

## University of Wollongong Research Online

University of Wollongong Thesis Collection  
1954-2016

University of Wollongong Thesis Collections

2008

### The application of information systems in marketing: a study of empowerment in electronic commerce

Mahmoud Ali Al-Dalahmeh  
*University of Wollongong*

Follow this and additional works at: <https://ro.uow.edu.au/theses>

#### University of Wollongong

##### Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following: This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part of this work may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of the author. Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material.

Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

Unless otherwise indicated, the views expressed in this thesis are those of the author and do not necessarily represent the views of the University of Wollongong.

#### Recommended Citation

Al-Dalahmeh, Mahmoud Ali, The application of information systems in marketing: a study of empowerment in electronic commerce, Doctor of Philosophy thesis, School of Economics & Information Systems - Faculty of Commerce, University of Wollongong, 2008. <https://ro.uow.edu.au/theses/1747>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: [research-pubs@uow.edu.au](mailto:research-pubs@uow.edu.au)

## **NOTE**

This online version of the thesis may have different page formatting and pagination from the paper copy held in the University of Wollongong Library.

## **UNIVERSITY OF WOLLONGONG**

### **COPYRIGHT WARNING**

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

**THE APPLICATION OF INFORMATION SYSTEMS IN  
MARKETING  
A STUDY OF EMPOWERMENT IN ELECTRONIC  
COMMERCE**

**A thesis submitted in fulfilment of the  
requirements for the award of the degree of**

**DOCTOR OF PHILOSOPHY**

**from**

**THE UNIVERSITY OF WOLLONGONG**

**by**

**Mahmoud Ali Al-dalahmeh**

**BCom, MCom (FIN-with merit), Australia**

**School of Economic & Information Systems**

**FACULTY OF COMMERCE**

**2008**

## **CERTIFICATION**

I, Mahmoud Al-dalahmeh, declare that this dissertation, submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the school of Economic and Information Systems, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

---

Mahmoud Al-dalahmeh

January 2008

## **Abstract**

This thesis describes post-positivist research in the field of Information Systems (IS), more specifically in Electronic Commerce (E-Commerce). Information systems (IS) and information technology (IT) both play a major role in improving productivity and competitive edge in e-commerce (Lin and Benjamin, 2000). The existence of IS does not depend on computers but it is the utilisation of computers and technology that produces a viable IS system (Davis and Olson, 1985).

E-commerce is considered as a new type of information system and was defined by Poong (2006, p. 553) as “an information system that provides catalogues of products over the World Wide Web”. Despite the deep employment of technology in Information Systems (IS), they are regarded as social systems.

Business-to-consumer (B2C) e-commerce has been rapidly changing the competitive landscape of retailing and service industries. Despite its claimed benefits, this innovative mode of retailing has not yet been accepted by every buyer. For company managers, the delays in the adoption of information systems such as e-commerce systems, and the empowerment of e-commerce users are recognised as a dilemma.

An interesting question is why some users accept the idea of online shopping more readily than others. This study aims at helping to improve information systems applications for e-commerce in the complex, technology-oriented marketing sector.

This thesis innovates a model to empower e-commerce users based on key critical factors that affect this technology. The core factors in this model are e-commerce self-efficacy, Personal Innovation in Information Technology (PIIT), system ease of use, system experience, and technology anxiety. The model was empirically tested in a field experimental setting, using a real retail website for the purchasing decisions. The

participants in this study were students at the University of Wollongong in Australia, as they are normal users of e-commerce. The Amazon.com website was chosen for this study, as this website is usually used by university students to buy books and CDs. The results of the investigation were tested using factor analysis and partial least square (PLS). The empirical testing provides support for the proposed theoretical model by explaining seventy-eight percent (78%) of the variance in the users' intention to use e-commerce systems.

