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

Mahmoud Ali Al-Dalahmeh
University of Wollongong

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**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 Economics & 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)¹, put social cognitive theory into practice for the IT area. The second model, by Thatcher and Perrewé (2002)², applied personal innovation in information technology, trait anxiety, and computer anxiety to computer self-efficacy. Henry and Stone's (1995)³ 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)⁴ 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 expectation,

¹ This model has been published by *Management Information System Quarterly*.

² This model has been published by *Management Information System Quarterly*.

³ This model has been published by *Computer Personal*.

⁴ This model has been published by *IEEE*.

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

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.

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

1.15.1	Academic Contributions	17
1.15.2	Methodology	18
1.15.3	Managerial Contributions/Practice	19
1.16	Organisation of The Thesis	20
2	<i>The Literature Review</i>	23
2.1	Introduction	23
2.2	The Internet	24
2.3	Definitions of E-commerce	25
2.4	E-commerce and Traditional Information Systems	27
2.5	Internet Marketing	30
2.6	Importance and Benefits of E-commerce	32
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
2.7	Models of E-commerce	34
2.7.1	Business-to-Consumer E-commerce (B2C)	35
2.7.1.1	B2C E-commerce Infrastructure	38
2.8	Information System Success	41
2.9	Constructive E-commerce Characteristics	42
2.10	Factors That Affect Consumers' Decisions to Use E-commerce	43
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
2.11	Justification for This Research	50
2.12	Conclusion	52
3	<i>Theoretical Review Of Self-Efficacy.....</i>	53
3.1	Introduction	53
3.2	Self-efficacy	54
3.3	Characteristics of Self-efficacy	56
3.4	Components of Self-efficacy	57

3.5	Perceived Self-efficacy	58
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
3.6	Outcome Expectations	63
3.7	Efficacy Beliefs and Outcome Expectation	67
3.8	Self-efficacy and Anxiety	68
3.9	Self-efficacy and Self-esteem	69
3.10	Allusions for Improving Self-efficacy	70
3.11	The Application of Self-efficacy in Health	71
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
3.12	The Effect of Self-efficacy on the Utilisation of Advanced Technology	75
3.13	The Importance of Self-efficacy in E-commerce	76
3.14	Conclusion	77
4	<i>Theoretical foundation, Research model and Hypotheses</i>	79
4.1	Introduction	79
4.2	Development of the Research Model	80
4.3	The Research Model	81
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
4.4	Summary of the Research Hypotheses	108

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
7	<i>Survey Data Analysis</i>	151
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
8	<i>Structural Equation Modelling And Hypothesis-Testing</i>	178
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
8.3	Descriptive Statistics of the Participants	197

8.4	Testing the Hypotheses	198
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
8.5	Research Model Goodness of Fit	205
8.6	Conclusion	205
9	<i>Discussion and Conclusions</i>	207
9.1	Introduction	207
9.2	Summary of the Main Findings	207
9.3	Discussion of the Survey Findings	210
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

9.4	The Contribution to Academic Research	222
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
9.5	The Managerial Contribution	227
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
9.6	Limitations of the Study	234
9.7	Areas for Future Research	236
References	238
Appendices	268
Appendix A:	Research consent form	268
Appendix B:	Study survey	269
Appendix C:	Research Ethics Application	275
Appendix D:	Descriptive statistic for all survey items	290
Appendix F1:	Table of Anti-Image Matrices for Perceived self-efficacy variables	295
Appendix F2:	Scree Plot Figure for Perceived self-efficacy variables (general self-efficacy, e-commerce self-efficacy, outcome expectation)	297
Appendix G1:	Correlation Matrix for Technological Factors (ease of use, personal innovation in Information Technology, experience)	298
Appendix G2:	Scree Plot Figure for Technological Factors(ease of use, personal innovation in Information Technology, experience)	299
Appendix G3:	Anti-image Matrices for Technological Factors (ease of use, personal Innovation in Information Technology, experience)	300
Appendix G4	Rotated Component for Technological Factors (ease of use, personal innovation in Information Technology, experience)	301
Appendix H1:	Scree Plot Figure for Psychological Factors(trait anxiety, technology anxiety, self-esteem)	302

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

CHAPTER 1

INTRODUCTION

Electronic-Commerce is the procedure of buying, selling, transferring, or exchanging product, services, and/or information via computer software networks, including the internet (Turban et al, 2004, p. 3).

1.1 Introduction

In the late 1960s, the Internet emerged as an investigational network used by a group of researchers to interact with each other (Herbig et al., 1998, Wang, 2001). Nowadays this network has evolved into what we call the Internet, providing millions of people with the means to send and receive information through a variety of interaction channels. This has been made possible by creating an international electronic network based on countless interrelated networks (Oakes et al., 1999). Internet users are perceived to be younger, more learned and wealthier, in comparison to the ordinary people, according to studies focused on the online populace (Bellman et al., 1999; Jupiter Communications, 1998).

Internet World Stats⁵ (2007) has stated that 1.244 billion individuals around the globe are users of the Internet . The huge growth of the Internet has changed it from being an exclusive communication tool for a group of scientists to a huge unstoppable beneficial juggernaut expected to revolutionise the trading processes for many businesses. Actually, ever since the Internet was commercialised in the early 1990s, the classic business principles base has been traumatised by the Internet and additional information technologies. According to Butler and Peppard (1998) and Wang (2001), e-commerce is the most remarkable marvel in this paradigm shift.

⁵ An International website featuring free, up-to-date, Internet Usage and Population Statistics and Market Research Data, for over 233 individual countries and world regions.

Many definitions of e-commerce⁶ have been put forward. This study accepts and uses Laudon's description of e-commerce as the employment of the Internet and the web in business dealings. Formally speaking, it refers to performing transactions that are electronically facilitated between and among companies and people. Clearly, the transaction style is illustrated through the concept of e-commerce as it occurs over networks or predominantly over the Internet.

Turban et al. (2000) defined e-commerce as using computer networks – the Internet mostly – to electronically purchase, sell or even swap goods, services and information.

A number of specialised business analysts have implied that the existence of e-commerce is continually altering the manner of transactions, as, for instance, online payment systems are now utilised in shops, on the phone, and the Internet. Such techniques allow customers to easily buy products for only a small fee to cover the transaction cost: approximately 25 cents. This implies that the delivery of purchases and the verification, authorisation and debiting of payments consumes no less than 25 cents of the product or service margin.

1.2 E-commerce Information Systems

Poong (2006, p. 553) defined e-commerce as “an information system that provides catalogues of products over the World Wide Web”. This new challenging stream of information systems is intended to be a vital part of performing business processes and, therefore, should reflect the business well. Principally, e-commerce systems offer innovative business operation techniques, assisted by new technologies. However, they are not derived from business processes similar to them (Akkermans et al., 1999).

⁶ These definitions are included in the literature review (Chapter 2).

E-commerce relies heavily on Internet-based information systems that can be used by one or more users; therefore, it is referred to as e-commerce information systems (Gordijn, 2002). This argument was further supported by Gordijn's study, in which e-commerce was defined as a specialised information system, interrelated through the Internet and made available to one or more users. Using an e-commerce system helps to sustain and facilitate object value dealings among many clients.

1.3 Internet Marketing

Mohammed et al. (2004, p. 5) have described Internet marketing as “the process of building and maintaining customer relationships through online activities to facilitate the exchange of ideas, products, and services that satisfy the goal of both parties”. In 2003, Tsai confirmed that e-commerce has significantly altered the techniques and methods used in business.

Wind and Mahajan (2001) portrayed the e-commerce empowered user through various features. These features include: having easy access to a large database of information regarding products, which can help customers make an accurate evaluation for price and value, in addition to having sorting and filtering abilities for products, according to individuals' requirements. The Internet also provides arbitrators' assessment and data.

Companies that are completely founded on the Internet and connected to other online and offline companies' stores are the companies that perform Internet marketing (Siegel, 2006).

This study model will include the following significant technical issues:

1.3.1 System Ease of Use

According to Davies (1993 p. 477), system ease of use is “the degree to which an individual believes that using a particular system would be free of physical and mental

effort”. Individuals’ decisions regarding new technology acceptance or rejection is believed to be one of the most complex matters in the field of information systems research, as indicated by Swanson (1988). The perception users have regarding ease of use significantly impacts on their satisfaction; therefore, perceived ease of use is regarded as a key determinant of technology usage attitudes. Such an argument can be partially explained through individuals’ evaluation of the intellectual efforts required to successfully operate a certain technology (Davis, 1989). Moreover, a study by Venkatesh in 2000 established that users’ usage intentions and actions regarding any new information technology or system are influenced by perceived ease of use.

1.3.2 System Experience

Previous experience plays a significant role in shaping behaviour, in that earlier occurrences provide individuals with knowledge that impact on their intention, partially due to the higher availability of knowledge in memory (Taylor and Todd, 1995)

Both previous experience and skills have been proven to substantially influence users’ performance while interacting with technology, as indicated by an analysis of the information technology literature (for example, Palmquist and Kim, 2000; Venkatesh and Davis, 2000). Commonly, it is believed that users with higher levels of experience are more likely to deeply interact with the system and consecutively experience more satisfaction.

1.3.3 Technology Anxiety

Howard et al. (1986, p. 630) described computer anxiety as “the fear of impending interaction with a computer that is disproportionate to the actual threat presented by the computer”. Similarly, Bozionelos (2001) suggested a definition for computer anxiety

that describes it as destructive negative feelings and cognitions brought to mind either through real or imaginary interactions with technologies based on computers. Mathematics and computer anxiety were proven to be notably and positively related in a study by Anderson (1995) and another 10 independent studies, as stated by Rosen and Maguire (1990).

1.3.4 Personal Innovation in Information Technology (PIIT)

Agarwal and Prasad (1999) stated that differences among Individuals play a significant role in the adoption and use of any new technology. This role has been thoroughly examined across various fields of research, like information systems and marketing for instance.

In 1977 Hurt et al. described personal innovation as the level to which individuals are willing to change. In turn, PIIT was defined by Agarwal and Prasad (1988b, p. 206) as “the willingness of individuals to try out any new information technology”. This study explores PIIT’s role as a precursor to both e-commerce self-efficacy and technology anxiety; therefore, the concept of PIIT refers here to individuals’ keenness to try out novel information systems like e-commerce (Uray and Ayla, 1997; Thatcher and Perrewe, 2002).

- Self-efficacy is the most significant factor used in the new model that is introduced in this study.

1.4 Self-efficacy

Self-efficacy refers to a belief in one’s ability to successfully perform a particular task. (Bandura, 1977). Bandura (1986, p. 390) also observed that “perhaps none is more

influential in people's everyday lives than conceptions of their personal efficacy ... People often do not behave optimally even though they know full well what to do. This is because self-referent thought mediates the relationship between knowledge and action.” (p. 390). Furthermore, Bandura (1986) defined self-efficacy as “people's judgments of their capabilities to organize and execute a course of action required to attain designed types of performance” (p. 391).

1.5 Problem Background

E-commerce creates an international marketplace connecting both buyers and sellers which transforms business processes completely, starting from customers' service to product modelling, by combining various innovative technologies. This approach results in more effective and approachable systems (Ewton, 2003); additionally, vendors and users of e-commerce have excellent access to helpful forums. According to Ewton (2003), such forums can significantly reduce the cost of transactions, improve the sales and delivery process, produce and utilise value-added services and modernise customer management. Using e-commerce will transform customers into well-informed people, who are more likely to increase demand and be of a significant weight in the market (Opensite, 1999).

Business-to-business (B2B) e-commerce and business-to-customer (B2C) e-commerce are the most common e-commerce streams. Until the present day, B2B has been the most exploited type of existing e-commerce transactions in terms of sales. Despite the rapid growth and the unquestionable success of B2C e-commerce, its participation in retailing deals is still undersized (Oakes et al., 1999).

Deals are performed between two businesses in B2B e-commerce, including those transactions that provide one business with raw materials that another business offers

through an electronic channel. Covisint.com is a good example of this kind of e-commerce business, whereby a variety of existing vendors is provided for by owned digital markets and the merchandise is delivered to these users for small charges and transaction commissions.

On the other hand, business-to-consumer (B2C) is described according to Webopedia (2008) as the opposite of business-to-business e-commerce, as business-to-consumer exchanges offer a variety of services, data and goods from a business to an end-user. The concept of business-to-consumer commerce is abbreviated as B2C (B-to-C) retailing. This style of e-commerce is more focused on empowering and enabling users to become more influential in terms of:

- The way products are selected and made
- Facilitating users' access to information regarding products and the market as a whole
- Improving the accuracy of prices, in order to help users make better purchases.

It is believed that B2C sales will gross up to \$331 billion in 2010, representing 13% of total retail sales, while B2B is estimated to reach \$13.1 Trillion globally by 2010 (research, 2008). Eighty per cent of the total commerce is illustrated to be B2B, leaving only 20% to the comparatively small B2C (Dunt and Harper, 2002). B2B online trades reached US \$995 billion, representing 93.3% of total e-commerce dealings in the USA alone (UNCTAD, 2003).

Due to the limited utilisation of B2C relative to B2B e-commerce, this research project focuses on B2C e-commerce and eliminates B2B e-commerce models to identify factors influencing its B2C usage and users' empowerment.

The B2C presence in the retailing field still needs to be strengthened by defeating obstacles that block the way of its success and spread. This innovative approach of

selling is considered as an unmatched improvement in technological and industrial terms.

A sizeable body of literature exists on the adoption of innovations, for example, innovative technologies, administrative methods, business strategies, new products/services, etc. Studying normal users' acceptance and adoption of e-commerce will be the principal and most important focus for this study.

1.6 Research Problem

- The lack of usage of B2C e-commerce; most surveys have indicated that 80% of the total commerce is B2B, which makes B2C minute compared to it (Dunt and Harper, 2002). In the USA alone, B2B online trades accumulated US\$995 billion, 93.3% of e-commerce transactions (UNCTAD, 2003).
- Despite all the extensive efforts employed in earlier research to point out factors that negatively influence the development of B2C e-commerce, no earlier studies have explored the effect of perceived self-efficacy (self-efficacy and outcome expectation) on users' intention to use e-commerce. The previously explored factors include: technological vagueness (Rowley, 1996), trust and security (Hoffman et al., 1995), as well as the inappropriate attitudes of online vendors to e-commerce principles (Alba et al., 1997).
- Lee (2001, p. 3) concluded that “even though the last few years have witnessed an explosive growth in electronic commerce activities in many parts of the world, very little is known about the exact nature, dynamics and impact of this phenomenon. There is a certain paucity of systematic investigations reported in the literature”.
- A sizeable body of literature on the adoption of innovations has appeared (for example, innovative technologies, administrative methods, business strategies, new

products/services, etc.). Research into the adoption of e-commerce has focused largely on the potential adopters (organisations or individual users within an organisation), whereas in the field of e-commerce there are two groups of potential adopters, that is, buyers and sellers. This research will focus on the other part of e-commerce transaction (the buyer).

