

UNIVERSITI TEKNOLOGI MARA

**USABILITY EVALUATION
FRAMEWORK FOR MALAYSIAN
HOSPITAL**

SITI NORSAZLINA HARON

Thesis submitted in fulfillment
of the requirements for the degree of
Doctor of Philosophy


Faculty of Architecture, Planning and Surveying

November 2015

AUTHOR’S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results 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 degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student	:	Siti Norsazlina Binti Haron
Student I.D. No.	:	2009762539
Programme	:	Doctor of Philosophy (Built Environment) – AP990
Faculty	:	Faculty of Architecture, Planning & Surveying
Thesis Title	:	Usability Evaluation Framework for Malaysian Hospital
Signature of Student	:	
Date	:	November 2015

ABSTRACT

The main priority of the Malaysian Hospital design quality has been to organise an informational domain for patient-oriented care design that requires a user-friendly environment. Despite the variety of quality design assessment, the usability evaluation has brought a new dimension in tracking the quality in-use by exploring the meaning of users' experiences. Furthermore, those methods lack the procedures that can effectively identify the needs of users would lead to what of the quality dimension to be considered in its implementation. Therefore, the aim of this research had been to develop a usability evaluation framework, in which the nature of patients and visitors' experience could affect the quality of Hospital environments. The theoretical part suggested that the experiences of hospital end-users might be understood through their feedback on the status of Hospital environments by extending usability and quality theories. This research adopted nine usability criteria, which were identified from the literature. After synthesising the literature, a usability evaluation framework was developed. In addition, the usability parameters for each usability criteria and the domain of user experience context of-use the Hospital physical environment were investigated. Phenomenological philosophy and qualitative dominant approach with case studies were carried out in three Malaysian public hospitals. The data from the main case studies were retrieved from the viewpoint of patients and visitors through the conducts of semi structured interviews (n=36) and walkthrough journey experience (n=18 group). The data were analysed using content analysis that was run by NVivo9. The findings were validated by the end-users of hospitals, experts who were experienced in construction, design, maintenance, and Hospital domain experts. The findings suggested 25 usability parameters and six (6) domains of users' experience that affected those parameters. The findings were analysed and the refinement of the usability evaluation framework was carried out. The research findings confirmed that the usability evaluation had been an effective approach and the walk-through journey experience method was the best way to gain holistic information pertaining to users' experience. The main contribution of this study is that the usability evaluation has given an added value in assessing the experiences among patients and visitors, quality design assessment, designing, constructing, and managing the hospital. Hence, this study should help organisations to understand the needs of end-users and to support the design of a user-friendly environment. Furthermore, this research provided a starting point from a different setting with more perspectives from the viewpoints of different actors.

ACKNOWLEDGEMENT

First and foremost, I would like to give my greatest glory to ALLAH (Subhanahu Wa Ta'ala), the Lord of the Worlds. Ultimately, only Allah gives us the strength and courage to proceed with our entire life.

My deepest gratitude goes to my supervisor, Associate Professor Dr. Md. Yusof Hamid, for his constant invaluable guidance, support, and encouragement that have helped me in the completion of this thesis. I am also thankful to Associate Professor Dr. Anuar Talib for being my second advisor and was always there whenever I needed guidance and assistance. Your constructive comments for the thesis have always been valuable.

I am privileged and grateful to have the financial support from the Malaysian Government, in particular the Ministry of Higher Education, Malaysia and University Technology MARA Malaysia in the last few years for my studies. My gratitude to all the people in the government agencies: the Malaysian Ministry of Health (MoH), Clinical Research Centre (CRC), and Kedah and Perak State Health Departments for giving me the opportunity and permission to conduct the case studies at selective three public hospitals. My thanks also to all the Hospital Sultanah Bahiyah, Hospital Slim River and Hospital Sultan Abdul Halim staff, who assisted me during the field work, and Public Works Department Malaysia who supported and provided current information on the scenario of public hospital design.

My warmest appreciation to Associate Professor Dr Masran Saruwono, the Dean of Faculty Architecture, Planning and Surveying and staff members at the Department of Interior Architecture for their continuous support and encouragement. My sincere thanks also to all the staff at Institute of Postgraduate Studies (IPSiS) and librarians in the UiTM main library for their valuable assistance. My warmest thanks to Dr. Yuhainis Abdul Talib for being my mentor and Mr John Dilling for revising the English of my manuscript.

Finally, but by no means least, to my husband Zamhuri Abdul Rahim and my wonderful children; Muhammad Aqil, Muhammad Muaz, Muhammad Umar, Muhammad Iman, and Sumayyah, my parents; Hajah Mek Esah Daud and Haji Haron Abdul Hamid, my parents-in-law; Hajah Umikalsom and Haji Abdul Rahim, my sisters; Associate Professor Dr. Siti Norlizaiha, Siti Normaya, and Siti Norbaizura, and the rest of the family, a very special thank you for their everlasting love and unequivocal support and continuous Doaa', without which the completion of this research will be an impossibility. To all those that were not mentioned here, due to my short memory, however small a work may be, there is an invaluable help from other people directly or indirectly of which I duly and fully appreciate all your contributions towards this journey.

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION TO THE RESEARCH

This thesis developed a usability evaluation framework based on the usability physical environment design criteria for tracking the quality of architecture in-use. The outcome of the framework had been a composition in understanding experience among hospital end-users and their expectations for the actual environment and the facilities that bring in quality and usability physical environment design. Accordingly, in order to achieve this goal, this chapter introduces the overall focus of this research and it is organised as follows:

- i. Background of the research.
- ii. Problem Statement.
- iii. Rational of the research.
- iv. Research gap.
- v. The research aims and objectives.
- vi. Research questions.
- vii. Scope of the research.
- viii. Significance of research
- ix. Research design.
- x. Structure of the thesis.

1.2 BACKGROUND OF THE RESEARCH

The quality of services and products in marketing and business strategy, which are achieved through the improvement of communication with the customers based on the evaluation of users' experience, has been widely discussed. This involves the exploration of customers' expectations and satisfaction with the service or product that they purchase. Changing consumer demand has forced organisations and businesses to change their strategy to that of a customer-oriented strategy. The evaluation of user experience is relevant because users or customers define quality