The implications of this study are both theoretical and practical. At the theoretical level, this study combined four models in one model. The first model, by Compeau et al. (1999)<sup>1</sup>, put social cognitive theory into practice for the IT area. The second model, by Thatcher and Perrewé (2002)<sup>2</sup>, applied personal innovation in information technology, trait anxiety, and computer anxiety to computer self-efficacy. Henry and Stone's (1995)<sup>3</sup> model is the third model used, as it employed ease of use and system experience in computer self-efficacy and outcome expectation. The final model was constructed by Kim and Kim (2005)<sup>4</sup> and used specific self-efficacy (online trading self-efficacy) in customer trust, perceived risk, and buying intention. Therefore, it can be positively confirmed that this research model is a solid model, as it unites these four models into one to generate a clarification of users' behaviour in the framework of e-commerce utilisation.

At the practical level, the study shows that adoption of e-commerce systems is directly, significantly and positively affected by e-commerce self-efficacy, outcome expectation (perceived usefulness), system ease of use, and system experience. It is proposed that individuals with higher levels of e-commerce self-efficacy, outcome

---

<sup>1</sup> This model has been published by *Management Information System Quarterly*.

<sup>2</sup> This model has been published by *Management Information System Quarterly*.

<sup>3</sup> This model has been published by *Computer Personal*.

<sup>4</sup> This model has been published by *IEEE*.

expectation, system experience, and perceived system ease of use are more likely to perform an online transaction than those experiencing lower levels of these concepts.

The study makes significant contributions across all areas of IT adoption and usage research and practice. There is justification for claiming that the study model will empower the application of management information systems for e-commerce.

## **PUBLICATIONS FROM THE RESEARCH**

The following articles and publications have been produced from the research reported in this thesis.

Articles related to this research

### **Refereed Conference Articles**

1. **Al-Dalahmeh, M.** and Saleh, A. S. (2007), “E-Commerce Self-Efficacy and Intention to Shop Online: the Empowerment of Internet marketing, Intellectbase International Consortium, Academic Conference, Atlanta, USA, October 25-27, 2007.  
**(This paper awarded Academic Excellence)**
2. **Al-Dalahmeh, M.** and Saleh, A. S. (2007), “A Review and New Theoretical Approach of E-Commerce Self-efficacy: Understanding Consumer Behaviour in the Context of Information Systems”, Asia Pacific Marketing Conference 2007, University Malaysia Sarawak, Kuching, Malaysia, 2-3 November 2007.
3. **Al-Dalahmeh, M.** and Saleh, A. S. (2007), “Psychological Factors Affecting the Intention to Use E-Commerce: A Theoretical Approach”, the First International Online Conference on Business and management, November 20-21, Iran.
4. **Al-Dalahmeh, M.**(2008), "The empowerment of citizen usage for e-government"; E-city; International Congress Center of Milad Tower, Tehran, Iran.  
**(In this article the author applied the research model in the area of e-government)**

### **International Journal Articles**

5. **Al-Dalahmeh, M.** and Saleh, A. S. (2007), “Psychological Factors Affecting the Intention to Use E-Commerce: A Theoretical Approach”, Lex et Scientia (International Journal of Law and Science), Nr. XIV/2007, pp. 40 - 60, Print ISSN 1583-039X.
6. **Al-Dalahmeh, M.** and Saleh, A. S. (2008), “E-Commerce Self-Efficacy and Intention to Shop Online: the Empowerment of Internet marketing”, International Journal of Accounting Information Science and Leadership – IJAISL, pp. 80-85, USA. Print ISSN 1940-9524

### **Work in Progress**

7. **Al-Dalahmeh, M.** (2008), “The Application of Information systems in Marketing; A Study of Empowerment in Electronic Commerce Technology Usage” Journal of Information Systems Technology & Planning – JISTP, (submitted) USA.