- There have been no studies to determine the impact of cognitive factors (for example, trait anxiety, technology anxiety, personal innovation in Information technology) in the context of e-commerce and how these factors affect the intention to use e-commerce technology.
- “Little research has contributed to theoretical developments in this area⁷, and the lack of a strong theoretical framework to investigate online shopping behaviour” (Park, 2003, p. 3).

1.7 Empowerment and Self-efficacy

Logan (2000) stated that many models have been developed with the intention of enhancing task performance and satisfaction by increasing self-efficacy, Empowerment is considered a very common concept. For instance, positive correlations were found between the employees’ self-evaluated feeling of empowerment and high contribution in social constructs such as employees’ extent of control as supervisors, socio-political support, reach to information, reach to resources, and the participative work atmosphere (Sprietzer, 1996).

Self-efficacy participates more deeply in the empowerment concept, since empowerment has been described as a perceived self-efficacy, a motivational situation

⁷ The area of E-commerce

in which a person has a strong belief of having the capacity, means, and power to successfully accomplish intended goals (Conger and Kanungo, 1988).

1.8 Definitions of Terms

1. Self-efficacy

Refers to a belief in one's ability to successfully perform a particular task. All definition of self-efficacy have followed Bandura (1986, p. 391), who defined self-efficacy as "People's judgment of their capability to organize and execute courses of action required to attain designated types of performances".

2. Self-efficacy expectation (SE)

An efficacy expectation is the conviction that one can successfully execute the behaviour required to produce the outcomes (Bandura, 1977).

3. Electronic-commerce system

The procedure of buying, selling, transferring, or exchanging product, services, and/or information via computer software networks, including the Internet (Turban et al., 2004).

4. Outcome expectation

The expected consequences of behaviour when using the e-commerce system (Al-dalahmeh and Saleh, 2007).

5. General self-efficacy (GSE)

An "[i]ndividual's perception of their ability to perform across a variety of different situations" (Judge et al., 1998, p. 170).

6. Specific self-efficacy

How well one believes he or she can perform, given the specific social context and the particular task (Stajkovic and Luthans, 1998).

7. Computer self-efficacy

The definition adopted of computer self-efficacy follows Compeau and Higgins (1995, p. 192), who defined computer self-efficacy as “a judgment of one’s capability to use a computer”.

8. Electronic-commerce self-efficacy (ESE)

Electronic-commerce self-efficacy is a judgment of one’s capability to use and buy through electronic-commerce (Al-dalahmeh and Saleh, 2007).

9. Technology anxiety

Loyed and Gressard (1985, p. 904) defined technology anxiety as fear of technology or of learning to use technology.

10. Risk aversion

In decision-making, risk aversion is the tendency to avoid options associated with uncertain outcomes that differ in their desirability (Baron, 1994)

11. User trust

A user’s confident belief in a company’s e-commerce system (Macintosh and Lockshin, 1997; Tax et al., 1998)

12. Personal innovation in information technology (PIIT)

The willingness of an individual to try out any new information technology (Hurt et al., 1977)

13. Self-esteem

The extent to which a person feels positive about her/himself (Gergen, 1971).

14. System ease of use

The level to which an end-user likes the system and finds it easy to use (Martocchio and Webster, 1992).

15. System experience

Previous system usage (Tylor and Todd, 1995).

16. ARPANET

The precursor to the Internet, ARPANET was a large wide-area network created by the United States Defence Advanced Research Project Agency (ARPA). Established in 1969, ARPANET served as an experiment for new networking technologies, linking many universities and research centres. The first two nodes that formed the ARPANET were UCLA and the Stanford Research Institute, followed shortly thereafter by the University of Utah (webopedia.com).

17. AARNet

The Australian Academic and Research Network offers Internet services to the Australian education and research communities and their research partners. AARNet is a not-for-profit company limited by shares. The shareholders are 37 Australian universities and the CSIRO Australia (webopedia.com).

1.9 Reasons for the Study

- Self-efficacy was taken into account by many researchers to be a critical influence on individuals' decisions, especially those concerning technological innovations (Kelman and Warwick, 1973; Leonard-Barton et al., 1985; Hill et al., 1985a and b; Davis et al., 1989). In studies performed by Hill et al. (1985a and b) to evaluate consumers' responses to word processors and personal computers, self-efficacy was found to be substantially associated with liking and choosing to use such products.
- With the rapid growth of online shopping, it has been required not only to revisit traditional consumer behaviour theories and models, but also to research factors influencing consumers' decision to shop online.

- Various conceptual frameworks have been formulated to help understand the adoption of e-commerce, but none of them was specifically designed to explain how the social cognitive theory (perceived self-efficacy) affects e-commerce usage.
- E-commerce and perceived self-efficacy (self-efficacy and outcome expectation) are two separate research areas that have attracted the attention of many researchers. However, as this study reveals later, self-efficacy has a significant effect on the intention to use e-commerce. This is the first study to explore how perceived self-efficacy (self-efficacy and outcome expectation) affects the usage of e-commerce and the factors that may affect self-efficacy in the context of e-commerce.
- Bandura (1997)⁸ demonstrated the importance of self-efficacy in our daily lives and urged researchers to determine the self-efficacy for every specific task, as well as the factors that might affect the self-efficacy for each task. Various researchers responded to Bandura, determining the self-efficacy for different tasks, such as self-efficacy for specific subjects in education (for example, mathematics self-efficacy) and the factors that affected it in this context, the self-efficacy for specific diseases (for example, diabetes self-efficacy, cancer self-efficacy). Compeau et al. (1995a, 1995b, 1999) responded to Bandura, establishing computer-self-efficacy. This current study constitutes another response to Bandura, in that it is aiming to establish e-commerce self-efficacy and the factors that affect it.

1.10 Purpose and Significance of the Study

- This study is the first step towards developing a more rigorous understanding of individual differences that may inform users' decisions, enhance training's effectiveness, and extend our understanding of users' intentions to use e-commerce.

⁸ Albert Bandura, the founder of the social cognitive theory (1977).

- This study will empower the usage of B2C e-commerce for normal individuals, if the government and sellers follow the recommendation at the end of this study.
- This study will develop a new theoretical model to be applied in the case of e-commerce.
- The research model has never been applied before in the case of e-commerce.
- This model will explore how self-efficacy will affect the intention to use e-commerce.
- This study is the first study to apply the social cognitive theory in the area of e-commerce.
- Electronic commerce has restructured nearly every industry in the world. It is a buzz word that materialised in the early to mid-1990s. (Padhyay, 2002).

1.11 Motivation for the Research

- The increasing popularity of the Internet and e-commerce is causes online merchants to seek tools that will affect users' attitude toward this technology.
- Not many studies have been undertaken on the cognitive factors that affect the users' intention to use e-commerce technology, so this study will be valuable for both developed and developing countries.
- Accessibility to data in Australia is easy, especially for researchers who wish to explore for the usage of new technology.

1.12 Objectives of the Study

This study aims to achieve the following objectives:

1. The study is concerned with identifying the key factors that influence an individual's desire to use the e-commerce Technology. To this end it is concerned with e-commerce

self-efficacy, the construct that appears to provide the most appropriate means for understanding the desire to use e-commerce technologies.

2. The study will seek to examine the nature of e-commerce, and to develop a model to explore the nature of the emotional and cognitive factors that seem to impinge upon its development.

3. Investigate the adoption and usage of e-commerce by individuals in Australia as an example of a developed country⁹.

4. Identify the perceived problems that individuals encounter while adopting or using this new technology.

5. Estimate the constructs concerning the current state of consumer beliefs and attitudes toward e-commerce, and develop and validate the relationships between the factors that drive the adoption and acceptance of such services.

1.13 Theoretical Background of This Study

- This study has developed a model that helps to explain the human behaviour in the area of e-commerce, based on the social cognitive theory.
- The founder of the social cognitive theory was Albert Bandura, in 1977. He has written many articles and four books to explain how this theory can explain human behaviour (Bandura, 1977, 1979, 1982, 1986, 1987, 1989, 1995, 1997, 2006).
- Four models have provided a theoretical foundation for the model constructs presented in this research. The first model, by Compeau et al. (1999)¹⁰ put social cognitive theory into practice for the computer area. The second model, by Thatcher and

⁹ There is a debate as to whether results obtained from students' sample can be generalized to the total population; use of students' sample is common in this type of research as discussed above. However interpretations of this result should take this factor into consideration. See pages 122-124 for a full discussion of this issue.

¹⁰ This model has been published by *MIS Quarterly*.

Perrewe (2002)¹¹, applied personal innovation in information technology, trait anxiety, and computer anxiety to computer self-efficacy. Henry and Stone's (1995)¹² 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)¹³ and used specific self-efficacy (online trading self-efficacy) on 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.

1.14 Research Questions

1. What are the factors that affect the e-commerce self-efficacy?
2. What are the impacts and antecedents of e-commerce self-efficacy?
 - 2a. How does e-commerce self-efficacy influence individuals' outcome expectation of using e-commerce?
 - 2b. How does e-commerce self-efficacy influence individuals' risk aversion?
 - 2c. How does e-commerce self-efficacy influence individuals' e-commerce trust?
3. How do the users' trust and risk aversion affect their intention to use e-commerce?
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?
5. What is the Impact of individual's outcome expectations on their intention to use e-commerce?

¹¹ This model has been published by *MIS Quarterly*.

¹² This model has been published by *Computer Personal*.

¹³ This model has been published by *IEEE*.

6. How do emotional factors (anxiety) and technical factors (system experience, system ease of use) affect the users' intention to use e-commerce?
7. Is there any difference between males and females in terms of their intention to use e-commerce?

1.15 Practical and Theoretical Value of This Research

The study makes both academic and managerial contributions, as discussed in the following sections.

1.15.1 Academic Contributions

The study makes a number of significant contributions to the growing body of research on e-commerce research; it is clear that research from a number of academic disciplines, in marketing, communication studies, information systems and computers can offer useful insights into users' responses to e-commerce usage. By drawing on and integrating concepts from other disciplines (such as psychology) this study sought to gain synergies and richer understandings into the phenomenon of B2C e-commerce.

1. The study contributes to the development of the social cognitive theory within the e-commerce area. It is the first study to use cognitive theory and its factors in explaining e-commerce adoption and usage. Social cognitive theory has been studied before in psychology, education, and information technology; each of these areas of study can add to our understanding of e-commerce but none on its own is sufficient. This is the first time this theory has been adopted in the e-commerce area. This study examines the effects of self-efficacy, technology anxiety, system ease of use, system experience and outcome expectation in the adoption and usage of e-commerce technology.

2. This study is the first major study to research the overall impact of self-efficacy on e-commerce technology usage. Either A) Its impact on user outcome expectation, and the impact of these constructs on the intention of the users to use e-commerce; or B) The impact of self-efficacy on consumer trust and risk aversion for the user and the impact of all of the previous variables on users' usage of e-commerce technology; C) The direct impact of self-efficacy on the intention to use e-commerce.

3. This study adds new constructs to the social cognitive theory in order to study e-commerce usage; it adds risk aversion, outcome expectation, technology anxiety, system ease of use, and personal innovation in information technology; these have never been studied before in the area of e-commerce.

In summary this research develops and tests a theoretical extension of the social cognitive theory and examines the factors that influence the adoption, usage and acceptance of the e-commerce technology, and specifically in the B2C e-commerce area. It examines the importance of these factors and asks questions relating to why users use or do not use this new technology.

1.15.2 Methodology

In providing answers to the research questions and the hypotheses to be employed, this study advocates a research design relevant to the empirical confirmatory analysis of a representative sample of real-life population. This methodology will be:

1. A significant contribution to the body of knowledge.
2. Important for further research into the e-commerce area, including B2C e-commerce technology usage.
3. Moreover, this study will employ a free simulation method to collect the data. In this method, the participant will have a scenario such that s/he will pretend to buy online.

S/he will perform this free simulation “without control from the researcher”, for financial reasons. This simulation will give this research more accurate answers for the research model, as it will recall the participant’s memory to moments when he was considering her/his choices and making decisions while buying online.

1.15.3 Managerial Contributions/Practice

The study makes managerial contributions in the e-commerce area, so the results of this study will:

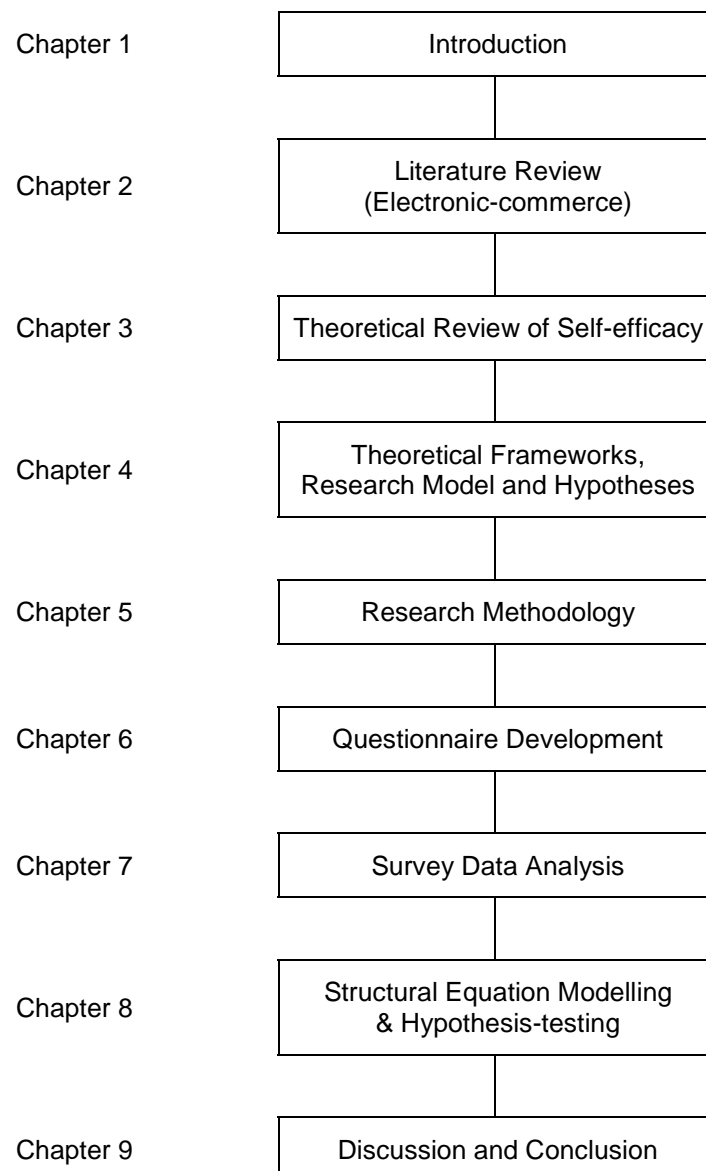
1. Reinforce the importance of factors relating to consumers’ cognition and emotions regarding their decision to use the technology.
2. Provide a better understanding of people’s behaviour when using e-commerce.
3. Enable managers of retail businesses to make the necessary improvements and interventions to maximise the possibility of successful usage of this technology. From the practical perspective, managers and other decision-makers in the e-commerce sector need information about how their consumers act and react. Consumer acceptance models are valuable to managers, as they help them to organise their learning about consumers by, for instance, segmenting the market environment. Hence, by knowing consumers and their behaviours, businesses are able to acquire a better understanding and build a stronger relationship with them. The battle for customers has never been greater than it is today. Therefore, businesses must understand who their customers are and how they behave.
4. Assist e-commerce developers to better understand the consumers’ psychology and to make important changes to this technology to increase the consumers’ self-efficacy and reduce their anxiety about using this technology.

