

Studying emotions and non-instrumental qualities as parts of the user experience

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Designing the user experience has become a central focus of interactive system developments in recent years. Several attempts have been made to broaden the traditional focus on the efficient achievement of goals and incorporate a fuller understanding of additional aspects of the user experience. The current research project investigates the role of non-instrumental quality aspects like hedonic and aesthetics qualities and their interplay with emotions in shaping the user experience. An integrative model, the methodological approach and first empirical results are presented. Future research will combine methods for measuring emotional aspects and relevant quality dimensions to further understand the interplay of various aspects of the user experience of interaction.

User experience, emotional user reactions, aesthetics, hedonics, usability, evaluation.

1. INTRODUCTION

Definitions of usability focus on tasks and goals, their efficient achievement, and the cognitive information processing involved. To go beyond these traditional perspectives and for a better understanding of how people experience technology, various approaches have been suggested that take other aspects of the interaction into consideration. Non-instrumental quality aspects and the role of emotions are discussed as two important areas for research on the user experience [1]. Jordan [2] argued for a hierarchical organization of user needs and claimed that along with the functionality and usability of the product, different aspects of pleasure are important to enhance the user's interaction with it. Further analyses studied selected non-instrumental quality aspects of interactive systems in detail, such as hedonic quality [3] and visual aesthetics [4]. Recently, the term emotional design [5] has received significant attention. Desmet & Hekkert [6] went a step further by presenting an explicit model of emotions according to product perceptions. Zhang & Li [7] studied the concept of affective quality as the ability of interactive systems to cause changes in the user's affective state. In this way non-instrumental quality aspects and the role of emotions were studied individually for a more in-depth understanding. However, to assess interactive systems regarding the user experience as a whole these various aspects have to be integrated to fully understand and compare users' experiences of interaction with different systems. Rafaeli & Vilnai-Yavetz [8] studied the interrelations between instrumental and non-instrumental quality aspects as well as emotions in a non-interactive domain. Tractinsky & Zmiri [9] transferred this approach to the area of websites. My research aims to carry on this first steps and wants to lay a more elaborate theoretical basis, use a broader methodological approach and provide further empirical results on this research problem.

2. THE USER EXPERIENCE RESEARCH FRAMEWORK

The user experience research framework presented in Figure 1 integrates the discussed aspects of the user experience and provides the basis for further research [10]. Instrumental and non-instrumental quality aspects are summarized in two distinct components that include the various quality dimensions described earlier. Properties of the interactive system that are perceived by the user while interacting with the system influence how the user experiences the product on these quality dimensions. On the other hand, these quality perceptions influence user's behaviour and judgments. Emotional user reactions play another important role. They are influenced by quality perceptions and also have an influence on consequences of the user experience. In the current research I focus especially on the interplay of instrumental and non-instrumental quality aspects with emotions.

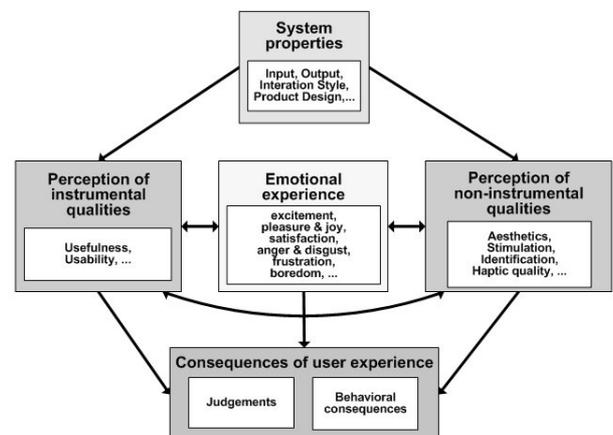


FIGURE 1: User experience research framework

3. METHODOLOGICAL ASPECTS

Rafaeli & Vilnai-Yavetz [8] took a qualitative approach to this research problem. Besides, a lot of questionnaires were developed to assess instrumental and non-instrumental quality aspects [3, 4, 6, 7]. These can be used to survey various experience dimensions. The methodological focus of my research lies on new methods to measure emotional reaction as parts of the user experience. We conducted a study to compare and integrate different approaches to emotion measurement. Based on a multi-component approach to emotions [11] different aspects of emotions in an interactive context were investigated: subjective feelings, physiological activation, motor expressions, cognitive appraisals, and behavioural tendencies [12]. The results suggest that a combination of methods that assess different components of emotional reactions provide a comprehensive basis for analyzing emotions in human-technology interaction.

4. EMPIRICAL RESEARCH

Furthermore, a first explorative study was conducted using the research framework as the basis for assessing user experiences with interactive systems [13]. Four digital audio players were chosen for the study. All were from the same manufacturer, so we did not have to deal with the influence of brand. Nonetheless, players differed in terms of various design aspects. Thirty individuals (fifteen women and fifteen men) participated in the study. They were between 20 and 30 years old, most of them students at Berlin University of Technology. All participants tested each product. Four short tasks were given to the participants for each product. After accomplishing the tasks, participants filled out a questionnaire that assessed ratings on different experience dimensions (usefulness, ease of use, visual aesthetics, hedonic qualities, physio-pleasure) and emotional consequences. After using each of the players, participants made a ranking list of the players. The preliminary results give first hints on the complex interplay of instrumental and non-instrumental quality perceptions with emotional user reactions. Instrumental quality aspects, i. e. the usability of the system have a main influence on the emotional user reactions, but also the non-instrumental aspects play a significant role. Further studies will focus on the role of quality perceptions for specific emotional reactions like satisfaction, enjoyment, anger or unhappiness.

5. CURRENT STATUS AND NEXT STEPS

The research framework serves as basis for the next steps. Furthermore, the results on the use of different methods to assess emotional user reactions will be applied in further empirical studies and the explorative study gave first hints on the interrelations between emotions, instrumental and non-instrumental quality aspects in human-technology interaction. In two following experiments these interrelations will be studied in more depth. Therefore, prototypes of interactive products will be designed and varied on various dimension that have an influence on specific instrumental, e.g. usability, and non-instrumental, e.g. visual aesthetics, quality perceptions. Thus, it should be possible to better understand in which way differences in design properties influence quality perceptions that determine emotional experiences as well as overall judgements and behavioural consequences.

ACKNOWLEDGEMENTS

This research is supported by the German Research Foundation (DFG) as part of the Research Training Group 'Prospective engineering of Human-Technology Interaction' (no. 1013).

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