## **ACKNOWLEDGEMENTS**

I wish to express my deepest appreciation and gratitude to my God (Allah S.W.T). Without Him this work would have never happened. My deepest appreciation also goes to all the people who have contributed to the completion of this dissertation. First of all, I had the great fortune to study under the supervision of Associate Professor Ann Hodgkinson. I am very grateful for her guidance, encouragement, and amazing patience. Her profound knowledge of different perspectives of studying electronic commerce and information systems have provided me with the opportunity to broaden my knowledge and to make significant progress. I am also very grateful for her friendly support and enthusiasm.

I sincerely acknowledge the contribution of my co-supervisor, Dr Ali Salman Saleh, for his intellectual initiative. He provided me with extremely useful feedback and friendly supervision.

I also owe many thanks to Associate Professor Robert Clark. As my statistical adviser, he provided statistical advice and alternatives for the analysis of the empirical data. In addition, I would like to thank the UOW library staff for their pleasant academic support.

My respect and very special appreciation go to my father, who unfortunately passed away one year after I started my PhD study. I will never ever forget him, and I am happy that I achieved his greatest wish. Another very special appreciation goes to the person I hold most dear, my mother, for encouraging and supporting me. I cannot forget to thank my older brother Yousef, who has believed in my ability to achieve my goals and given me his full financial support. I also would like to thank my brothers, Ekbal and Mosa, and all my sisters, uncles, aunts, especially my uncle Yasser, who have believed in my ability and patiently waited for me.

## **Dedication**

I dedicate this Study to my dearest people, mother and father, who have  
always inspired me to challenge myself.

## TABLE OF CONTENTS

<i>Certification .....</i>	<b>ii</b>
<i>Abstract .....</i>	<b>iii</b>
<i>Publications From The Research .....</i>	<b>vi</b>
<i>Acknowledgements .....</i>	<b>vii</b>
<i>Dedication .....</i>	<b>viii</b>
<i>Table of Contents .....</i>	<b>ix</b>
<i>List of Tables .....</i>	<b>xvii</b>
<i>List of Figures .....</i>	<b>xix</b>
<i>List of Acronyms .....</i>	<b>xix</b>
<b>1 Introduction .....</b>	<b>1</b>
<b>1.1 Introduction</b>	<b>1</b>
<b>1.2 E-commerce Information Systems</b>	<b>2</b>
<b>1.3 Internet Marketing</b>	<b>3</b>
1.3.1 System Ease of Use	3
1.3.2 System Experience	4
1.3.3 Technology Anxiety	4
1.3.4 Personal Innovation in Information Technology (PIIT)	5
<b>1.4 Self-efficacy</b>	<b>5</b>
<b>1.5 Problem Background</b>	<b>6</b>
<b>1.6 Research Problem</b>	<b>8</b>
<b>1.7 Empowerment and Self-efficacy</b>	<b>9</b>
<b>1.8 Definitions of Terms</b>	<b>10</b>
<b>1.9 Reasons for the Study</b>	<b>12</b>
<b>1.10 Purpose and Significance of the Study</b>	<b>13</b>
<b>1.11 Motivation for the Research</b>	<b>14</b>
<b>1.12 Objectives of the Study</b>	<b>14</b>
<b>1.13 Theoretical Background of This Study</b>	<b>15</b>
<b>1.14 Research Questions</b>	<b>16</b>
<b>1.15 Practical and Theoretical Value of This Research</b>	<b>17</b>