5. Assist marketers in these businesses in terms of these factors (self-efficacy, technology anxiety, trait anxiety, system ease of use, system experience and personal innovation in information technology) and focus on their role by increasing the self-efficacy in a way they find suitable.

1.16 Organisation of The Thesis

This thesis is organised into nine chapters, as described in Figure 1.1 below.

Figure 1.1 Organisation of the thesis



Chapter 1 introduces the study and discusses the importance of the study's focus, also, this chapter discusses the research study problem and the gap that exists in the B2C e-commerce area, as well as the need to have the integrative model presented in the research study. In addition, this chapter introduces the research questions that are addressed and provides an overview of the academic and managerial contributions made by the study.

Chapter 2 presents the literature review related to electronic-commerce to introduce the reader to the concept of e-commerce, then the chapter explores the research problem, that there have been no major studies about how perceived self-efficacy (self-efficacy and outcome expectation) affect the user's intention to use e-commerce.

Chapter 3 presents the theoretical framework of the social cognitive theory, explores the self-efficacy concept and the previous research to which this theory has been applied.

Chapter 4 presents the model utilised in this study. This chapter provides a brief overview of each segment of the model, and the part that each segment plays in contributing to empower the user's intention to use e-commerce.

Chapter 5 explains the quantitative methodology adapted in this study in order to empirically test the research hypotheses, which have been stated in the previous chapter. It explains why this study should use the post-positivism methodology. In addition, this chapter explains the quantitative research in terms of its components and the deductive route that quantitative researchers follow.

Chapter 6 explains the methodology through which the constructs in the research model (Figure 4.1) are operationalised. It is imperative for the researcher to describe

how the items of each construct are chosen in order to build a homogenous scale with relatively high reliability and validity.

Chapter 7 reports on the data collection used to test the research hypotheses presented in Chapter 4. This chapter includes a review of the data collection, the descriptive statistics and demographics of the study and scale reliability tests, followed by factor analysis.

Chapter 8 uses a second statistical technique. The structure equation model (SEM) technique focuses on the partial least square (PLS — a special branch of the original SEM) to analyse the data, test the research hypotheses and test the model's fitness.

Chapter 9 presents a summary of the research questions and hypotheses and their results. This is followed by a discussion of the quantitative analyses results. Research limitations and suggestions for future research.

CHAPTER 2.

THE LITERATURE REVIEW

2.1 Introduction

The Internet has made the world very small. Through the Internet, individuals can sell their products and promote them without opening shops or recruiting salespeople. This process can be undertaken through the assistance of Internet marketing, that is, electronic commerce. Through the www (world-wide web), marketers can show off their products, businesses and services to very wide categories of people. The introduction of this new technology allows various means for retailers to promote and trade their businesses. E-mail and Internet facilities make e-commerce more accessible for different varieties of people. E-commerce originated in the USA, as it was used for military purposes and medical exchange experience, then it was widely distributed in and outside the USA, and the purposes of using e-mail and the Internet also widened.

Internet usage has reduced time and distance barriers (Sheth et al., 2001; Chiam, 2006) and consequently it has been used as a distribution channel in e-commerce with the effect that the procedures and methods of commerce have been widely changed (Torjak 2003). E-commerce began in the 1990s (Padhyay, 2002) and has, by all means, affected industry all over the world. In spite of the wide distribution of e-commerce activities, the nature, dynamics and impact of this phenomenon are not known]. This is a consequence of the paucity of systematic investigation reported in literature concerning this subject (Lee, 2001, p. 3).

The purpose of this literature review is to review the phenomenon of e-commerce and to identify any gaps or problems that may appear. This section clarifies the study of electronic commerce for the researchers and academics. The following pages present an introduction to the Internet concept, the diverse set of e-commerce meanings, the importance of e-commerce, a focus on business to consumer e-commerce, and the benefits of e-commerce for both individual and organisations, together with disabled people. Models of e-commerce and the focus on business-to-consumer e-commerce, as well as benefits to both consumers and individuals are also illustrated. The review also demonstrates three features of profitable e-commerce, technical, managerial and industrial features. It also contains the rationale for the research, and a review of the literature on e-commerce.

2.2 The Internet

The word Internet derives from two components. The first is “inter” and the second is “net”. “Inter” is taken from “International” and “net” comes from “network”. This means that the “Internet” is a combination of both networking and international distribution. Thus, the Internet is defined as a “network of computers that are connected all over the world to access exchange of electronic information” (Forder and Quirk, 2001). It has been observed that users of the Internet are people who are younger, better educated, and more prosperous than others (Kehoe et al., 1999). It began as an academic resource amongst colleagues to facilitate communication researches in libraries (Rowley, 1996).

The swift growth of the Internet universally provides feedback about the contribution that the Internet will make to commerce. In this respect, Clark observed that the “internet is the biggest thing that has happened in telecommunications since the

telephone and that it is going to become as fundamental to the operations of business as having a telephone” (*Business Times*, 1996). Thus, “the internet has created a new method of doing business, i.e. e-commerce.” (Chiam, 2006).

2.3 Definitions of E-commerce

E-commerce is the short form of electronic commerce. It can also be shortened to “eCommerce”. These two abbreviations indicate the full electronic commerce words (Foder and Quirk, 2001). E-commerce has been defined differently by different researchers (Khosrowpour, 2005). Witeley (2000) and Sagi (2003) introduced a brief definition of e-commerce. They defined e-commerce as: “The use of information technology in commercial transactions.” Also, Moore (2004) defined e-commerce as: “commercial transactions conducted electronically on the Internet.”

The previous two definitions have mentioned the tool that is applied in e-commerce. A more comprehensive definition was introduced by Wigand (1997, p. 5). He defined e-commerce as: “the seamless application of information and communication technology from its point of origin to its endpoint along the entire value chain of business processes conducted electronically and designed to enable the accomplishment of a business goal. These processes may be partial or complete and may encompass business to business as well as business to consumer and consumer to business transactions.” In this definition Wigand (1997) included the tool that can be used in e-commerce and the parties that can share the e-commerce. Another comprehensive definition was put forward by Laudon (2003, p. 10), who defined e-commerce as: “the use of internet and the web to transact business. More formally, digitally enabled commercial transactions between and among organisations and individuals” “digitally enabled transactions include all transactions mediated by digital technology. Commercial transactions involve the exchange of value

(for example, money) across organisational or individual boundaries in return for products and services. Exchange of value is important for understanding the limits of e-commerce: without an exchange of value, no commerce occurs”. Haag and Commings (2005, p. 244) defined e-commerce as: “commerce, but it is commerce accelerated and enhanced by IT, in particular the Internet. It enables customers, consumers, and companies to form powerful new relationships that would not be possible without the enabling technologies.” These two definitions include some tools that can be used in e-commerce. The tools used by this definition to fulfil the e-commerce process are the Internet, web pages or IT in general. This definition also determined the different types of people who benefit from e-commerce.

Other definitions of e-commerce depend on defining the process that occurs in e-commerce. Turban et al. (2004, p. 3) defined e-commerce as: “the process of buying, selling, transferring, or exchanging product, services, and/or information via computer networks, including the internet”. This definition has determined the activities that can be included in e-commerce and limits the electronic tool to the Internet. Others, such as Bidogli (2002), limited the activities of e-commerce to buying and selling on the Internet. Bajaj (1999) included the electronic data interchange as part of the e-commerce activities. Schneider (2006) defined e-commerce as the electronic data transmission that takes place in implementing or enhancing processes. E-commerce is the result of the application of computer and telecommunication technologies to business processes. (Padhyay, 2002). E-commerce is any net business activity that transforms internal and external relationships to create value and exploit market opportunities driven by new rules of the connected economy (Damanpour, 2001).

The definition of e-commerce has been concluded by the author to include the different views of e-commerce and to support the purpose of this study. E-commerce is the use of

information technology networks and the Internet to conduct commercial transactions, which include the exchange of digitalised information between business parties (typically customers and suppliers).

According to Laudon (2003), e-commerce is the use of the Internet and the web to transact business. More formally, it consists of digitally enabled commercial transactions between and among organisations and individuals, whereas e-business is the digital enablement of transactions and processes within a firm, involving information systems under the control of the firm. However that firm's e-business infrastructure provides support for online e-commerce exchange; the same infrastructure sets are involved in both e-commerce and e-business.

2.4 E-commerce and Traditional Information Systems

E-commerce 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 system, that is, socially associated systems (Benson and Standing, 2005), Information systems (IS) as an area of research has been organised to enhance companies' capabilities in data-processing and information management (Avgerou, 2000).

Nickerson (1998, p. 5) testified that an

Information system is not one thing, but a group of things that work together.

These things are called component of the system, and they include equipment or hardware such as computers, instructions or software for the computers, facts or data stored in the system, people to operate the system, and procedures for the people to follow.

Afterwards, Nickerson (1998) explained how IS will possibly incorporate computers, yet this is not a must. For instance, an information system may include names and an

address book that can be used to easily retrieve helpful data to write letters and make phone calls. According to Benson and Standing (2005), information systems and information technology are different, as IT comprises the hardware, software and the interaction that maintains IS, while IS involves people, procedures and technology.

IS and IT both play a role in improving productivity and competitive edge in e-commerce (Lin and Benjamin, 2000). Information technologies and information systems (IS) are major contributors to productivity and competitive edge in e-commerce.

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, while considered as a new type of information system, has much in common with traditional IS. E-commerce systems are a type of IS but differentiated with extra services like the obtaining, processing and display of information that helps consumers and decision-makers (Molla and Licker, 2001). Therefore, all those additional business features provided by e-commerce systems must be taken into consideration when attempting to extend traditional IS models and measures to e-commerce systems.

A study by Stair and Reynolds (2001) indicated the extensive use of e-commerce systems, transaction processing systems, information management systems, and decision support systems as the most utilised IS in business organisations.

The e-commerce information system is a modern exigent class of information systems. This system is significantly an essential part of performing business operations and accordingly should mirror the business well. E-commerce systems mainly suggest new methods of performing business, facilitated by new technological potentials; however,

they are not similar to business processes, nor did they originate from it (Akkermans et al., 1999).

Internet-based information systems used by one or more performers provide a good foundation upon which e-commerce can rely, thus, the name e-commerce information systems Gordijn (2002). Additionally, this is supported by Gordijn's study (2002) that defined e-commerce as a specialised information system, interconnected through the Internet, and can be utilised by one or more users. Such a system maintains and facilitates object value transactions between numerous users.

Information technology is an important factor in e-commerce information systems and similar systems. This means that information technology is considered a fundamental part of the system and not only a supporting one. Such attributes distinguish e-commerce from other conventional information systems, as those typical systems are used to assist domestic processes of projects and at the same time are unseen by consumers. On the other hand, e-commerce systems are partially visible to customers and provide great value for customers (Gordijn, 2002).

Almost all business processes are carried out by e-commerce information systems, particularly when the nature of products and services is not touchable (e.g. files of informations) (Rayport and Sviokla, 1995).

The e-commerce information system (ECIS) has been described by Gruhn and Schope (2002) as a system that utilises electronic media – typically the Internet – for goods and services to be purchased and sold.

This proposed system has four executors: purchaser, salesperson, delivery officer, and credit authentication corporation. The association between the buyer – a user, browser, or application – the e-corporation system and bank is clearly illustrated in Figure 2.1.

Figure 2.1 E-commerce information systems.



Source: Feng (2002).

The consumer directly interacts with the system through the electronic web-enabled website. Internally, the e-commerce system involves two positions: the salesperson who is responsible for bringing the product information up to date and the delivery officer, who is responsible for product deliveries. The validity of the credit cards used by customers is ensured through the credit verification company (Feng, 2002).

2.5 Internet Marketing

The Internet is considered a very efficient channel for advertising, as it creates personalised connections with individual consumers (Zinkhan, 2002). Quelch and Klein (1996) have also recognised a natural development in companies' approach to developing their websites in order to back up their marketing campaigns.

A study by Albert and Sanders (2003) has demonstrated how companies are now using Internet selling to put their products on the market directly to customers or end-users. Such a technique is different from the conventional marketing that distributes goods through selling channels. Amazon.com is a clear illustration of Internet marketing.

Using the Internet marketing approach removes the sellers' role, which creates a new transaction process, and allows consumers to discuss items with each other through instant messaging and e-mail. Consequently, this technology will help both providers and buyers as it allows purchasing through only one click (Tsai, 2003).

Internet marketing has been described by Mohammed et al. (2004, p. 5) as "the process of building and maintaining customer relationships through online activities to facilitate the exchange of ideas, products, and services that satisfy the goal of both parties"

In a study by Tsai (2003), Internet marketing was proven to have changed business techniques and methods. The old offline business and the new online one are differentiated by two main features:

First: the dynamic design of the new business approach, which enables it to manage the ever-changing future needs. The way technology changes and rapidly evolves gives the company an uncertain vision.

Second: the increasing importance of customer interaction; mainly because customers are now capable of deciding what to buy whenever and wherever they wish.

The e-commerce empowered user has been represented by Wind and Mahajan (2001) through various features. This user has effortless access to a huge database of product information which facilitates prices and value assessments as well as comparison. Additionally, the user has the ability to sort and filter products according to the needed characteristics. Arbitrators' appraisal and knowledge can be also found through the Internet. Internet marketing, according to Siegel (2006), is carried out by a corporation that is totally Internet-based and connected to other companies with both online and offline stores.

