Master Thesis

UX Model For E-Learning Systems

by

Mohanad Khamees Dhari

Supervisor

Dr. Thamer Al-Rousan

Co-Supervisor

Dr. Bassam Al-Shargabi

Submitted in Partial Fulfilment of the Requirements of the
Master Program of Software Engineering

Faculty of Information Technology

Isra University

2019
AUTHORIZATION STATEMENT

I, Mohanad Khamees, authorize Isra University to provide hard copies or soft copies of my thesis to libraries, institutions or individuals upon their request.

Name: Mohanad Khamees Dhari

Signature:

Data:
إقرار تفويض

أنا مهند خميس، أفوّض جامعة الأسراء للدراسات العليا بتزويد نسخ من رسالتي ورقياً وإلكترونياً للمكتبات أو المنظمات أو الهيئات والمؤسسات المعنية بالأبحاث والدراسات العليا عند طلبها.

المؤسسة: مهند خميس ضاري

التوقيع:

التاريخ:
The undersigned have examined the thesis entitled “UX Model For E-Learning Systems” presented by Mohanad Khamees Dhari, a candidate for the degree of Master of Science in Software Engineering and hereby certify that it is worthy of acceptance.

________________________________________  ______________________________
Date                                               Dr. Thamer Al-Rousan

________________________________________  ______________________________
Date                                               Dr. Bassam Al-Shargabi

________________________________________  ______________________________
Date                                               Dr. Adi Maaita

________________________________________  ______________________________
Date                                               Dr. Faisal Abu Rub
ACKNOWLEDGMENTS

Thanks to God I have completed this thesis praise and thanks for his blessings.

I would like to thank Dr. Thamer Al-Rousan and Dr. Bassam Al-Shargabi for his guidance and assistance of them through valuable information for the completion of this thesis.
Dedication

I start my words with the name of God, as he was the reason to the place I have reached today; I thank him for what came to me...

"To my first Role model...

"To the one who taught me success and patience...

"To the one whom I carry my name with all pride...

"To the one who I miss to face difficulties and to have his tenderness...

My beloved father, may God have mercy on him

"To my angel in life...

"To the smile of life and the secret of existence...

"To the meaning of love, compassion and dedication...

"To the one whom her prayers were the secret of my success and her tenderness to heal my wounds ...

"Who taught me and suffered the difficulties to get me to what I am now...

My Dearest mother

"To whom I knew the meaning of life...

"To those closer to me than my soul...

"To the glowing jewels and the shining Diamonds...

"To those whom their presence gave me strength and boundless love...

My brother

"To the owner of the good heart and sincere intentions...

"To the one who stood beside me and planted optimism in my path and gave me assistance...

My Brother Dr. Salwan Alobaidi
Abstract

User Experience (UX) is the key success factor in the software systems. Many E-Learning systems face challenges in their work with UX. A better understanding of these challenges can help Practitioners, Instructors and students better address them in the future. UX challenges increasing day after day. Despite the importance of UX for E-Learning systems, the number of studies that have been conducted to examine the level of acceptance and factors influencing the acceptance of the E-Learning systems in Middle East is very limited. The majority of these studies examined the E-Learning systems against one UX factor or two as maximum. In this context, this research will study the state of the practice currently used in E-Learning systems and investigate the most important success factors that E-Learning systems should have. To achieve this, a surveys among employees and students of Isra University was conducted. A total of 100 questionnaires were distributed through a survey to employees and students of Isra University. The survey involved all levels of employees and students. The survey questions were formulated based on the findings from previous studies. The findings indicate that six success factors determinants, namely, useful, usable, findability, desirable, accessible, and valuable significantly influenced employees and students to use E-Learning system. The results of questionnaire were testes in two ways. The first way is by using SPSS to find the relations between the identified UX factors and the second way by apply an online tool named Sortsite to assess the suitability of the current E-learning system at Isra University versus the identified UX factors. The findings depict that understanding the identified UX factors and the relation between them will help decision makers to identify the reasons for the acceptance or rejection of use E-Learning system among employees and students in the future and finally to support them to enhance the E-Learning system acceptance and usage.
Contents

