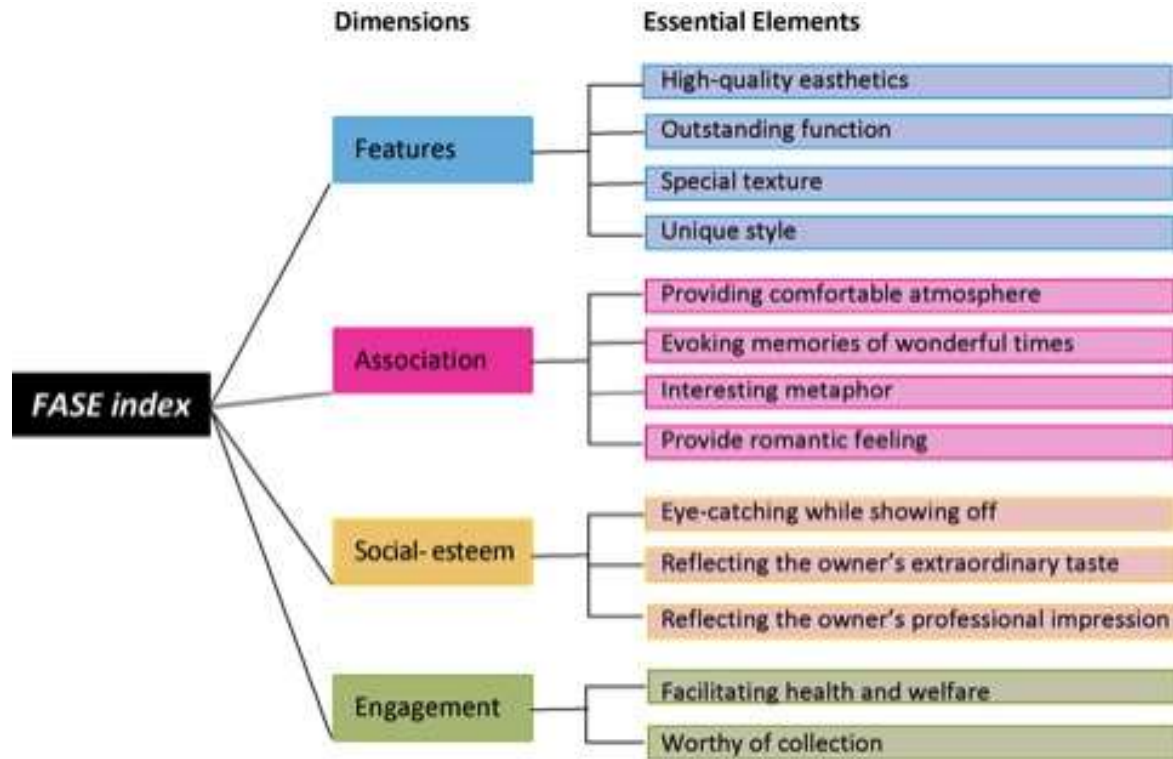


Figure 1. The four dimensions and 13 evaluation criteria of the FASE index (Reproduced from Chen & Chu, 2012)

Hassenzahl et al. (2010) studied the elements that constitute 'pleasurable experiences' with technology. The results showed that need fulfilment refers to the hedonic needs rather than pragmatic ones. Competence, relatedness, popularity, stimulation, meaning, security and autonomy are the major needs they defined, which the users expect to be fulfilled through the technological product (Hassenzahl et al., 2010).

Being aware of the need to measure the emotional responses of users to the products, Desmet (2003) and Desmet and Hekkert (2009) defined 14 emotions that are aroused by the interaction with products. Seven positive and seven negative emotions are characterised in PrEmo issued by him as a measurement tool. PrEmo is a non-verbal self-report instrument that measures emotions by using animated icons. Desmet argues that the animated icons are necessary to universalise the instrument and secure the objectivity. The animated icons selected by the users serve as a guide for the designers, in order to further bring development to their work on the product (Desmet, 2003; Desmet & Hekkert, 2009).