2.6 Importance and Benefits of E-commerce

2.6.1 Importance of E-commerce in Business Transactions

It is well known that e-commerce is the result of the technological revolution witnessed in the Internet and other facilities. Rayport and Jaworski (2001) stated that e-commerce is a unique and significant subject in many aspects of society, including economic and industry structure, wealth creation and social structure considerations.

In 1999, Noonan assumed that the right to select and buy goods is central for any society. Thus he stressed the importance of using e-commerce for disabled people, such as shopping through the Internet with independence and the right of privacy, similar to everyone in society who has the freedom to drive a car, to buy goods, etc. Consequently, people with disabilities have rights and freedoms denied to them on a daily basis.

2.6.2 Benefits of E-commerce in Business Transactions

It has been observed that e-commerce is beneficial for both individuals and organisations. The benefits resulting from e-commerce can be evaluated by the customers who use e-commerce for shopping and by companies that tender such types of commerce. Therefore e-commerce is beneficial for both individuals and organisations.

Turban et al. (2004) listed some of these benefits:

2.6.2.1 Individual Benefits from E-commerce

Benefits generated for individuals are very wide and the most important benefit is the ability to log onto and access the Internet for shopping at any time, day and night. Turban et al. (2004) stated that “internet is ubiquity that allows the consumer to shop or

perform other transactions year around, 24 hours a day, from almost any location”. The other benefit introduced by e-commerce for the customer is the existence of cheaper products and services. The customer can search for the same product at a cheaper price. The customer is always concerned about the availability of information and this aspect is well served by e-shopping. S/he can find comprehensive information about the products in a second and save time and effort by making comparisons between the available products (Turban et al. 2004). Some countries offer free sales tax when shopping from electronic stores. Such an action will save more money for the customers who use electronic stores. E-commerce also facilitates participation in virtual auctions, and this allows sellers and buyers to interact quickly (Turban et al., 2004).

2.6.2.2 *Organisational Benefits from E-commerce*

There are many ways in which organisations can benefit from e-commerce. The major one is the global reach (Turban et al., 2004). Through e-commerce, organisations may expand their sales locally and internationally. Companies’ distribution through e-commerce is cheap, compared to physical distribution. The cost has also been reduced for running, creating, processing, distributing, storing and retrieving information (Turban et al., 2004). E-commerce improves the supply chain. So in e-commerce, companies benefit by all means from consumers’ shopping without adding any extra cost. The specialisations in e-commerce form an advantage for the organisations (Turban et al., 2004).

Quick reach to the market is a great advantage for organisations through e-commerce, as a result of the improvements in communication and collaboration. Because of this, e-commerce allows organisations to build up good relations with customers through the electronic contact tools. Organisations may also benefit from e-commerce by

introducing new business models, customisations, lower communication costs, and others (Turban et al., 2004).

2.7 Models of E-commerce

E-commerce can be practised through many forms and can benefit different levels of commerce. E-commerce has been classified according to its benefits. Using this method of classification, Laudon and Traver (2003) classified e-commerce in five models. Table 2.1 shows the different types of e-commerce models. The most common type of e-commerce is the **Business-to-Consumer (B2C)** type. The parties to such a type of e-commerce are limited to business and final consumers. One good example of this type of e-commerce is Amazon.com. In this type of e-commerce the revenue comes from the sale of goods. The other common type of e-commerce is **Business-to-Business (B2B)**. In this e-commerce model, a deal is conducted from one business to another business. This type of e-commerce includes transactions that supply one business with basic materials through another business that conducts this service through electronic tools. An example of this kind of e-commerce is Covisint.com. This industry owns digital markets open to select suppliers; it charges fees and commissions on the transactions. The third, less common type of e-commerce, is the **Consumer-to-Consumer (C2C)** type. In this type of e-commerce, the transactions are executed from one customer to another. This process can be conducted directly or through mediators. An example of this kind of e-commerce is eBay.com. eBay.com was established in 1995 and helps the consumers' connection to conduct business. It charges transaction fees for this service. The fourth type of e-commerce is **Peer-to-Peer (P2P)**. This type of e-commerce is performed via central web-servers, in which users share files. Groovenetworks.com is an example of this model of e-commerce. It provides client and server software that

helps employees share files and plans without burdening central servers. There are few examples of this model outside music sites. The last and least common type of e-commerce is **Mobile Commerce (M-C)**. This type of e-commerce can be run through wireless digital devices to enable transactions on the web. Cybertrader.com is a good example, being used for stock trading and portfolios (Laudon and Traver, 2003).

Table 2.1: E-commerce models

E-commerce model	Example
B2C	Amazon.com
B2B	Consint.com
C2C	eBay.com
P2P	groovenetworks.com
M-C	cybertrader.com

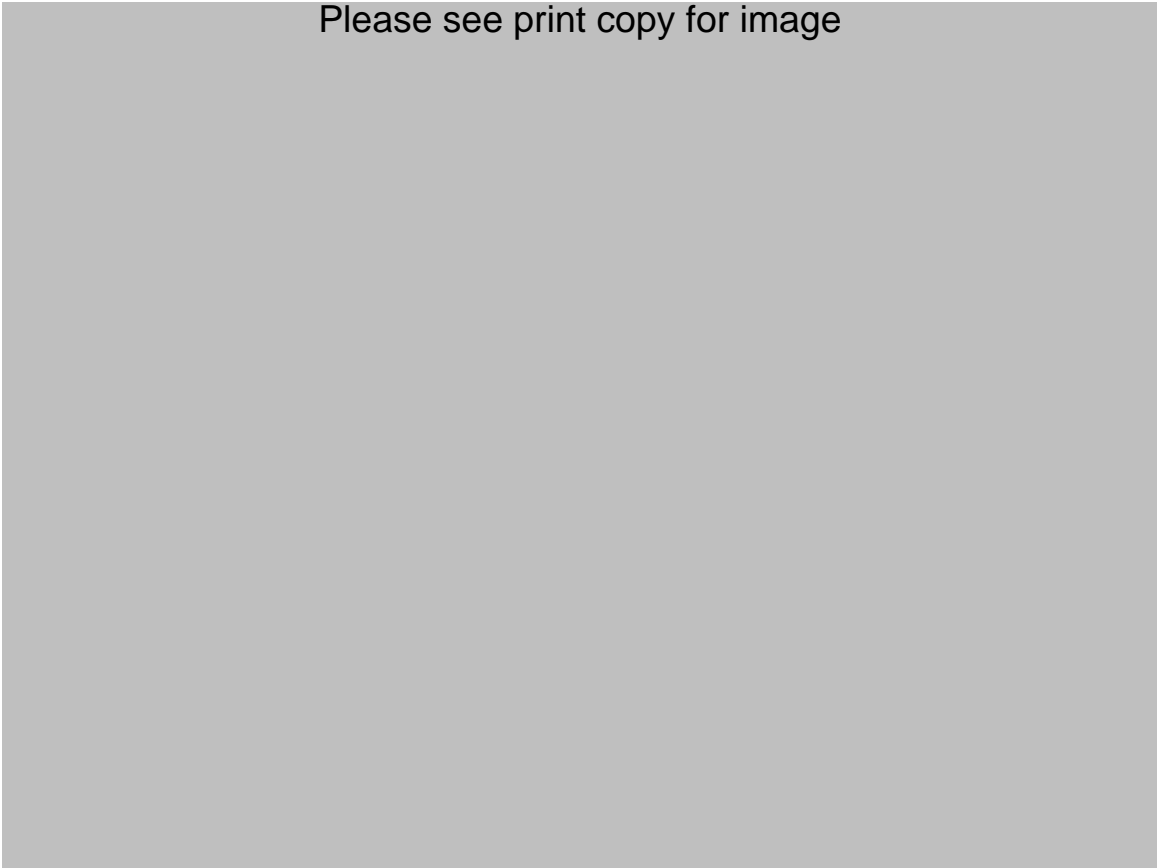
Source: compiled by the author, based on Laudon and Traver (2003).

2.7.1 Business-to-Consumer E-commerce (B2C)

This research will focus on B2C e-commerce. For the purpose of this study, e-commerce is related to B2C e-commerce. This model of e-commerce has been defined by Chan (2001) the sale of products or services electronically via internet directly to individual customers for their own use, rather than to businesses. As mentioned before, one of the best examples of B2C e-commerce is Amazon.com (Finkelstein, 2000; Walsh, 2001). Figure 2.2 shows the homepage of the Aamazon.com website.

Figure 2.2 Homepage of Amazon.com (one of the leaders in e-commerce)

Please see print copy for image



Source: Amazon.com (2006).

This electronic store has become one that represents the success of B2C e-commerce. Since 1995 this company has accomplished many successes in B2C e-commerce (Anders, 1999). The physical assets of this company are valued at \$36 million. For any other company to achieve the same value of sales using traditional commerce procedures, it needs physical assets of about \$650 million. This explains one of the advantages that can be achieved via e-commerce for the companies, represented by savings of the constructions costs (Anders, 1999). Seattle (2006) indicated that Amazon.com executed more than four million orders in the 2006 holiday season. The company said: “it sold 1,000 Xbox and 360 game consoles in 29 seconds as part of a promotion that slashed two-thirds off the regular retail price”(Amazon.com, 2007).

Amazon.com also sold the most expensive digital music player to date, for \$19,999. This explains the extent of success that can be achieved through B2C and the growing number of consumers who use e-commerce to provide for their needs.

Amazon.com provides a broad selection for customers worldwide; it continues to focus on in-stock inventory availability. Amazon.com's websites have been designed to enable millions of unique products to be sold by it and by third parties across dozens of product categories, such as the products listed in Table 2.2.

Table 2.2 Products sold by Amazon.com

Please see print copy for image



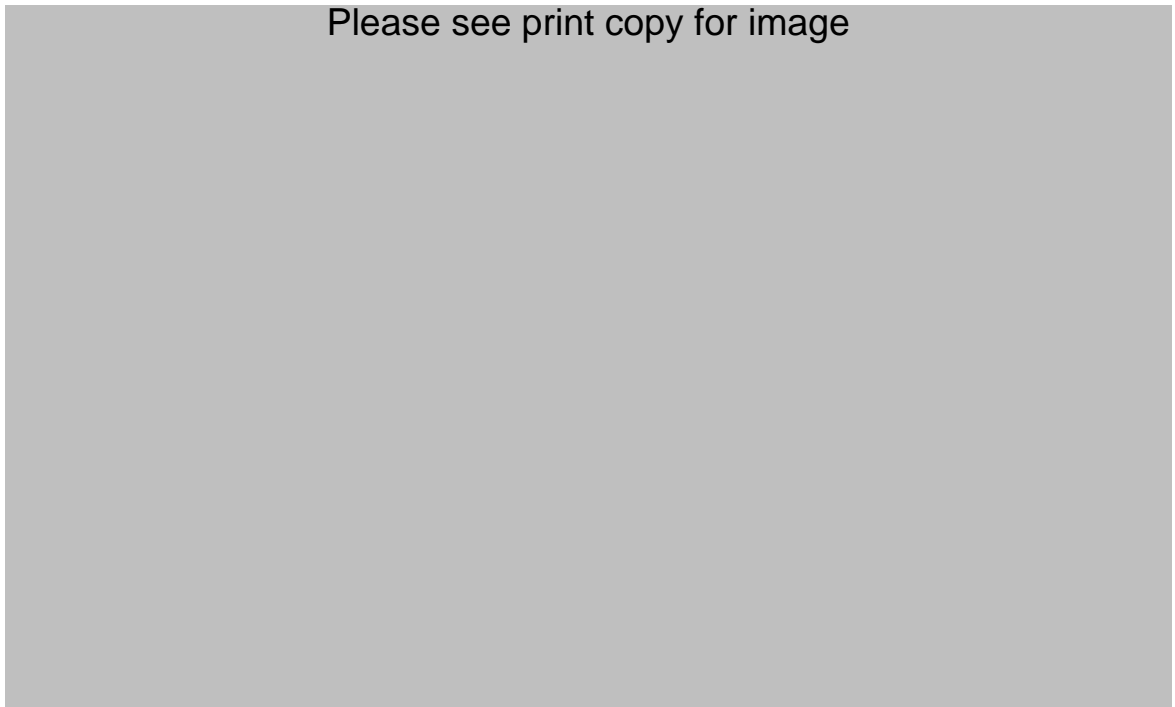
Source: Amazon.com (2006).

According to Amazon.com's Annual Report 2006, the increase in gross profit in absolute terms during 2006, compared to 2005 and 2004, corresponds with increases in sales, offset by lower prices for customers including free shipping offers and Amazon Prime. Generally, the gross margins fluctuate based on several factors, including their products, services and geographic mix of sales, as well as sales volumes by third-party

sellers. Table 2.3 shows the gross profit information for the three calendar years, 2004, 2005 and 2006.

Table 2.3: Gross profit information for Amazon.com

Please see print copy for image



Source: Amazon.com (2006).

Amazon.com offers promotions such as free membership trials for Amazon Prime, and expects to continue to offer these promotions in the future. It views its shipping offers as an effective worldwide marketing tool and intends to continue offering them indefinitely.

Sales of products by third-party sellers on Amazon's websites represented 28%, 28%, and 26% of unit sales in 2006, 2005 and 2004 (Amazon.com, 2006).

2.7.1.1 B2C E-commerce Infrastructure

B2C e-commerce has four basic levels. The first level is represented in the communications infrastructure, prices, quantities, services and characteristics. The

second level is the marketplace where buyers and sellers meet and negotiate. The third level is the transaction mechanism to send, execute and settle orders. The fourth level is the deliverable that the service or merchandise being exchanged (Farhoomand and Lovelock, 2001).

In summary, e-commerce is conducted in three stages. The first stage consists of searching for the required product, collecting information and making a purchasing decision. This stage is almost similar to the customer's behaviour in ordinary purchasing, except for the lack of physical contact with the other party. The second stage is the purchasing process, which requires completion of the order form and methods of payment. The customer will accordingly be notified of the purchasing process. The third stage is the customer's receipt of the merchandise ordered. Figure 2.3 summarises the process of consumer buying via e-commerce in 10 steps.

A customer's purchase through e-commerce may be summarised as follows (Padhyay, 2002):

Step 1. A customer logs on to the Internet and finds online sellers of the product in which s/he or she is interested.

Step 2. The customer examines a number of sites and selects one that s/he wants to use for the purchase.

Step 3. Having chosen a site to investigate, the buyer searches for the goods required, using the interface provided.