1.15.1	Academic Contributions	17
1.15.2	Methodology	18
1.15.3	Managerial Contributions/Practice	19
<b>1.16</b>	<b>Organisation of The Thesis</b>	<b>20</b>
<b>2</b>	<b><i>The Literature Review .....</i></b>	<b>23</b>
<b>2.1</b>	<b>Introduction</b>	<b>23</b>
<b>2.2</b>	<b>The Internet</b>	<b>24</b>
<b>2.3</b>	<b>Definitions of E-commerce</b>	<b>25</b>
<b>2.4</b>	<b>E-commerce and Traditional Information Systems</b>	<b>27</b>
<b>2.5</b>	<b>Internet Marketing</b>	<b>30</b>
<b>2.6</b>	<b>Importance and Benefits of E-commerce</b>	<b>32</b>
2.6.1	Importance of E-commerce in Business Transactions	32
2.6.2	Benefits of E-commerce in Business Transactions	32
2.6.2.1	Individual Benefits from E-commerce	32
2.6.2.2	Organisational Benefits from E-commerce	33
<b>2.7</b>	<b>Models of E-commerce</b>	<b>34</b>
2.7.1	Business-to-Consumer E-commerce (B2C)	35
2.7.1.1	B2C E-commerce Infrastructure	38
<b>2.8</b>	<b>Information System Success</b>	<b>41</b>
<b>2.9</b>	<b>Constructive E-commerce Characteristics</b>	<b>42</b>
<b>2.10</b>	<b>Factors That Affect Consumers' Decisions to Use E-commerce</b>	<b>43</b>
2.10.1	Trust	43
2.10.2	Perceived Risk	45
2.10.3	Culture	46
2.10.4	Website Design	47
2.10.5	Experience	48
2.10.6	Brand	49
2.10.7	Reputation	49
<b>2.11</b>	<b>Justification for This Research</b>	<b>50</b>
<b>2.12</b>	<b>Conclusion</b>	<b>52</b>
<b>3</b>	<b><i>Theoretical Review Of Self-Efficacy .....</i></b>	<b>53</b>
<b>3.1</b>	<b>Introduction</b>	<b>53</b>
<b>3.2</b>	<b>Self-efficacy</b>	<b>54</b>
<b>3.3</b>	<b>Characteristics of Self-efficacy</b>	<b>56</b>
<b>3.4</b>	<b>Components of Self-efficacy</b>	<b>57</b>

<b>3.5</b>	<b>Perceived Self-efficacy</b>	<b>58</b>
3.5.1	Efficacy Belief as a Mechanism of Operation	58
3.5.2	Dimensions of Efficacy Belief	59
3.5.3	The Nature and Construction of Self-efficacy	60
3.5.4	Development of Self-efficacy	60
<b>3.6</b>	<b>Outcome Expectations</b>	<b>63</b>
<b>3.7</b>	<b>Efficacy Beliefs and Outcome Expectation</b>	<b>67</b>
<b>3.8</b>	<b>Self-efficacy and Anxiety</b>	<b>68</b>
<b>3.9</b>	<b>Self-efficacy and Self-esteem</b>	<b>69</b>
<b>3.10</b>	<b>Allusions for Improving Self-efficacy</b>	<b>70</b>
<b>3.11</b>	<b>The Application of Self-efficacy in Health</b>	<b>71</b>
3.11.1	Self-efficacy and Rheumatic Diseases	71
3.11.2	Self-efficacy and Diabetes	72
3.11.3	Self-efficacy and Recovery from Heart Attack	74
3.11.4	Self-efficacy and Stress Response	74
<b>3.12</b>	<b>The Effect of Self-efficacy on the Utilisation of Advanced Technology</b>	<b>75</b>
<b>3.13</b>	<b>The Importance of Self-efficacy in E-commerce</b>	<b>76</b>
<b>3.14</b>	<b>Conclusion</b>	<b>77</b>
<b>4</b>	<b><i>Theoretical foundation, Research model and Hypotheses .....</i></b>	<b>79</b>
<b>4.1</b>	<b>Introduction</b>	<b>79</b>
<b>4.2</b>	<b>Development of the Research Model</b>	<b>80</b>
<b>4.3</b>	<b>The Research Model</b>	<b>81</b>
4.3.1	Construct Definitions	83
4.3.2	Personal Innovation in Information Technology (PIIT)	84
4.3.3	System Experience	85
4.3.4	E-commerce System Ease of Use	85
4.3.5	Self-esteem	88
4.3.6	Trait Anxiety	89
4.3.7	Technology Anxiety	91
4.3.8	General Self-efficacy (GSE)	94
4.3.9	E-commerce Self-efficacy (ESE)	98
4.3.10	Outcome Expectation	104
4.3.11	Risk Aversion	105
4.3.12	User Trust	106
<b>4.4</b>	<b>Summary of the Research Hypotheses</b>	<b>108</b>