Abstract .......................................................................................................................... 7

Contents ......................................................................................................................... 8

Table of Figure ................................................................................................................ 11

Chapter One .................................................................................................................. 1

1.1 Introduction .............................................................................................................. 1

1.2 Background of the Problem .................................................................................. 2

1.3 Problem Statement ............................................................................................... 2

1.4 Current Solutions and Techniques ....................................................................... 2

1.5 Proposed Solution ................................................................................................. 3

1.6 Research Objectives .............................................................................................. 4

1.7 Importance of Research ....................................................................................... 4

1.8 Thesis Structure .................................................................................................... 4

Chapter Two .................................................................................................................... 6

Literature Review and Related Work .......................................................................... 6

2.1 Introduction ............................................................................................................ 6

2.2 E-learning Systems ............................................................................................... 6

2.3 User Experience .................................................................................................... 7

2.4 The Connectivity Points between UX and E-learning ....................................... 7

2.5 E-learning Design ................................................................................................ 11

2.6 User Experience ................................................................................................... 12

2.7 Related Works ..................................................................................................... 14

2.8 Literature Analysis ............................................................................................... 19

Chapter Three ............................................................................................................... 20

Research Methodology ................................................................................................. 20

3.1 Introduction ........................................................................................................... 20

3.2 Research Approach .............................................................................................. 20

3.3 Research Assumptions ......................................................................................... 24

3.4 Data Collection ..................................................................................................... 24

3.5 Data Analysis ......................................................................................................... 26

Chapter Four .................................................................................................................. 28

Design UX Model ......................................................................................................... 28