Step 4. E-commerce sites normally have a facility for choosing a number of products to order in the same way that shoppers collect items in a basket in a shop.

Step 5. At this stage the customer is normally presented with an electronic form to enter personal (name, address etc.) and financial (credit/debit card number) details.

Step 6. The details are checked for validity, credit worthiness etc. by the seller online following which the system responds with a statement of either acceptance or rejection.

Step 7. If the order is accepted, the seller then processes it by sending it through to the appropriate department.

Step 8. If the order is sent successfully, the customer is presented with a message confirming this and with information on when the delivery should be expected.

Step 9. The user can now log off. If the experience was satisfactory and enjoyable, s/he likely to come back to the same supplier for future use.

Step 10. The first offline activity takes place when the goods are delivered by physical means.

Figure 2.3 The process for a customer's purchase online

Please see print copy for image



Source: Padhyay (2002).

2.8 Information System Success

As explained by O'Donnell (2002), there is a substantial amount of good literature material concerning the success of information systems. The measurement of the multi-dimensional factors involved in creating successful information systems is significantly addressed through that material (Garrity and Sanders. 1998, p. 14). This study benefits from this stream of study, as it tackles the connection between user satisfaction and the system itself, along with its use. As proven by the preceding studies, users' satisfaction positively influences system use (Baroudi et al., 1986). Along these lines, all research performed in the area of information systems success present rich constructs that can be utilised in investigating B2C e-commerce usage.

In 1992, Delone and McLean created an IS success model in which system quality along with information quality are determining factors of system use and user satisfaction. According to Delone and McLean (1992), system quality is determined through performance measures such as response times, system reliability, ease of use and system helpfulness, while information quality entails attributes like: relevance, significance, helpfulness and clarity. System use and user satisfaction are circularly associated, in that basically any increase in user satisfaction should positively affect system use, and vice versa. According to this model, both system use and user satisfaction affect individual impact and therefore organisational impact. The terms individual and organisational impact refer to the functioning of both individuals and organisations, respectively (O'Donnell, 2002).

Figure 2.4: Garrity and Sanders' IS Success



Source: O'Donnell (2002).

The B2C e-commerce model (Garrity et al., 2002) has used the extended elements included in the Garrity and Sanders IS Success Model, with the intention of developing a model of e-commerce web utilisation. The apparent quality of user interface was established by researchers to be influential in decision support satisfaction and task support satisfaction. Correspondingly, decision support satisfaction influences task support satisfaction, which shapes users' intention to use a B2C e-commerce website. Internet buying quantity was also found to be affected by task support satisfaction (O'Donnell et al., 2002).

2.9 Constructive E-commerce Characteristics

Constructive e-commerce characteristics are those playing a vital role in the continuous development of electronic commerce (Kuzic, 2002).

Laudon and Laudon (1998) stated that crucial factors of the construct are better described in fine points, whereby each point easily introduces one particular operational

goal shaped by the business, the organisation, the manager, and the promising environment.

Many other opinions are reflected in theories concerned with business success. Seddon (1997) was convinced that the major factor in the information systems construct is not reflected by the use of the system but rather by the turnover that should flood from using the system. He supported his theory by making it clear how a constructive method will afford benefits, such as helping the user to do more or better work in the same time, or taking less time to achieve the same amount work of the same quality that was achieved in the past.

E-commerce is now one of the most challenging areas of exploration, as the whole idea of online business is newly discovered and ever-changing, yet the major subdivision of its success factors can be identified as follows: technological, managerial, business and other.

2.10 Factors That Affect Consumers' Decisions to Use E-commerce

The last few years have witnessed an unpredictable broad expansion of business-to-consumer (B2C) e-commerce; this section briefly investigates B2C e-commerce in light of previous studies.

2.10.1 Trust

Trust has been defined differently by many researchers, according to the frameworks within which it is addressed (Kim, 2003). According to Moorman et al. (1993), trust is “a willingness to rely on an exchange partner in whom one has confidence”. Trust beliefs refer to an individual's conviction about other persons' honesty, trustworthiness and care in a certain state (McKnight et al., 1998).

A customer's decision to perform a transaction or a purchase is affected by trust. When people are more expected to be continually engaged in long-standing business relationships, the trust effect is exceptionally notable in keeping those customers interested and shaping their perception of future exchanges (Chiam, 2006; Doney and Cannon, 1997). Moreover, the influence of trust is clearly observed online concerning users' intention to buy instead of only browsing through items (Lynch et al., 2001).

According to Archetype/Sapient (1999), trust can be a forecasting factor of the level of security and confidentiality the website offers and the quality of user experience in the context of e-commerce.

There have not been many experimental studies addressing trust in e-commerce; however, more researchers are now investigating this matter. One study conducted in 1997 by Crisp et al. assessed the extent to which online shopping is influenced by consumer beliefs and attitudes. The employment of e-commerce acceptance under a trust model has been weighed against employment under an extensive technology acceptance model (TAM) (Van der Heijden et al., 2001).

Along these lines, building an initial relationship between users and e-business can be achieved by gaining these potential customers' trust when they first encounter the website either by chance or design. Customers' trust is characterised by their conviction that the company has competence and/or benevolence. Users' perceptions of the website and other aspects influencing trust can be strengthened during the first interaction, which increases a company's chances of enhancing the relationship with potential customers. As maintained by Kim (2003), this initial trust develops to become steady at a specific moment of time. Trust is believed to be even more influential as a success factor in the case of online purchasing, as online stores lack a physical site to which customers can go back to complain or to replace defective items (Chiam, 2006).

2.10.2 Perceived Risk

Customers' assessments, preferences, and behaviours are essentially based on their perceptions of risk (Dowling, 1986). In a study by Choi (2001), the degree to which the perception of risk and online purchasing are related is revealed through perceived risk. This concept is founded on the set of beliefs and the associated belief weight concerning doubt. Perceived risk influences customers' judgment of how positive or negative the results of a certain operation or state can be (Kathryn and Mary, 2002).

Ever since Bauer conducted his study in 1960, perceived risk has become an important matter for advertisers. Additionally, an individual's avoidance of risk has turned into a generally understood and accepted concept (Kim, 2005). According to Baker (1999) and Keeney (1999), customers are most essentially concerned with transaction security – protecting both personal information and credit card information – when deciding to perform an online purchase.

Both an individual's tendency to accept risk and previous experiences provide a foundation for the development of risk views. Therefore, perceived risk is not the same for all people. For instance, individuals with a history of beneficial online transactions are more expected to view e-commerce as less risky than those who have no past financial interaction with the Internet (Chiam, 2006; Pires et al., 2004).

A connection was recognised between the cultural value and risk aversion related to buying products (Choi, 2001; Mitchell and Vassos, 1997). A study by Mitchell et al. (1996) revealed that French consumers' tendency to sense risk is greater than British consumers'. This observation was recognised through different levels of risk averting when individuals attempt to buy CDs.

2.10.3 Culture

Earlier literature has thoroughly investigated the weight of cultural impact on decision-making. Radford et al. (1993) have demonstrated that culture is an important determinant of individuals' decisions, approaches and standards, besides other cognitive processes. intention and behaviour. Many factors work together to determine the countrywide success of e-commerce; these factors include: national financial systems, national civilisation, national cultures and the accessibility of telecommunications, in addition to technology expansion and acceptance, as maintained by Tillquist, 1997; Pitkow and Kehoe (1996).

E-commerce is chiefly founded on information technology (Sagi, 2003). Corporations have been becoming progressively more interested in the Internet, and the World Wide Web, because it can serve them as a worldwide operations system. Along these lines, e-commerce must be categorised within the same multicultural investigation as previous IS and IT.

A comparison between Japanese and American individuals was performed by Straub (1994). This study focused on how e-mail and fax utilisation in Japan and the USA is influenced by cultural factors. The Japanese study participants were found to be less keen on e-mail usage than the Americans and more interested in using the fax. Such findings can be explained through culture.

Another example is illustrated in a study by Harris and Davison (1999), who pointed out significant variations in PC involvement that were revealed in studies on consumers living in China, Hong Kong, Malaysia, New Zealand, Tanzania and Thailand. Those variations are partially attributed to culture.

With the purpose of revealing any variations in attitude towards technology generally and e-commerce specifically between the independent variables of culture groups, gender and those having experienced an e-commerce activity, Sagi (2003) conducted a survey on 195 students from the USA, UK and Greece. Students' views were communicated through this survey on numerous key issues for which the influence of culture and prior experience on e-commerce was clearly established.

2.10.4 Website Design

The concept of website design is characterised by attributes such as the excellence of navigational features, organising and searching abilities, product appearance, product explanations, website arrangement and layout (O'Donnell, 2002; Nielson, 2000).

According to a survey of Internet users, better utilisation of e-commerce can be achieved most importantly through faster access speed for users, followed by user-friendliness and high navigational usability (Davenport and Beck, 2001; Chiam, 2006).

Vendors' image and competence can be communicated through website design. A study by O'Donnell (2002) demonstrates how the excellence of this design influences customers' perception of the seller, whereby a well-designed site that is also nicely styled expresses the seller's professional abilities. Throughout the navigational process of the website, customers make their own deductions concerning site processing. The quality of a site's design provides customers with an indication of the quality of transactions and technical competency, which creates a type of process-based trust. It is commonly agreed among researchers that website design is important for building customers' trust; however, its influence is less than that of other variables (Belanger and Slyke, 2000).

The intention to use e-commerce is therefore potentially affected by design and layout. The term ease of use has been illustrated by Taylor and Todd (1995) and Chiam (2006) as the existence of straightforward comprehensible directions that users can follow, running on a usable hardware. Amusement, usefulness, and arrangement of the site shape customers' responses to the website's content (Chen, 1999).

Specific to e-commerce sites, company-specific information and design elements such as the logo, product image, and address, in addition to images of the workshop spot, privacy policies, client testimonials and the website itself are all elements of the image conveyed to users. Many companies feature vendors' artefacts next to products to enhance characteristics-based trust and process-based trust, which integrates items associated to corporation branding (Zucker, 1986; O'Donnell, 2002).

2.10.5 Experience

The e-commerce experience has been described by Crisp et al. (1997) as the existence of prior visits or purchases performed through an e-commerce website. Behavioural intention to utilise e-commerce is believed to be predictable by means of web technology experiences (Crisp et al., 1997). Online and offline shopping are differentiated by the need for an Internet-enabled computer in the case of online shopping. Experience has been featured as an objective concept stating individuals' prior utilisation of computer, hardware or software usage chances, or the formerly operated software variety (Agarwal and Prasad, 1999). Therefore, experienced Internet users are those who were found to be more interested in e-commerce and online transactions (Tracy, 1998). Furthermore, e-commerce experience and intention to use e-commerce have been proven to be related positively in the preceding research (Lloyd, 2002).

2.10.6 Brand

Seetharaman et al. (2001, p. 243) described brand as “an asset that does not have physical existence and the value of which cannot be determined exactly unless it becomes the subject of a specific business transaction of sale and acquisition”. In the situation of online purchasing, it is difficult for customers to evaluate the quality of product, therefore they use other substitute signs such as brand and information about approval of the website of other consumers (Chiam, 2006; Chen and Dubinsky, 2003).

Additionally, the absence of needed information strengthens the importance of branding while assessing products online (Dick et al., 1990). According to a study of online brand orientation (Heijden et al., 2001), brands do actually motivate individuals to purchase items, especially those complicated, highly priced and showy ones.

2.10.7 Reputation

The level of individuals’ belief in a company’s truthfulness and concern towards consumers affects its reputation (Chiam, 2006; Doney and Cannon, 1997). Shopping behaviour is significantly determined by reputation and trust, according to Hackbarth (2001). Furthermore, he applied this to e-commerce, assuming a similar effect to that existing in the physical environment. Similarly, many researchers in the field have proposed customers’ preference to buy items from websites that are familiar to them (Chiam, 2006; Quelch and Klein, 1996). Consumers’ motivation to buy on an Internet site is well forecasted through customers’ trust in the store, according to Jarvenpaa and Leidner (1998). Factors like firm size and reputation as well have been found to influence consumers’ trust in online stores.

2.11 Justification for This Research

- Until now, despite all the researches performed in the area of e-commerce, no key studies have explored the influence of perceived self-efficacy (self-efficacy and outcome expectation) on users' intention to use e-commerce. Many issues need to be answered and explained, such as the need to investigate the direct and indirect influence of self-efficacy, along with outcome expectation, on users' intention to use e-commerce and self-efficacy's predecessor factors that in the framework of e-commerce.

Researchers dedicated to increasing our realisation of consumers' online shopping behaviour have investigated a wide range of factors that can influence consumers' choice to shop online. Examples of these influencing elements include trust (Doney and Canon, 1997; Lynch et al., 2001), perceived risk (Pires et al., 2004; Choi, 2001), culture (Sagi, 2003; Straub, 1994), website design characteristics (O'Donnell, 2002; Nielson, 2002), system experience (Crisp et al., 1997; Tracy, 1998), brand (Dick et al., 1990; Heijden et al., 2001), reputation (Hackbarth, 2001; Jarvenpaa and Leidner, 1998), demographic characteristics (Donthu and Garcia, 1999; Fram and Grady, 1995), and product or service types (Peterson et al., 1997; Phau and Poon, 2000). Despite the great insights these studies have provided, the need still exists for a study that explains how users' intention to use e-commerce is affected by perceived self-efficacy.

- In a study by Bandura (1997)¹⁴, the significance of self-efficacy's effect on our way of life has been explained. Furthermore, Bandura advised researchers to dig deeper and explore how self-efficacy influences every specific task. In addition to determining elements that impact on self-efficacy for that task. Numerous researchers adopted Bandura's recommendations as they attempted to discover self-efficacy for various tasks (for example, mathematics self-efficacy, cancer self-efficacy, nursing self-

¹⁴ Albert Bandura, the founder of the social cognitive theory (1977).

efficacy). Computer self-efficacy is the result of a studies by Compeau et al., (1995a; 1995b; and 1999) that came as a response to Bandura's advices, and this current study is another effort intended to respond Bandura's, recommendations and examine e-commerce self-efficacy and the predecessors for this construct, and the way they influence users' intention with regard to e-commerce.