4.5	Summary and Conclusions	109
5	<i>The Methodology used for Empirical Research .....</i>	111
5.1	Introduction	111
5.2	Research Design	112
5.3	Research Paradigm	112
5.4	Quantitative Methodology	114
5.5	Nature of the Study	115
5.6	Unit of Analysis	116
5.7	Time Scope	116
5.8	Data-collection Methods and Free Simulation Experiment	117
5.9	Conceptualisation, Operationalisation and Measures	120
5.10	Developing the Survey's Scenario	121
5.11	Sampling Strategy	122
5.11.1	Sample Size	124
5.12	Ethical Considerations	126
5.13	Conclusion	127
6	<i>Identification Of Concepts And Measures Leading To The Development Of The Questionnaire .....</i>	128
6.1	Introduction	128
6.2	Development of the Survey Instrument	129
6.2.1	General Self-efficacy Scale	131
6.2.2	Electronic-commerce Self-efficacy Scale	133
6.2.3	Outcome Expectation Scale	135
6.2.4	Self-esteem Scale	137
6.2.5	System Ease of Use Scale	137
6.2.6	System Experience Scale	138
6.2.7	Personal Innovation in Information Technology Scale	138
6.2.8	Trait Anxiety Scale	139
6.2.9	Technology Anxiety Scale	140
6.2.10	User Trust Scale	140
6.2.11	Risk Aversion Scale	141
6.2.12	Intention to Use the E-commerce Technology Scale	142
6.3	Initial Reliability and Face Validity	143
6.4	The Pre-pilot Test	143

6.5	Pilot Testing	144
6.6	Survey Questionnaire	146
6.7	Conclusion	149
<b>7</b>	<b><i>Survey Data Analysis .....</i></b>	<b>151</b>
7.1	Introduction	151
7.2	Data preparation	151
7.2.1	Coding of Measurement Scales for E-commerce Self-efficacy Model	153
7.3	Descriptive Statistics of the Participants	156
7.4	Descriptive Analysis	158
7.4.1	Gender and the Main Research Variables	158
7.4.2	Age Groups and the Main Research Variables	159
7.4.3	Level of Study and the Main Research Variables	161
7.4.4	Level of Income and the Main Research Variables	161
7.4.5	Nationality and the Main Research Variables	162
7.5	Reliability Analysis	163
7.6	Validity of the Scales	166
7.6.1	Perceived Self-efficacy (General Self-efficacy, E-commerce Self-efficacy, Outcome Expectation)	167
7.6.2	Technological Factors (Ease of Use, Personal Innovation in Information Technology, Experience)	169
7.6.3	Psychological Factors (Trait Anxiety, Technology Anxiety, Self-esteem)	171
7.6.4	Consumer Trust Scale and Risk Aversion Scale	173
7.6.5	Intention to Use E-commerce Scale	175
7.7	Conclusion	177
<b>8</b>	<b><i>Structural Equation Modelling And Hypothesis-Testing.....</i></b>	<b>178</b>
8.1	Introduction	178
8.2	Structural Equation Modelling (by Partial Least Square PLS)	178
8.2.1	Introduction and Background	178
8.2.2	Reflective vs. Formative	182
8.2.3	PLS Model Measurements	184
8.2.3.1	Assessment of the Measurement Model (Outer Model)	185
8.2.3.1.1	Item Reliability	185
8.2.3.1.2	Convergent Validity (Composite Reliability or Internal Consistency)	186
8.2.3.1.3	Discriminate Validity	187
8.2.3.2	Assessment of the Structural Model (Inner Model)	193
8.2.3.2.1	Direct and Indirect Effects	195