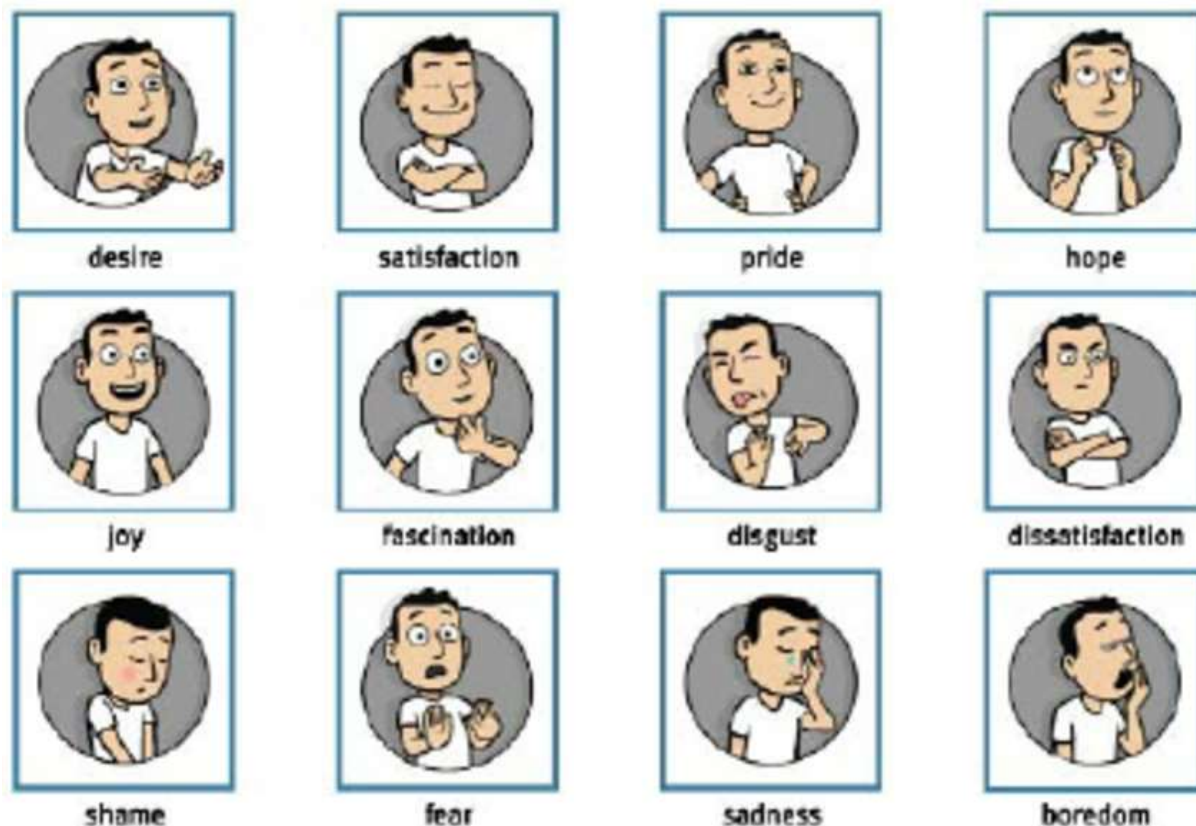


Figure 2. 12 examples from Desmet PrEmo instrument. Measures emotions by using animated icons (Desmet, 2003; Desmet & Hekkert, 2009)

Taking all the above-mentioned aspects of the product design into consideration, it is more important to understand why some characteristics of a product provoke certain emotions. This understanding will lead us to design a design process through which a designer can comprehend users' expectations and come up with smart well-designed products.

Contemplating emotions and purchase decisions, negative emotions can provide people with pleasurable product experiences. For example, a healthcare app that elicits disgust in people who are grocery shopping, a thermometer that makes feverish children feel sad when it takes their temperature, by eliciting negative emotions they can create rich experience can also promise new direction in the design. As Desmet (2003; Desmet & Hekkert, 2009) offered guidelines for experience-driven design with 14 emotions that 7 of them are negative ones, negative emotions can be experienced as valuable, beneficial and pleasant. There is an open space for literature to study negative emotions on purchase decisions.

5. Conclusion

Technological developments change human perceptions about time, space, interaction, expectation and relationship. In fact, all human existence changes. This, in turn, presents new research and study subjects in many areas with a constant movement. With this conceptualisation, it is possible to detail consumer behaviour in a multi-disciplinary framework and to associate different disciplines with each other.

From a broad perspective, technology does not only offer new ways and possibilities to meet human needs and expectations but also its existence and development bring new limitations and

constraints to human behaviour. It is increasingly accepted that the success of scientific and technological innovations depends on the social relations between supplier and consumers and on the communication practice between them. In other words, the emotional context between technology and user is the key to successful innovations. For this reason, researchers working in detail on emotions are needed.

To build user experience and improve the design vision, designers need to be more active in creating tools that encourage creativity and to acquire deep personal knowledge about user demands. As today, users want to take part in the product design and determine the content.

The key skill of designers is to empathise with the people they design for. To understand how they experience products, services and environments. For a design team thinking about communication experiences rather than mere object opens up a big design area for possible services, products and devices. Ultimately, one of the main goals of designers is to provide a unique experience for consumers. Designers should shift attention away from technology-focused innovations to human-focused innovations; they should direct attention to the conscious design of experiences resulting from usage rather than the integration of new technologies.

It seems that, to better understand the characteristics of the positive user experience and expectations needed for multidisciplinary work teams, including designers. Observing and understanding user behaviours is the first step in creating and constructing such experiences. For this reason, this study intends to provide a framework by accumulating the qualities of the positive user experiences, approaching models and methods to awaken and shape these experiences, by providing knowledge about user expectations, experiences and emotions correctly. The information presented in this framework can potentially help designers to formulate their design strategies to improve customer loyalty.

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