- E-commerce and perceived self-efficacy (self-efficacy and outcome expectation) are two separate research areas that have attracted attention from many researchers. However, as this thesis reveals later, perceived self-efficacy has a significant effect on the intention to use e-commerce. This is the first study to explore the factors that may affect self-efficacy in the context of e-commerce.
- Most research in the area of e-commerce has been exploratory. Little research has contributed to theoretical developments, and the lack of a strong theoretical framework to investigate online shopping behaviour may negatively influence the validity of research in this area. Thus, this study introduces new theory in this area.
- Generally, there are two main types of e-commerce: business-to-business (B2B) or business-to-consumer (B2C). Most surveys have indicated that 80% of the total commerce is B2B, which makes B2C minute compared to it (Dunt, 2002). In the USA alone, B2B online trades accumulated US\$995 billion, 93.3% of e-commerce transactions (McFarlane et al., 2004).
- Self-efficacy was taken into account by many researchers to be a critical influence on individuals' decisions, especially those concerning technological innovations (Kelman and Warwick, 1973; Leonard-Barton et al., 1985; Hill et al., 1985a and b; Davis et al., 1989). In studies performed by Hill et al. (1985a and b) to evaluate consumers' responses to word-processors and personal computers, self-efficacy was found to be substantially associated with liking and choosing to use such products.

2.12 Conclusion

This chapter has reviewed the literature related to the present study. The important conclusion that can be drawn from this chapter is that a limited number of research studies have employed to investigate the factors that influence users' behaviour towards electronic commerce adoption and usage. Without a significant number of research studies, it will be difficult to understand the factors that might influence individuals' behaviour to use electronic commerce.

In the e-commerce area, the focus is on the trust in e-commerce, the perceived ease of use of this technology and the perceived usefulness of this technology. However, before this stage can be reached, it is necessary to study the cognitive factors and emotional factors that affect consumers' decision to use or not use e-commerce technology.

Therefore, the motivation for this study has come from the realisation that there is: 1) limited research on the actual use of electronic commerce by customers, 2) a lack of appropriate reference theoretical foundation for social, cultural, individual and organisational variables that play a role in determining the key factors for user acceptance and use of e-commerce. "There is a need to examine the effect of self-efficacy (both general self efficacy and online transaction self-efficacy) on the purchase intention" (Kim, 2004).

This research hypothesises that the solution to the entire previous e-commerce usage problem is self-efficacy, for a number of reasons, according to the literature.

Chapter 3 will present the self-efficacy theory upon which this study is based.

CHAPTER 3.

THEORETICAL REVIEW OF SELF-EFFICACY

“Perhaps none is more influential in people’s everyday lives than conceptions of their personal efficacy” Bandura (1986, p. 390).

Self-efficacy is “People’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” Bandura (1986, p. 391).

3.1 Introduction

The previous chapter critically reviewed e-commerce and found a gap in the literature, in that there have been no previous studies about the effect of self-efficacy on e-commerce usage. This chapter will review the self-efficacy theory in order to present what is already known about this phenomenon and to review its application in different fields.

Definitions of self-efficacy will be introduced in the second section, following the introduction. Characteristics of self-efficacy and the diagram of self-efficacy will be presented and elucidated in the third section. Components of self-efficacy are introduced in the fourth section. Perceived self-efficacy will be re-introduced in section five in more detail, with the four sources for developing self-efficacy. These sources will be used in the research model in the next chapter. Outcome expectations will be introduced in section six, as the second component of self-efficacy after efficacy belief. In addition, outcome expectations will be used in the research model in the next chapter. Differences between efficacy beliefs and outcome expectations will be elucidated in section seven. The relation between self-efficacy and anxiety will be discussed in section eight; likewise the anxiety will be used in the theoretical model in the next chapter. The difference between self-efficacy and self-esteem will be simplified in

section nine. Allusions for improving self-efficacy will be introduced in section ten. Experimental applications of self-efficacy in the health area will be discussed in section eleven. The importance of studying self-efficacy for Australian e-commerce will be introduced in section twelve.

The chapter concludes with section thirteen, with a review of the literature on self-efficacy.

3.2 Self-efficacy

Koul and Rubba (1999) and Cassidy and Eachus (1998) stated that users' thinking models, feelings and behaviour are all shaped by self-efficacy beliefs, or briefly, the overall human behaviour. Human motivation, comfort and individual achievement are also based on self-efficacy beliefs. Even when people believe in the desirability of their actions' outcomes, they are not expected to continue when complications exist (Pajares, 2002).

Self-efficacy is the vital point of Albert Bandura's¹⁵ social cognitive theory. By means of the self-system, individuals exercise control over their thoughts, feelings and actions. Among the beliefs with which an individual evaluates control over her/his actions and environment, self-efficacy is the central determinant of human activity.

Ever since Albert Bandura achieved his main breakthrough in psychology with the publication of his article "Self-Efficacy: Toward a Unifying Theory of Behavior Change" in 1977, the expression "self-efficacy" has evolved universally in psychology and many associated domains, and numerous researches accordingly followed to enlighten self-efficacy in the subfields of psychology, such as personality, medical,

¹⁵ Albert Bandura (born December 4, 1925 in Mundare, Canada) is a Ukrainian–Canadian psychologist. He is most famous for his work on social learning theory (or social cognitive theory) and self-efficacy (answer.com).

social, production and managerial, and in the associated domains of drugs, communal health, nursing and business management.

Day by day, millions of people all around the world are required to cope with countless challenges and difficulties by making the right choices. In spite of many studies and information indicating widespread emotional and behavioural malfunctions, the majority of people are capable of achieving proper success through effective problem-solving and good decision-making. This has overwhelmed psychologists as they try to understand humans' high ability in adaptation and fine-tuning to life's rapid changes.

Bandura (1977) defined "self-efficiency" in his famous article as a psychological construct that refers to a belief in one's ability to successfully perform a particular task.

Later on Bandura's observations specified that:

Nothing is more influential in people's everyday lives than conceptions of their personal efficacy. People often do not behave optimally even though they know full well what to do. This is because self-referent thought mediates the relationship between knowledge and action (1986, p. 390).

In 1986 he developed his definition of self-efficiency as: "people's judgments of their capabilities to organize and execute course of action required to attain designed types of performance" (Bandura, 1986, pp. 390–391).

Various types of knowledge and skill are demonstrated through humans' abilities in different ways and are displayed in many forms of development to make them capable of functioning in varied fields. No one can possess all types of knowledge simply because it requires massive resources in respect of time, effort and assets to master every field of science and human knowledge. Accordingly, self-efficiency addresses this diversity of individuals' capacities.

Self-efficacy, according to Gist and Mitchell (1992), incorporates three aspects:

1. The general assessment that individuals make regarding their ability to successfully perform a certain task is reflected through self-efficacy.
2. The evaluation of self-efficacy is dynamic and ever-changing, since new information and experiences influence individuals' beliefs of self-efficacy.
3. The stimulating element straightforwardly mobilising users' behaviours is included in the self-efficacy belief.

Humans' application of control over action is not the only interest of physiologists studying self-efficiency; incentives, self-governing of thought procedures, in addition to emotional and physiological states are all directly connected to the analysis of that term. Perceived self-efficacy is connected with what the individual believes s/he is capable of doing, in view of her/his knowledge and skills, when confronted with different situations, and not with the number of skills he possesses.

3.3 Characteristics of Self-efficacy

The concept of self-efficacy originated from the famous social cognitive theory. This theory presents behaviour, cognitions, and environment in a triadic causation pattern, whereby each element dynamically affects the others, as illustrated in Figure 3.1.

Figure 3.1: Triadic Reciprocal Causation Model, 1979

Please see print copy for image



Source: Bandura 1986

Self-efficacy, as defined by Wood and Bandura (1989a, p. 408), is “the beliefs in one’s capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands.” Others analysed that self-efficacy has three components, and related works pointed out three features of the above description (Bandura, 1988a; Bandura and Wood, 1989; Wood and Bandura, 1989b).

First, self-efficacy is a comprehensive summary or judgment of perceived capability for performing a specific task. From an organisational perspective, the full estimation of capability is derived from the individual, the tasks being given to her/him and others in the work environment

Second, the concept of self-efficacy is highly dynamic. One’s estimation of efficacy varies as new information and experiences are obtained (even through performing the task itself).

Third, self-efficacy involves a mobilisation component; self-efficacy reflects an extra difficult and generative process involving the creation and orchestration of adaptive performance to fit changing situations (Bandura, 1989). This reveals that people possessing the same abilities will possibly perform diversely, based on factors like their consumption, arrangement and sequencing of these abilities in a developing framework.

3.4 Components of Self-efficacy

Self-efficacy is divided into two related elements according to Rapley (2001):

1. Perceived self-efficacy: which stands for an individual’s self-belief in her/his ability of keeping up a certain performance despite the existence of any circumstances or challenges (Bandura, 1982; O’Leary, 1985). Such viewpoints differ for various

behaviours in relation to succeeding due to performing a certain behaviour (Rapley, 2001).

2. Outcome expectations: which refer to one's conviction that a certain course of action will lead to a certain outcome (Bandura, 1977).¹⁶

3.5 Perceived Self-efficacy

Humans' productive competence systems depend essentially on efficacy beliefs; therefore several people with identical or similar skills, or the same person in different situations may execute the same job inadequately, satisfactorily, or astonishingly, depending on changes in their beliefs of personal efficacy (Bandura, 1997).

3.5.1 Efficacy Belief as a Mechanism of Operation

Bandura (1977) differentiated between efficacy belief and outcome expectation by explaining how outcome expectation does not influence people's behaviour, since individuals can be in no doubt that a specific action will generate precise outcomes, yet not be confident of their ability to perform the required actions. Furthermore, Bandura established the relationship between the assumed individual mastery of efficacy (self-efficacy) and decision-making in this theoretical system, in which the initiation and perseverance of coping behaviour are equally influenced by self-efficacy.

Individuals' attempts to handle given situations depend primarily on the strength of their personal confidence in self-effectiveness, which signifies the fact that self-efficacy affects the selection of behavioural settings. People's tendency to avoid situations,

¹⁶Both efficacy belief and outcome expectancy are important determinants of behaviour and their differential influence is explained further in Chapter 3.

believing that they are beyond their coping skills, increases, while they can easily handle threatening situations if they perform confidently and consider themselves capable of being involved in such activities.

Beside the commanding influence self-efficacy has on the selection of activities and settings, it also influences coping attempts, once started. The extent to which people's efforts can increase, and their persistence against difficulties or unpleasant experiences, are highly determined by efficacy expectations (Bandura, 1977).

3.5.2 Dimensions of Efficacy Belief

Self-efficacy holds principal performance inferences reflecting efficacy beliefs that diverge on its several dimensions, as Bandura (1977, 1986, 1997) argues:

- 1) Efficacy belief differs in level: as a consequence, if assignments are sorted in relation to difficulty, some people's self-efficacy will restrict them to undertaking simple assignments while others with higher self-efficacy will attempt to solve quite tricky ones, or even engage in extremely demanding operations within a specific domain of performance.
- 2) Efficacy belief differs in generality: while a number of experiences form limited mastery belief, a generalised sensation of efficacy can be produced through experiences that create a feeling of efficacy expanding greatly beyond that exact handling of the situation. Generality is affected by several different factors, including likeness degree among activities, the characteristics of the person who is being directed by that behaviour, and the modules through which capabilities are articulated, whether they are behavioural, cognitive, or emotional.
- 3) Efficacy beliefs vary in strength: diminishing experiences can easily overcome weak efficacy beliefs, but others holding a strong belief in their own potential will continue

their efforts to cope with new circumstances, despite that experience. The stronger the sense of personal efficacy is, the higher the determination and the greater the probability that the selected activity will be accomplished productively (Bandura, 1986).

3.5.3 The Nature and Construction of Self-efficacy

Bandura (1977) is highly recognised for his continuous efforts to build up the term self-efficacy as a complete construct. For more than 30 years he has carried out considerable researches on what that term represents (Bandura, 1977a, 1977b, 1982, 1986, 1989, 1994, 1997, 2001, 2003, 2006). He argued that individuals' self-image reflects directly on their deeds and thought patterns. Moreover, Bandura's observations on how to develop self-efficacy clarified its four main sources as follows:

1. Performance accomplishments
2. Vicarious learning experiences
3. Verbal persuasion
4. Physiological encouragement.

Each of these four sources is elaborated in the next section.

3.5.4 Development of Self-efficacy

As mentioned earlier, expectations of self-efficacy are built on the four bases of information. Past experiences influence the improvement of efficacy belief through generality, strength, and the level of the belief, so in order to create expectations of mastery, efforts should be directed towards the four major sources of information to achieve full utilisation of their power which will result in a reduction of defensive behaviour (Bandura, 1977, 1982).

There are other methods as well concerning the collection of individuals' coping information, but these techniques are criticised for presenting fewer ways to gather the needed knowledge.

1) Performance accomplishments (mastery experience)

Bandura believed that this source of efficacy information is formed by successes and failures, whereby important successes boost mastery expectations and repeated failures reduce them; additionally, he discussed the influence of formerly faced experiences, as individuals tend to be more influenced by earlier successes and failures.

Once robust and strong efficacy belief is acquired through continual success, the negative effect of occasional failures will probably be reduced (Bandura, 1977, 1986, 1997).

Strong efficacy belief usually spreads and generalises to other situations in which performance was self-debilitated due to apprehension about personal incompetence (Bandura, et al., 1975; Bandura, et al., in press).

Therefore, progress in behavioural operation reflects to other situations, not only those directly connected to the provided treatment but also to activities that are considerably different (Ewart et al., 1986). For example, rapid mastery of a particular animal phobia will result in encouraging coping efforts in social situations, in addition to the diminishing panic caused by animals. Nevertheless, the generalisation effects can be better predicted in behaviours that are for the most part similar to those in which treatment helped restore self-efficacy (Bandura, 1977, 1986, 1997; Bandura et al., 1969). Performance of that behaviour has constantly clarified a superior proportion of efficacy belief over other sources (Bandura, 1986; Gecas, 1989; Rosenstock et al., 1988; Rapley, 2001).

The more difficult that tasks appear to the individual, the higher the efficacy expectation they will produce they are successfully accomplished. This type of success contributes to generalisation and stronger efficacy belief, more than vicarious experience or other sources of feedback to behaviour (Bandura, 1982). Efficacy belief is ever-changing and alters as new experiences influence an individual's view of her/his abilities (Rapley, 2001).

2) Vicarious experience (modelling)

Vicarious experience makes judgment possible through examining others' performance (Bandura, 1986). Modelling is used as well to help create a belief of personal efficacy. Rosenstock et al. (1988) created modelling to follow immediately after the experience of performing the behaviour in importance.

The similar processing of information articulated by modelling can be of great influence on how vicarious experience causes modifications in self-efficacy, depending on several factors:

- A. The similarity between models and viewers
- B. The complexity of the performance tasks
- C. The situational circumstances under which the modelled achievements occur.

