

**UNIVERSITI TEKNOLOGI MARA**

**EMOTIONAL USER EXPERIENCE IN WEB  
DESIGN: THE KANSEI ENGINEERING  
APPROACH**

**ANITAWATI MOHD LOKMAN**

**PhD**

**December 2009**

**UNIVERSITI TEKNOLOGI MARA**

**EMOTIONAL USER EXPERIENCE IN WEB  
DESIGN: THE KANSEI ENGINEERING  
APPROACH**

**ANITAWATI MOHD LOKMAN**

Thesis submitted in fulfilment of the requirements  
for the degree of  
**Doctor of Philosophy**

**Faculty of Computer and Mathematical Sciences**

**December 2009**

## **Candidate's Declaration**

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other academic institution or non academic institution for any other degree or qualification.

In the event that my thesis be found to violate the condition mention above, I voluntarily waive the right of conferment of my degree and agree be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

Name of Candidate : **Anitawati Mohd Lokman**  
Candidate's ID No. : **2005220836**  
Programme : **CS 990**  
Faculty : **Faculty of Computer and Mathematical Sciences**  
Thesis Title : **Emotional User Experience in Web Design: The  
Kansei Engineering Approach**

Signature of :  
Candidate

Date : **24/12/2009**

## ABSTRACT

The use of the Internet has become an essential part of our everyday lives. People surf the website with various purpose to accomplish their personal goals. Inline with the thriving growth in the use of website, research in website design has expanded the focus from functionality and usability to the full range of human experience. In recent years, Human Computer Interaction (HCI) issues related to web applications have shifted its focus to address emotional aspect of website design. This is mainly due to the evolution of website functions from conveying information to the extent of providing persuasive engagement with visitors through the lively process of perception, judgment and action. Over the Internet, visitor's perception of websites significantly affects their browsing behaviours and purchase decisions. With its nature of unlimited availability, online businesses are exposed to vast competition. Hence, an online business need to offer a website that could capture visitor's attention at first sight and persuade them to stay longer on the website, to win over competitor. Supported by previous literature involving studies on user experience, this research argue that to motivate stickiness to website, the website must be able to cultivate emotional engagement and elicit positive user experience. To enable the development of such website, the knowledge of how design elements influence emotion must be pursued so that we could engineer the emotion into a website design. This research was performed to systematically engineer the aspect of emotional user experience in Website UID. The research formulated its research framework based on Kansei Engineering (K.E.) methodology. Using 35 valid website specimens, 40 emotional keywords, and 120 evaluation subjects, the research performed experiments to assess users' emotional responses to Website UID. Multivariate analyses were performed to the average evaluation result obtained from subjects to determine the concept of emotion in Website UID and investigate the associated design elements to be used as a guide in designing Kansei Website, a website that embeds target emotion in its design. Based on the results, the research proposed Kansei Web Design Guideline©, a guideline to the design of Kansei Website. A confirmatory study was performed to provide justification to the guideline. Five prototypes were developed according to the proposed guideline, to be used as specimen in the confirmatory study. A comparative analysis was performed to analyse differences in the structure of emotion formed by the assessment of emotion before and after the implementation of the guideline. The result has shown a clearer formation of the structure of emotion in the newly developed prototypes, and thus provided some hypothetical credence that it is possible to design website that embeds target emotion with the use of the guideline. Based on its results, this research developed Kansei Web Design Guideline©, Kansei Website Taxonomy, Method to Engineer Kansei Website, and Method of Emotion Detection. Additionally, the research has also developed Kansei Design Model and Periodic Table of Kansei Web Design Elements©. Although all of these outcomes were based on experiments that were performed with some limitations and constraints, they lend some novel foundations in the engineering of emotion in Website UID. Further testing of the experiments in a larger and more diverse population and variable could be performed to support the internal validity of the research claims.

## ACKNOWLEDGEMENTS

Alhamdulillah, praise be to Allah, the Most Gracious, the Most Merciful.

Many people have contributed their ideas, time, and energy to assist me in the pursuit of this research. I am grateful to my two supervisors: Associate Professor Dr Nor Laila Md Noor and Professor Dr. Mitsuo Nagamachi who gave me the opportunity to work on this topic, convinced me to incorporate an experimental approach, and taught me a great deal about writing research papers. Associate Professor Dr. Nor Laila Md Noor assured that the project satisfies the applied needs of the IT discipline, and Professor Dr. Mitsuo Nagamachi was my resource to the Kansei Engineering methodology used as a foundation to this research.

I thank all members of the HCI SIG group who supported me by discussing ideas, commenting on drafts, and providing good company. The research project was partially supported by the Ministry of Science, Technology and Innovation Malaysia under the ScienceFund grant scheme.

I wish to thank my family and friends for their support and company during this exciting and challenging period of my life. I am especially grateful to my husband, Ismail Amat, who has been supporting me unconditionally in good and bad times throughout my research endeavours. My deepest love to all my children, Aqil, Eidlan, Zulaikha, Umaeer, Uqashah and Eidrihana, for their loves and sacrifices in accommodating my selfish venture.

I would like to dedicate this work to Anis Umairah, my late daughter, whom her super-brave courage and will she thought me during her short life has been my inspiration thereafter.