<b>8.3</b>	<b>Descriptive Statistics of the Participants</b>	<b>197</b>
<b>8.4</b>	<b>Testing the Hypotheses</b>	<b>198</b>
8.4.1	Hypothesis 1: Personal innovation in information technology vs . e-commerce self-efficacy	198
8.4.2	Hypothesis 2a: Experience vs. e-commerce self-efficacy	199
8.4.3	Hypothesis 2b: Experience vs. outcome expectation	199
8.4.4	Hypothesis 3a: Ease of use vs. e-commerce self-efficacy	199
8.4.5	Hypothesis 3b: Ease of use vs. outcome expectation	199
8.4.6	Hypothesis 4: Self-esteem vs. e-commerce self-efficacy	200
8.4.7	Hypothesis 5: Trait anxiety vs. e-commerce self-efficacy	200
8.4.8	Hypothesis 6a: Technology anxiety Vs. e-commerce self-efficacy	200
8.4.9	Hypothesis 6b: Technology anxiety vs. intention to use e-commerce	200
8.4.10	Hypothesis 7: General self-efficacy vs. e-commerce self-efficacy	201
8.4.11	Hypothesis 8a: E-commerce self-efficacy vs. outcome expectation	201
8.4.12	Hypothesis 8b: E-commerce self-efficacy vs. risk aversion	201
8.4.13	Hypothesis 8c: E-commerce self-efficacy vs. user trust	201
8.4.14	Hypothesis 8d: E-commerce self-efficacy vs. intention to use e-commerce	202
8.4.15	Hypothesis 9: Outcome expectation vs. intention to use e-commerce	202
8.4.16	Hypothesis 10: Risk aversion vs. intention to use e-commerce	202
8.4.17	Hypothesis 11: User trust vs. intention to use e-commerce	203
<b>8.5</b>	<b>Research Model Goodness of Fit</b>	<b>205</b>
<b>8.6</b>	<b>Conclusion</b>	<b>205</b>
<b>9</b>	<b><i>Discussion and Conclusions .....</i></b>	<b>207</b>
<b>9.1</b>	<b>Introduction</b>	<b>207</b>
<b>9.2</b>	<b>Summary of the Main Findings</b>	<b>207</b>
<b>9.3</b>	<b>Discussion of the Survey Findings</b>	<b>210</b>
9.3.1	Research Question 1: What are the factors that affect the e-commerce self-efficacy? (Hypotheses H1, H2a, H3a, H4, H5, H6b, H7)	210
9.3.2	Research Question 2: What are the impacts and antecedents of e-commerce self-efficacy?	215
9.3.3	Research Question 3: How do the users' trust and risk aversion affect their intention to use e-commerce? (Hypotheses H10, H11)	217
9.3.4	Research Question 4: What is the role of individuals' beliefs about their abilities to use electronic commerce (e-commerce self-efficacy) in the determination of their intention to use e-commerce? (Hypotheses H8a, H8b, H8c, H8d)	218
9.3.5	Research Question 5: How do the individuals' outcome expectations affect their intention to use e-commerce? (Hypothesis H9)	219
9.3.6	Research Question 6: How do emotional factors (anxiety) affect the users' intention to use e-commerce? (Hypotheses H5, H6b, H2a, H2b, H3a, H3b)	219
9.3.7	Research Question 7: Is there any difference between males and females in terms of	