The level of similarity between the modelled task and the viewers' determines the intensity of success or failure's impact on them (Bandura, 1997). However, vicarious experience cannot be suggested as the only source of efficacy information as there are many other factors, such as perceived personal failure, which can negate that effect. (Bandura, 1997; Schunk and Carbonari, 1984).

3) Verbal persuasion

The influence that verbal persuasion has on self-efficacy differs significantly according to the perceived integrity of the persuaders, their reputation, reliability, skill and

confidence (Bandura, 1977). Verbal persuasion has proven to be of great impact on efficacy belief and outcome expectation, in addition to encouraging changes in behavioural intentions (Maddux et al., 1982). The value of the persuaders' credibility has been deeply examined and analysed, due to its influence on verbal persuasion, because the more believable the supplier of information, the more likely are efficacy expectations to change. However, this field is in need of further investigation.

4) Emotional arousal

People's physiological arousal is mainly determined by their evaluation of conditions creating the stimulating effect. Therefore, instinctive arousal that takes place in reaction to situations considered intimidating is recognised as fear, while arousal practised in upsetting conditions is identified as anger. Irreversible loss of valued things or people forms another type of arousal, which is sorrow (Hunt et al., 1958). Similar sources of physiological arousal can result in many types of arousals requiring individuals to follow the expressive response of others in the same situation in order to construct proper reactions (Mandler, 1975; Schachter and Singer, 1962).

3.6 Outcome Expectations

In 1986 Bandura exemplified that if people acted with insight on the basis of informative signs but remained unaffected by the results of their actions, they would be too insensible to survive very long, which pointed out the fact that behaviour is highly regulated by its consequences. "Actions that bring rewards are generally repeated, whereas those that bring unrewarding or punishing outcomes tend to be discarded" Bandura (1986, p. 228). Thus, full understanding of human behaviour can never be established without bearing in mind the influence regulations have on the reactions' outcomes. While self-efficacy belief is defined as one's belief in her/his ability to

perform a certain task which provides wanted results, outcome expectation is the belief that the suggested activities (task) will be the source of desired results. Outcome expectations rely primarily on how well the person is required to carry out the task (Bandura, 1986).

Frantzich, in 1979, stated that besides individuals' feelings about the need to change, they must be motivated to change. Personal viewpoints about response results – named outcome expectations – create one more vital constituent in social cognitive theory, which distinguishes between numerous classes of behavioural motivations (outcome expectation) along these lines:

1. Primary motivations: motivations encouraging changes in people as growth experiences. The power of primary incentive connected to physical needs like food or drink intensifies by lack and weakens by fulfilment.
2. Sensory motivations: human activities are mostly viewed and regulated by the sensory feedback produced by these motivations. For instance, people who enjoy sounds created by a musical instrument will probably spend long hours playing that instrument.
3. Social motivations: individuals are usually seeking others' approval, trying at the same time to avoid disapproval through their actions.
4. Monetary motivations: money is considered one of the most powerful widespread motivations. As a result, many people are willing to be involved in careers that they don't really enjoy only, because they are well paid.
5. Activity motivations: activities vary in their virtual value; for any two activities people will most likely perform their less favoured one if it provides them with the chance to take part in the more favoured activity. For example, if reading is favoured over mathematics, individuals will work hard on mathematics in order to gain the

opportunity to read; but if mathematics is preferred to reading, individuals will read for a chance to be involved in mathematical activities (Premack, 1965, 1971).

6. Self-evaluative motivations: in proficient activities, the individuals behind them witness the consequences of their actions. This awareness of results can fulfil two main purposes. First, it can offer firm information on the precision of performance, so if the feedback is satisfactorily comprehensive, it will help by stating what parts of the operation need to be fixed and enhanced. Secondly, the end results of actions reveal indications of advancement, which can be either encouraging or discouraging, depending on the degree and manner of performance modification.

Bandura, in 1989, classified outcome expectation into two types: a positive or negative expectation. Graved and Carter (2005) stated that expectations about the outcome of one's behaviour directly influence that behaviour, for instance, when an individual expects a negative outcome from a behaviour, he or she is less likely to engage in that behaviour, despite her/his belief in the ability to perform it. For example, a person who is healthy enough to walk for exercise every day may have the highest confidence that s/he can walk when it is raining, but because of expectations about becoming wet and cold, may not engage in walking on a rainy day.

Many theories genuinely highlight the relation between expected outcomes and action like Vroom's model, which was introduced in 1964. This model has achieved much success and highly inspired organisational/career literature (Locke and Henne (1986), perceived choice behaviour as being for the most part determined by the personal chance that particular acts will produce specific outcomes, concurrently with the worth one places on those results. Outcome expectations are implicitly acknowledged through career analysis techniques, in addition to emphasising the value of evaluating consequences connected to several choices (Mitchell and Krumboltz, 1984).

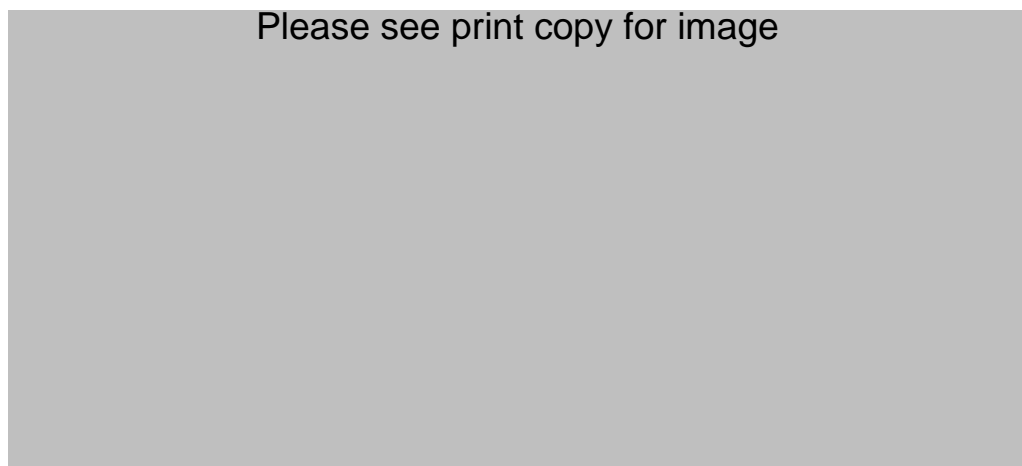
Social cognitive theory implies that “people act on their judgments of what they can do, as well as on their beliefs about the likely effects of various actions” (Bandura, 1986, p. 231). Despite having been systematically established, the dual effect of self-efficacy and outcome expectations is still being examined and argued. Bandura, in 1986, stated that these two types of belief (self-efficacy and outcome expectations) differ in their influence on individuals, in that self-efficacy operates as a more powerful determinant of behaviour. For instance, many people may refrain from performing a certain course of action, even with its perceived positive outcomes, due to their weak belief in their efficacy. Equally, they may work genuinely on performing tasks when they believe in their ability to successfully accomplish them, regardless of the results’ uncertainty.

While self-efficacy and outcome expectations are the unique motives for any activity, the main element in this presumed structure remains the activity itself. In cases where particular outcomes are guaranteed by the quality of performance, self-efficacy is perceived as a leading fundamental factor and as a partial condition to outcome expectations. Nonetheless, while outcomes are not directly connected to the excellence of performance, they contribute independently to motivation and behaviour (Bandura, 1989). This concluding scenario is possibly applicable to career progress in the academic or professional world, yet only generates flawed associations between the quality of performance and outcomes. Furthermore, expensive life decisions appear to point to consideration of response outcomes in addition to personal capabilities. For example, an individual with high self-efficacy may withdraw from science-intensive career fields, as a result of anticipating negative outcomes, for example, the discouragement of important others or work/family variances (Bandura, 1986).

3.7 Efficacy Beliefs and Outcome Expectation

Self-efficacy is often confused with outcome expectations when, in fact, they are two different constructs. An outcome expectation is thus a belief about the consequences of behaviour. On the other hand an efficacy belief is a belief concerning to performance of a behaviour (Bandura, 1977, 1997; Hackett and Betz, 1981; Caprara and Cervone, 2000).

Figure 3.2 Distinction between outcome expectations and self-efficacy perception



Source: Bandura (1997).

Efficacy belief and outcome expectation are two different things, because many people happen to believe that a certain action will lead to well-known outcomes, yet not have enough confidence in their ability to carry out the required activity. The stronger one's belief in her/his effectiveness, the higher the possibility that a coping attempt will take place. People's tendency to avoid situations, believing that they are beyond their coping skills, increases, while they can easily handle threatening situations if they perform confidently and consider themselves capable of being involved in such activities (Bandura, 1988).

3.8 Self-efficacy and Anxiety

Anxiety, an aversive experience of sorrow, is a main psychological problem in life in general (Williams, 1995). According to Williams (1987), anxiety is the individual's sense of extreme fear. Procedurally, being anxious indicates a self-evaluation of fear intensity on a scale initiated from not being afraid at all to being extremely frightened. As stated by Williams (1985), the attributes of anxiety as depression, low self-efficacy, separate arousals, and numerous other aspects linked to temper, self-efficacy and notion of threat. Anxiety levels are shown to have a significant impact on individuals' processing of available information both relevant and irrelevant to the task. In a study by Suri and Monroe (2001), individuals who were less anxious than others tried to process all available data, which made the appraisal of given information cognitively heavy, while highly anxious individuals, on the other hand, were not able to focus on all task-relevant cues or process information completely. Additionally, these findings suggested that a moderate anxiety level creates the ability to handle a limited variety of cues, concentrating primarily on task-relevant ones (Easterbrook, 1959). Extra intensifying in anxiety from moderate levels will cause a further decrease in the range of utilised cues, such that even significant and central signs are disregarded, which diminishes the mental operations.

Growing anxiety motivates avoidance simply because humans tend to escape stressful situations to lessen anxiety levels, which is recognised as an avoidance pattern of behaviour (Dollard and Miller, 1950; Mowrer, 1950). In self-efficacy theory, anxiety creates a feeling of failure regarding the need for behavioural coping, and similarly with probable threats (Bandura, 1988). Almost all procedures and environments include several potential hazards, with which most people are fully informed, yet they are not

constantly distressed as a result of their consideration that they are capable of handling all dangerous elements and effectively responding to requirements that may occur. Anxiety is usually boosted by one's belief of being unqualified to exercise power over possibly disliked or destructive events (Williams, 1995).

Self-efficacy has been defined as confidence in one's ability to perform coping tasks (Bandura et al., 1997). As indicated by Bandura (1982), self-efficacy and anxiety are both parts of the same procedure in which the task set is professed to be intimidating. However, in his more recent articles, Bandura (1997) has implied that the influence of perceived efficacy on anxiety arousal seems to be well determined, but the influence of anxiety arousal on efficacy beliefs is rather vague.¹⁷

3.9 Self-efficacy and Self-esteem

Examining the isolation of self-efficacy and similar constructs is vital for additional theoretical development on self-efficacy. One of two constructs frequently confused with self-efficacy is self-esteem. Despite the existence of many differences between these constructs, self-esteem is typically regarded as an attribute revealing an individual's characteristic, which is the emotional evaluation of oneself. By contrast, self-efficacy is an evaluation about task capacity that is not essentially evaluative.

As an example, Gist and Mitchell (1992) explained how a rocket scientist may have very low self-efficacy regarding activities like dancing, while being able to decide that s/he is adequate, without losing self-esteem Judge et al. (1997) presented the theory of core self-evaluations which indicates additionally that self-efficacy and self-esteem are fundamental self-evaluation qualities that strongly shape how people act and respond in a variety of settings.

¹⁷ More details about the relation between self-efficacy and anxiety will be provided in the next chapter.

Despite all their researchs, Stanley and Murphy (1997) have consistently discovered that self-efficacy and self-esteem are strongly connected. Furthermore, other researchers like Judge and his colleagues (Judge et al., 2002) have observed that it is complicated to differentiate between self-efficacy and self-esteem operationally due to their high connection to each other. However, the reality of self-efficacy and self-esteem being interrelated to a high degree does not lead to considering them as the same concept.

Brockner (1988) presented a comprehensive argument for the division between self-efficacy, self-esteem, and other self-related concepts. Additionally, he discussed the theoretical identification of global (evaluation of the total self) and specific (circumstantial or task-specific) self-esteem. In comparison, self-efficacy always refers to one's believed capability to accomplish a specific task. A number of researchers like Shrauger (1972) have examined task-specific self-esteem by evaluating individuals' confidence about accomplishing a certain task successfully. This functional characterisation of task-specific self-esteem is indistinguishable from self-efficacy as defined by other scientists.

Self-esteem is a global concept that stands for individuals' self-evaluations in addition to their belief of being capable to cope under various conditions (Brockner, 1988).

3.10 Allusions for Improving Self-efficacy

The importance of using self-efficacy to calculate performance expectations has been articulated by studies referred to previously. Numerous researchers and practitioners argue that performance is highly affected by one's beliefs, whereby the increase in constructive beliefs and the decrease in destructive ones might lead to higher performance. In several organisational studies, positive post-test differences were observed to a high degree in average self-efficacy and performance for participants who

were previously open to the elements of self-management and modelling training (Gist, 1989; Gist et al., 1989).

Additional studies have been conducted in medical and educational fields. These studies employed methods that rely on operant principles (Andrews and Debus, 1978), modelling (Zoeller et al., 1983), information (Wilson and Linville, 1985), and persuasion (Schunk, 1984) to change beliefs, attributions, expectancies and self-efficacy (Bandura, 1977). Nevertheless, many issues regarding the levels to which self-efficacy and performance can be increased and the flexibility of efficacy have received limited treatment and discussion to date. Until now, no major attempts have been made to methodically recognise which variables' alterations can cause greater changes in self-efficacy or what approaches should be used. Figure 3.2 (previous) assists in providing a theoretical framework for conceptualising the process of change.

3.11 The Application of Self-efficacy in Health

O'Leary (1985); Maddux (1997); Rapley (2001) carried out a studies to test the effect of self-efficacy on behavioural change and health effects related to chronic illness management.

3.11.1 Self-efficacy and Rheumatic Diseases

Rapley (2001) stated that present and future health status were found to be highly associated to self-efficacy beliefs for a variety of arthritis patients who took part in a 12-hour Arthritis Self-Management Course (ASMC) (n = 95). In four months, many strategies were used to boost efficacy (abilities mastery, modelling, reinterpreting symptoms and persuasion), which resulted in greatly enhanced health status regarding pain and depression, separate from learnt behaviours ($p < .05$).