4.1 Introduction ........................................................................................................... 28
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2</td>
<td></td>
<td>Design of Questionnaire:</td>
<td>28</td>
</tr>
<tr>
<td>4.3</td>
<td></td>
<td>User Experience Application</td>
<td>29</td>
</tr>
<tr>
<td>4.4</td>
<td></td>
<td>User Experience Tools:</td>
<td>30</td>
</tr>
<tr>
<td>4.5</td>
<td></td>
<td>Evaluation Processing</td>
<td>32</td>
</tr>
<tr>
<td>4.4.1</td>
<td></td>
<td>Evaluation Tools</td>
<td>32</td>
</tr>
<tr>
<td>4.5</td>
<td></td>
<td>SortSite Evaluator</td>
<td>33</td>
</tr>
<tr>
<td>4.5.1</td>
<td></td>
<td>Accessibility</td>
<td>33</td>
</tr>
<tr>
<td>4.5.2</td>
<td></td>
<td>Valuable</td>
<td>34</td>
</tr>
<tr>
<td>4.5.3</td>
<td></td>
<td>Findability</td>
<td>35</td>
</tr>
<tr>
<td>4.5.4</td>
<td></td>
<td>Usability</td>
<td>35</td>
</tr>
<tr>
<td>4.5.5</td>
<td></td>
<td>Desirability</td>
<td>35</td>
</tr>
<tr>
<td>Chapter 5</td>
<td></td>
<td>Analysis and Testing</td>
<td>37</td>
</tr>
<tr>
<td>5.1</td>
<td></td>
<td>Introduction</td>
<td>37</td>
</tr>
<tr>
<td>5.2</td>
<td></td>
<td>Evaluation of Current System</td>
<td>38</td>
</tr>
<tr>
<td>5.2.1</td>
<td></td>
<td>Accessibility:</td>
<td>38</td>
</tr>
<tr>
<td>5.2.2</td>
<td></td>
<td>Usability</td>
<td>39</td>
</tr>
<tr>
<td>5.2.3</td>
<td></td>
<td>Desirability</td>
<td>40</td>
</tr>
<tr>
<td>5.2.4</td>
<td></td>
<td>Valuable</td>
<td>41</td>
</tr>
<tr>
<td>5.2.4.1</td>
<td></td>
<td>Privacy</td>
<td>41</td>
</tr>
<tr>
<td>5.2.4.2</td>
<td></td>
<td>Errors</td>
<td>42</td>
</tr>
<tr>
<td>5.2.4.3</td>
<td></td>
<td>Standards:</td>
<td>42</td>
</tr>
<tr>
<td>5.2.5</td>
<td></td>
<td>Findability</td>
<td>43</td>
</tr>
<tr>
<td>5.3</td>
<td></td>
<td>The Results of SortSite Comparisons</td>
<td>45</td>
</tr>
<tr>
<td>5.4</td>
<td></td>
<td>The Design of Questionnaire Form</td>
<td>46</td>
</tr>
<tr>
<td>5.5</td>
<td></td>
<td>Questionnaire Analysis</td>
<td>47</td>
</tr>
<tr>
<td>5.5.1</td>
<td></td>
<td>Usability:</td>
<td>47</td>
</tr>
<tr>
<td>5.5.2</td>
<td></td>
<td>Useful</td>
<td>49</td>
</tr>
<tr>
<td>5.5.3</td>
<td></td>
<td>Findability and Navigation</td>
<td>51</td>
</tr>
<tr>
<td>5.5.4</td>
<td></td>
<td>Desirability</td>
<td>52</td>
</tr>
<tr>
<td>5.5.5</td>
<td></td>
<td>Accessibility</td>
<td>55</td>
</tr>
<tr>
<td>5.5.6</td>
<td></td>
<td>Valuable</td>
<td>58</td>
</tr>
<tr>
<td>5.6</td>
<td></td>
<td>Classification and Descriptive</td>
<td>61</td>
</tr>
<tr>
<td>5.7</td>
<td></td>
<td>Data Distribution Format</td>
<td>63</td>
</tr>
<tr>
<td>5.7.1</td>
<td></td>
<td>Usability</td>
<td>64</td>
</tr>
</tbody>
</table>
5.7.2. Useful ................................................................................................................. 66
5.7.3 Findability and Navigation ................................................................................. 68
5.7.4 Desirability ......................................................................................................... 70
5.7.5 Accessibility ...................................................................................................... 72
5.7.6 Valuable ............................................................................................................. 74
Discussion .................................................................................................................... 77
Chapter Six .................................................................................................................. 78
Conclusions and Future Works .................................................................................... 78
4.6 Conclusions .......................................................................................................... 78
4.7 Future Work ......................................................................................................... 79
References .................................................................................................................... 80
Priority 1 ....................................................................................................................... 102
List of Tables

Table 2.1 Sample of Questionnaire form ................................................................. 11
Table 3.1 Validity and reliability results ..................................................................... 26
Table 4.1 Evaluation tools .......................................................................................... 30
Table (4-4) The evaluation tools .............................................................................. 32
Table (5-1): The results of the accessibility factor .................................................... 38
Table (5-2): The results of the usability factor .......................................................... 39
Table (5-3): The results of the desirability factor ...................................................... 40
Table (5-4): The results of Privacy factor ................................................................. 41
Table (5-5): The results of Errors factor ................................................................... 42
Table (5-6): The results of Standards factor ............................................................ 43
Table (5-7): The results of the findability factor ....................................................... 44
Table (5-8) The results of SortSite for the comparison of three universities .......... 45
Table (5-7) The Number of Respondents .................................................................. 47
Table (5-9): Usability ................................................................................................. 48
Table (5-10): The useful ............................................................................................ 50
Table (5-11): Findable and navigation ..................................................................... 52
Table (5-12): The Desirability .................................................................................. 53
Table (5-13): Accessibility ......................................................................................... 55
Table (5-14): The Valuable ....................................................................................... 58
Table (5-15) Descriptive results ............................................................................... 61
List of Figure

Figure 1.1 Proposed factors to design a UX model ................................................................. 3
Figure 1.2 Thesis organization ................................................................................................. 5
Figure 3.1. The proposed methodology .................................................................................. 21
Figure 3.2. The proposed model ............................................................................................. 22