their intention to use e-commerce?	220
<b>9.4 The Contribution to Academic Research</b>	<b>222</b>
9.4.1 Academic Research Contribution 1	222
9.4.2 Academic Research Contribution 2	223
9.4.3 Academic Research Contribution 3	224
9.4.4 Academic Research Contribution 4	224
9.4.5 Academic Research Contribution 5	225
9.4.6 Academic Research Contribution 6	226
9.4.7 Academic Research Contribution 7	226
9.4.8 Academic Research Contribution 8	227
<b>9.5 The Managerial Contribution</b>	<b>227</b>
9.5.1 Managerial Contribution 1	228
9.5.2 Managerial Contribution 2	228
9.5.3 Managerial Contribution 3	228
9.5.4 Managerial Contribution 4	229
9.5.5 Managerial Contribution 5	229
9.5.6 Managerial Contribution 6	230
9.5.7 Managerial Contribution 7	231
<b>9.6 Limitations of the Study</b>	<b>234</b>
<b>9.7 Areas for Future Research</b>	<b>236</b>
<b>References .....</b>	<b>238</b>
<b>Appendices .....</b>	<b>268</b>
<b>Appendix A:</b> Research consent form	268
<b>Appendix B:</b> Study survey	269
<b>Appendix C:</b> Research Ethics Application	275
<b>Appendix D:</b> Descriptive statistic for all survey items	290
<b>Appendix F1:</b> Table of Anti-Image Matrices for Perceived self-efficacy variables	295
<b>Appendix F2:</b> Scree Plot Figure for Perceived self-efficacy variables (general self-efficacy, e-commerce self-efficacy, outcome expectation)	297
<b>Appendix G1:</b> Correlation Matrix for Technological Factors (ease of use, personal innovation in Information Technology, experience)	298
<b>Appendix G2:</b> Scree Plot Figure for Technological Factors(ease of use, personal innovation in Information Technology, experience)	299
<b>Appendix G3:</b> Anti-image Matrices for Technological Factors (ease of use, personal Innovation in Information Technology, experience)	300
<b>Appendix G4:</b> Rotated Component for Technological Factors (ease of use, personal innovation in Information Technology, experience)	301
<b>Appendix H1:</b> Scree Plot Figure for Psychological Factors(trait anxiety,	

	technology anxiety, self-esteem)	302
<b>Appendix H2:</b>	Correlation Matrix for the psychological factor scales (trait anxiety, technology anxiety, and self-esteem)	303
<b>Appendix H3:</b>	Anti-image Matrix for the psychological factor scales(trait anxiety, technology anxiety, and self-esteem)	304
<b>Appendix I1:</b>	Scree Plot Figure for User Trust & User Risk Aversion	305
<b>Appendix I2:</b>	Total Variance Explained for User Trust & Risk Aversion	305
<b>Appendix I3:</b>	Communalities for User Trust & Risk Aversion	306
<b>Appendix I4:</b>	Correlation Matrix for User Trust & User Risk Aversion	306
<b>Appendix I5:</b>	Anti-image Matrix for User Trust & User Risk Aversion	307
<b>Appendix J1:</b>	Scree Plot Figure for Intention to use E-commerce	308
<b>Appendix J2:</b>	Total Variance Explained for Intention to use E-commerce	308
<b>Appendix J3:</b>	Communalities for Intention to use E-commerce	309
<b>Appendix K:</b>	PLS .Ist File	310
<b>Appendix L:</b>	PLS Bootstrap File	332
<b>Appendix M:</b>	Gift Voucher for the Research Participants	339

