USER EXPERIENCE IN THE DESIGN FIELD: A SYSTEMATIC REVIEW OF THE LITERATURE

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1   Context

User experience helps to define the shape, behavior and content of products, ensuring coherence and consistency across all project dimensions (NORMAN, 2004). Russo and Hekkert (2008) discuss the term 'product experience', whose definition is a set of effects caused by the interaction between a person and a product, including the extent to which all our senses are rewarded (aesthetic experience), the meanings attached to products (experience of meaning), and the feelings and emotions that are evoked (emotional experience) (HEKKERT, 2006). The experiences that people have with products and services, are the real advantages of a brand. Therefore, a strategy should be explored and applied when new products are designed (Merholz et al. 2008).

Thus, this study aims to review the literature within the design field about user experience, usability and user-centered design. Through systematic review, we intend to analyze the articles published in the journal Design Studies, a high-level international journal[1]. With this systematic review, it was possible to identify which studies were carried out on user experience and what can be researched and explored based on them.

2   Method

The research was structured in order to identify the number of articles that address user experience in the development of products. We conducted a systematic review

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[1]Design Studies is ranked as Qualis A by the Brazilian Coordination for the Improvement of Higher Education Personnel (CAPES). Qualis is a set of procedures used by CAPES to categorize the quality of intellectual research in post-graduation programs. This process has been conceived to meet demands that are specific to the evaluations defined by CAPES and is based on information received from the institutions (BRASIL, 2014).

from which we collected, selected and analyzed articles published in the journal Design Studies about user experience. The selected journal is classified by the Brazilian Coordination for the Improvement of Higher Education Personnel (CAPES) as Qualis A, the highest possible score, because it maintains frequent publications (bimonthly) and addresses various fields of Design. Systematic review is a technique that uses transparent procedures to find, evaluate and synthesize relevant research results on a given subject. The procedure for the construction of the methodology is predetermined to ensure that the technique is transparent and can be replicated (THE CAMPBELL COLLABORATION [20--]). The cutoff criterion adopted in this research was convenience (MALHOTRA, 2005),over a period of time ranging from 2005 until the end of 2015. This criteria resulted in 328 articles in 67 editions and 16 volumes. The search criterion was the occurrence of the following keywords: usability, user experience, user behavior and user-centered design.

For the systematic analysis of the articles, we collected all articles available online. The analysis was performed by using the following steps: (a) to list all articles published from 2005-2015, (b) to filterall articles with the selected keywords, (c) to read the abstracts of the articles selected due to the keywords, (d) to screen the articles that actually dealt with the subject, based on the abstracts, (e) to readthe papers in full and present a summary of their data. The collection, screening, selection and reading were accompanied by data sheets to record the year/volume of the publication, the author, institution of origin, article title, keywords and a summary developed by the author of the present study.

3   Results

The systematic analysis in the journal Design Studies was based on the reading of keywords and abstracts of articles since volume 26, published in 2005, to volume 41, published in 2015, totaling 328 articles. Volumes 2005-2014 are composed of six editions, which characterizes Design Studies as a bimonthly and regular publication. The bimonthly editions from 2015 are separated by volumes, without separate editions. Considering the bimonthly aspect of this publication, the number of articles generated for the selected period was considered sufficient, because the journal has a vast approach onthe contentsabout design.

The first filter was applied to all 328 articles, including the keywords usability, user experience, user behavior and user-centered design. This first filter returned 34 articles. The second filter was to read the abstracts of the articles to verify the connectionto the subject in question. The third filter was toread in full the 13 articles selected in the previous step, so as to understand how each paper dealt with the issue related to this study. A total of eight articles were considered relevant to the topic.

In 2008, Chamorro-Kocet.al., showed the importance of studying user needs and designing the best possible experience. The results are given in terms of design

principles that address the connections between experience and aspects of use, and the similarities and differences between the concepts and thoughts of users and designers. In the same year, Bilda et. al. studied user experience through interaction with digital systems in the arts field. The study presented a model to facilitate communication between artists, interaction designers, researchers and system developers. The data collection and analysis showed the forms of interaction and stages in which the users are involved, using all elements from the model. Also in 2008, Leggett and Bilda presented a system for building hypervideos, based on design concepts and how the interaction with the system takes place. The validation was made through the presentation of three system models for three different groups of people, and by testing the tools. As a result, it was identified that the design of an interactive system is complex and that feedback is necessary in the early stages of the project.

In 2011, Park developed an information center of designers regarding user-centered design project. The validation was based on a design scenario, an ethnographic study and videos for users to develop their own product ideas. By using design knowledge based on scenarios, one can track scenario generation paths through users' actions, thus identifyingdesign-related factors and suggest solutions.

In 2012, Hsiao et. al., presented an online evaluation model to measure the degree of affordance that evaluates the usability of a product. A case study of a steam iron was conducted to verify the effect of the evaluation model. The results allow designers to detect any operational deficiencies of the product components earlier and review the product to improve usability.

In 2014, Pucillo and Cascini proposed the construction of a frameworkshowing the connection between users' experience, needs and affordances. The framework helps to conceptualize such aspects and sets the basis for new attempts to provide designers guidance on how to design for experiences. Also in 2014, Kelly and Matthews discuss the concept of use in design. By adapting the methods of user-centered design, theypresented a case study of a mobile product for doctors, who were observed through an ethnographic study, in order to identify other design project attributes beyond the use of the product, which are essential to the design. Finally, in 2014, Wilkinson and De Angeli, criticize the traditional approach of design for not engaging with users through the design process. The article argues that by including users from the early stages of the project, problem solving can be enhanced.

4 Conclusions

We identified that from 2008 onwards,studies that deal with interaction design, user behavior and user experience started to emerge. The years 2008 and 2014 are the onesthat address issues related to user experience the most. In addition, some disparity between the articles was noticed, especially in the last two years. The latest articles bring us to the conclusion that there is no consensus about concepts relating to user-centered design, use experience and usability, and whether the relationship with the user is valid for the project design. We also noticed that no ideal proposal to

address all design requirements properly has been put forward. All analyzed articles show that user-centered design concepts are applied during the product development process.

We identified that the theme proposed in this study is still little explored in the design field, despite the fact that user experience and design are very closely related. We intend to continue this research by analyzing other scientific journals, both the most general in the area, as the more specific of each subject, in addition to conference proceedings following the same analysis proposal.

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6   Acknowledgments