## LIST OF TABLES

Table 2.1	E-commerce models	35
Table 2.2	Products sold by Amazon.com	37
Table 2.3	Gross profit information for Amazon.com	38
Table 4.1	Construct definitions	83
Table 4.2	Summary of the research hypotheses	108
Table 5.1	General aspects of research design and methodology	112
Table 5.2	Comparing survey methods	119
Table 5.3	The study scenario	122
Table 6.1	Five-point numerical scale	130
Table 6.2	Items measuring general self-efficacy	132
Table 6.3	Items measuring electronic commerce self-efficacy	134
Table 6.4	Items measuring outcome expectation	136
Table 6.5	Items measuring self-esteem	137
Table 6.6	Items measuring system ease of use	138
Table 6.7	Items measuring system experience	138
Table 6.8	Items measuring personal innovation in information technology	139
Table 6.9	Items measuring trait anxiety	139
Table 6.10	Items measuring technology anxiety	140
Table 6.11	Items measuring user trust	141
Table 6.12	Items measuring risk aversion	142
Table 6.13	Items measuring intention to use e-commerce	143
Table 6.14	Demographic data of pilot study	144
Table 7.1	Coding of measurement scale for e-commerce self-efficacy model	153
Table 7.2	Participant characteristics	157
Table 7.3	Gender and the main research variables	159
Table 7.4	Age groups and the main research variables	160
Table 7.5	Level of study and the main research variables	161
Table 7.6	Level of income and the main research variables	162
Table 7.7	Nationality and the main research variables	163
Table 7.8	Internal reliabilities for the scales in the study	165
Table 7.9	KMO and Bartlett's test for perceived self-efficacy variables	167

Table 7.10	Results of factor analysis for the perceived self-efficacy scales (general self-efficacy, e-commerce self-efficacy, outcome expectation).	168
Table 7.11	KMO and Bartlett's test for technological factors	170
Table 7.12	Results of factor analysis for the technological factor scales (ease of use, personal innovation in information technology, experience)	171
Table 7.13	KMO and Bartlett's Test for Psychological Factors	172
Table 7.14	Results of factor analysis for the psychological factor scales (trait anxiety, technology anxiety, self-esteem)	173
Table 7.15	KMO and Bartlett's Test for User Trust and Risk Aversion	173
Table 7.16	Results of factor analysis for the consumer trust scale and risk aversion scale	175
Table 7.17	KMO and Bartlett's Test for Intention to use E-commerce	175
Table 7.18	Results of factor analysis for the intention to use e-commerce scale	176
Table 8.1	Comparisons between PLS and LISREL	181
Table 8.2	Mean, standard deviations and internal consistencies of construct	187
Table 8.3	The average variance extracted of constructs	188
Table 8.4	Correlation of the constructs	189
Table 8.5	Loadings and cross-loadings of measures	191
Table 8.6	Variance explained by R square	194
Table 8.7	The direct and indirect effects of the research constructs	196
Table 8.8	Structural model findings	204
Table 9.1	A summary of the research questions and hypotheses	208
Table 9.2	Results of the respondents' categorisation of the main study (high, neutral and low)	210
Table 9.3	Gender and the main research variables	221

## **LIST OF FIGURES**

Figure 1.1	Organisation of the thesis	20
Figure 2.1	E-commerce information systems	30
Figure 2.2	Homepage of Amazon.com	36
Figure 2.3	The process for a customer's purchase online	40
Figure 2.4	Garrity and Sanders' IS Success	42
Figure 3.1	Triadic Reciprocal Causation Model, 1979	56
Figure 3.2	Distinction between outcome expectations and self-efficacy perception	57
Figure 4.1	E-commerce self-efficacy model	82
Figure 5.1	The concept (construct) of general self-efficacy	121
Figure 6.1	Example of ethnic background question	144
Figure 8.1	Reflective construct	183
Figure 8.2	Formative construct	184
Figure 8.3	E-commerce self-efficacy model: output of PLS	198
Figure 9.1	The e-commerce self-efficacy model	212
Figure 9.2	Previous research on the relation between self-efficacy and anxiety	225
Figure 9.3	Current research on the relation between self-efficacy and anxiety	225

## **LIST OF ACRONYMS**

B2C	Business to Consumer
E-commerce	Electronic Commerce
ESE	Electronic Commerce self-efficacy
EU	Ease of Use
GSE	General self-efficacy
INI	Intention
OUE	Outcome Expectations
PITT	Personal Innovation in Information Technology
RA	Risk Aversion
S-E	Self-efficacy
TA	Trait Anxiety
TE-A	Technology Anxiety
UOW	University of Wollongong