ASMC and other similar courses demonstrated the effect of having a high self-efficacy on decreasing patients' pain, functional impairment, depression and stress, in addition to helping them sleep better (Holman and Lorig, 1992). Holman and Lorig, in 1992, stated in their 12-year examination of the ASMC that the course's effects on health status appear to be more strongly linked to changes in self-efficacy than to changes in behaviour.

Similarly, courses like stress management – which are basically focused on the reinforcement of exercise-related efficacy belief – caused major improvements in health conditions over 15 months (Smarr et al., 1997). In a study of three randomised groups, an important inverse connection between absolute self-efficacy and vulnerability improved over 15 months ($r = -.31$ to $-.51$) As patients' self-efficacy increased, the vulnerability, depression, and pain intensity reduced .

3.11.2 Self-efficacy and Diabetes

Diabetes studies have mainly focused on the educational contribution, in order to enhance general awareness of the disease, daily self-maintenance behaviours (skill level and obedience behaviour) and development in metabolic management (Brown, 1990). Nevertheless, the expansion in diabetes research has brought the importance of psychological factors into view in the last two decades (Hunt et al., 1998), besides cognitive factors such as self-efficacy theory (Hurley, 1990; Bandura, 1997).

Diabetes self-management involves many difficulties, because some patients will need years of guidance and courses to learn the principles of diabetes knowledge (Brown, 1990). The value of self-efficacy as the most powerful cognitive control variables has not been deeply investigated yet, despite its proven worthiness in assisting self-regulation (Rapley, 2001).

A variety of health status outcomes such as a reduction in glycated haemoglobin (Anderson et al., 1995) or weight (Glasgow et al., 1999) were associated with the increase of diabetes-specific beliefs. The connection between efficacy beliefs and self-care behaviours has been confirmed – in diabetes research (types 1 and 2) – to be stronger than the one between these behaviours and any succeeding improvements in glycaemic management (Glasgow et al., 1999). An experiment on a randomised group of people described as either users or non-users of insulin was conducted by Anderson et al., in 1995. This study was intended to empower patients' ability to improve their self-efficacy in areas related to the content of the diabetes course. The participants showed considerably improved efficacy beliefs regarding abilities like:

- a. setting goals
- b. managing stress
- c. making decisions
- d. obtaining social support.

Health status outcomes related to the right management of diabetes were easily justified through the concept of self-efficacy (Anderson et al., 1995). Twenty-six studies – almost 28% – used diabetes knowledge measures, yet knowledge by itself is not enough to change a person's behaviour with regard to diabetes (Beeney and Dunn, 1990).

Self-efficacy strategies are now highly recommended for incorporation by diabetes trainers into self-care education courses, as evidence was established in relation to the function of self-efficacy in enhancing the health status of diabetes patients (Anderson et al., 1995).

3.11.3 Self-efficacy and Recovery from Heart Attack

More than 50,000 early deaths are caused every year by diseases of the heart and vasculature in the United States alone (Gunby, 1992). A noticeable increase in individuals' probability of surviving a heart attack (Acute Myocardial Infarction (AMI)) has been detected, because of the significant improvement in emergency and post-coronary care. In order to reduce unnecessary anxiety and functional disability after AMI, there must be a good understanding, measuring, and modifying of the psychological reactions that play a role in producing these problems. Self-efficacy has been proven to be extremely useful in providing this necessary understanding.

In 1983, Ewart et al. conducted a study on 40 men with a mean age of 52 ± 9 years who had all experienced clinically uncomplicated myocardial infarction (MI). Self-efficacy scales were applied before and after a symptom-limited treadmill exercise examination to measure patients' confidence in their capability to carry out various physical activities. Activities like treadmill exercise (walking, stair-climbing, and running) caused a major increase in confidence right after the exercise, while dissimilar activities like sexual intercourse and weight-lifting produced higher levels of self-efficacy only when test results were clarified by a doctor and nurse.

3.11.4 Self-efficacy and Stress Response

The concept of stress has gained a remarkably increased focus recently. The negative influences stress can cause on individuals' health take two pathways.

First, they may lead to embracing health-damaging behaviours, like smoking, using drugs and alcohol or refusing medical care treatment.

Second, it may affect organs and tissues by its negative influence.

Through the basic principle, “I can cope with this, I can manage the stressor using cognitive and/or behavioural means”, self-efficacy is characterised – in terms of relation to stress – by its connection to a mixture of physiological stress systems, involving the sympathetic nervous system, the hypothalamic adrenal cortical system, and the endogenous opioid system (Bandura et al., 1987).

3.12 The Effect of Self-efficacy on the Utilisation of Advanced Technology

This thesis suggests a study that embraces the viewpoint of approving a solid connection between self-efficacy beliefs and the utilisation of advanced technology. In a study by Compeau and Higgins (1995), computer self-efficacy was described as “a judgment of one’s capability to use a computer” (p. 192). Generally, the study highlighted the significant influence self-efficacy has on individuals’ self-perceptions when using computers. Supporting data and observations were presented in the study, as the researchers noted that individuals with high self-efficacy suffered less computer anxiety, used computers more and took pleasure in using them more

Gist et al. (1989) carried out earlier studies on computer self-efficacy which gave evidence that business managers enjoying higher computer self-efficacy beliefs performed considerably better than those with low computer self-efficacy results. Additionally, these findings were supported in a wide range of other contexts, including computers. Self-efficacy comes into view as a major factor that distinguishes adopters and non-adopters of complex technologies (Faseyitan and Hirschbuhl, 1992; Faseyitan et al., 1996) which is directly connected to the utilisation of advanced technologies (Hill et al., 1987; Kinzie et al., 1994; Landino and Owens, 1988; Zhang and Espinoza, 1998).

In a research study that involved employees of a federal agency, an explicit connection was recognised between self-efficacy and technological innovations (Burkhardt and Brass 1990). Nevertheless, computer self-efficacy is not absolute, since it differs within the computer framework as each individual attempts to achieve specific tasks. It is influenced by factors like:

- 1) the software and hardware configurations users must cope with (Compeau and Higgins, 1995).
- 2) the nature of the task required (Compeau and Higgins, 1995).

3.13 The Importance of Self-efficacy in E-commerce

Shopping online is highlighted as one of the most rapidly rising types of purchasing (Limayem et al., 2000; Levy and Weitz, 2001; Shim et al., 2001; Grunert and Ramus, 2005). Generally, purchase transactions can be facilitated among all involved groups: consumers, businesses, and between businesses and consumers. Yet undoubtedly the largest, most profitable domain of application has been in the business-to-business sector. In the business-to-consumer domain, business growth has been more directed to specific narrow areas (Butler and Peppard, 1998). Many of the business-to-consumer operations now run with a shortfall and many had to cease trading. There have been very few considerable achievements regarding the sale of food and other daily-use products on the Internet. Despite the great number of users in both the USA and Europe frequently using the Internet for shopping purposes, the reasons that encourage these people to shop online are still ambiguous (Monuwe et al., 2004). However, self-efficacy was taken into account by many researchers to be a critical influence on individuals' decisions, especially those concerning technological innovations (Kelman

and Warwick, 1973; Leonard-Barton et al., 1985; Hill et al., 1985a and b; Davis et al., 1989).

In studies performed by Hill et al. (1985a, 1995b) to evaluate consumers' responses to word-processors and personal computers, self-efficacy was found to be enormously associated with liking and choosing to use such products.

Self-efficacy has been proven to be a strong predictor of behaviour (Maddux et al., 1986), besides attitudes (Maddux and Rogers, 1983; Seltzer, 1983) in many different situations wherein one's own performance capability in specific settings can be forecasted through judgments of self-efficacy. Individuals with low self-efficacy tend to choose alternatives that can be handled or managed more easily, rather than the best ones (Seltzer, 1983). These feelings of incompetence or discomfort, which may arise from the expected change that individuals feel less capable of managing, lead to a refusal of this change. Perceived efficacy influences the extent of the effort, the perseverance and the level of learning taking place if the individual is willing to make an effort (Bandura, 1977). As indicated by the Australian Bureau of Statistics survey for the years 2005–2006, more than 3.2 million families own houses that lack Internet access!

Twenty-four per cent of these families justified lacking Internet home access as a result of having "No use for the Internet", while 23% said that they "Lack interest in the Internet". Surprisingly, those excuses were mainly used by people with low self-efficacy for using any new technologies (Bandura, 1997).

3.14 Conclusion

This chapter has reviewed the background literature on self-efficacy, on which the work presented in the following chapters is based. This chapter has also demonstrated the

application of self-efficacy in the health area. The next chapter will consider the significance of self-efficacy for the adoption of technology, more specifically the usage of e-commerce. In the next chapter the theoretical framework for the research will be developed.

CHAPTER 4.

THEORETICAL FOUNDATION, RESEARCH MODEL AND HYPOTHESES

4.1 Introduction

Subsequent to the analysis provided in Chapter 2 regarding e-commerce and the theoretical examination of self-efficacy as a concept, in this chapter the influence self-efficacy has on technology utilisation will be investigated, in order to construct the e-commerce self-efficacy model.

Many information systems researches have been conducted since the mid-1970s with the aim of identifying the factors that affect individuals' usage of technology, as the general embracing of new technologies was not living up to expectations (Compeau and Higgins, 1995).

Several theories were introduced as attempts to provide better methods to obtain widespread acceptance of technology. First, Fishbein and Ajzen (1975) developed the theory of reasoned action, which implies that individuals are more willing to utilise computers if positive outcomes associated with this usage are clear to them. The validity of this theory was demonstrated through its actual application in technology and IS literature. The second model developed to provide insights into computer usage is the technology acceptance model (TAM) by Davis et al. (1989). TAM has focused on the professed ease of use and usefulness as direct factors affecting usage, rather than focusing on the external factors influencing these determinants. According to this theory, the positive outcomes that individuals expect out of any technology will encourage them to utilise it. However, it does not establish a direct relationship between

individuals' expectations of their capabilities (self-efficacy) and their behaviour. Conversely, beliefs about outcomes are not considered sufficient to shape behaviour as indicated by the Social Cognitive Theory (SCT), particularly if individuals suspect their abilities to successfully accomplish the task. The above argument suggests that self-efficacy, besides outcome expectations, must be taken into consideration (Bandura, 1977, 1982, 1986; Igbaria and Iivaria, 1995). Bandura's work on the Social Cognitive Theory over more than 20 years (1977–1997) has produced the present construct, which is widely accepted and confirmed practically as a theory of individual behaviour. This theory is mainly based on self-efficacy which underlines the effect of an individual's cognitive state on outcomes (for example, low self-confidence, loss of control, lowered accomplishment motivation, and perceptions of future outcomes) (Bandura, 1986, 1982; Meier, 1985; Seligman, 1990).

4.2 Development of the Research Model

Social Cognitive Theory and the existing results of research in the field of information systems have provided a solid base for the research model examined in the study. The SCT was exemplified as a construct of two main expectations:

1. Outcome expectations, a concept presented also in a research study by Davis (1989) as the perceived usefulness for individuals.
2. Expectations related to self-efficacy (Igbari and Iivari, 1995).

Bandura (1977, 1986), through researches related to cognitive theory, has conceived joint relations between behaviour, key cognitive elements and environment. It is very important to obtain deep insights in to these existing relations, yet it is difficult to draw a linear recursive model to entirely

understand this conceptualisation, due to the richness of its contents (Compeau and Higgins, 1995).

In this study, these three elements were incorporated into the developed research model and the question of what factors to include was answered from previous IS research through investigating constructs within the structure of Social Cognitive Theory. Therefore, the discoveries resulting from previous IS researches will be incorporated into the model by relating key constructs within it to the Social Cognitive Theory construct as, follows:

4.3 The Research Model

Initially, this section will provide a deeper review of the research model that is founded on the Social Cognitive Theory (Bandura, 1986), in addition to the theory that will be investigated in this study.

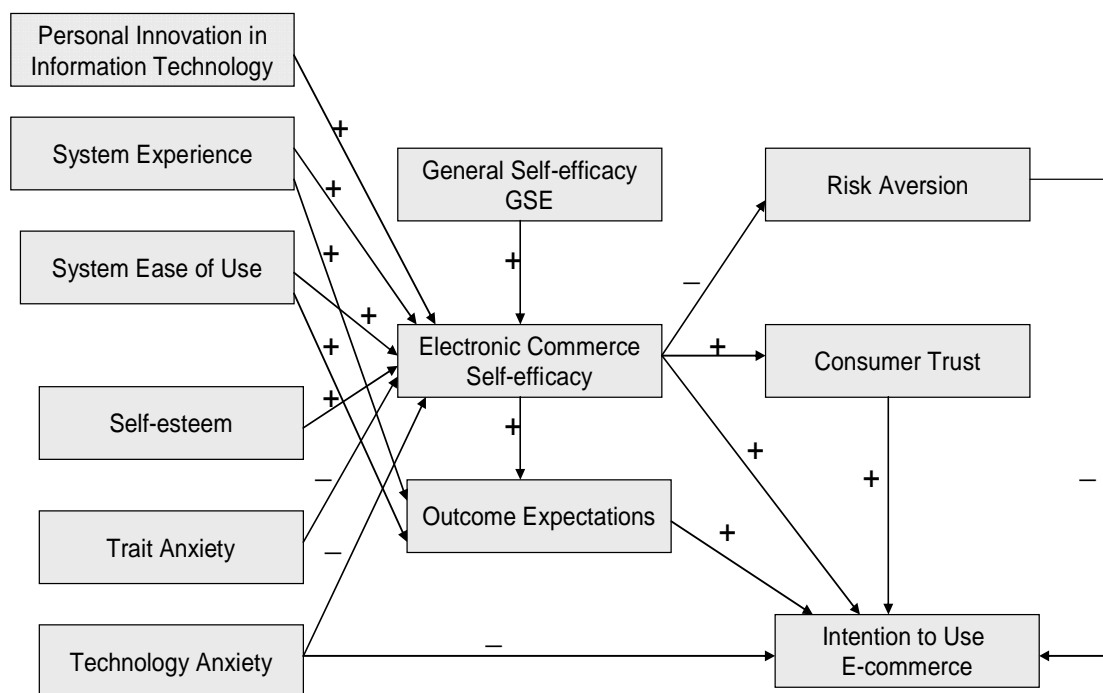
Researchers have applied the Social Cognitive Theory, the self-efficacy construct particularly, in many empirical research fields such as health, education, science, and, for the first time, on computers in 1989. However, no study has verified an existing relation between Social Cognitive Theory and the utilisation of e-commerce until now. Only one study by Kim and Kim (2005) has partially discussed the effect Social Cognitive Theory has on online shopping, by examining self-efficacy's impact, but that research suffered many limitations, which this study attempts to cover. Earlier, self-efficacy was also presented as a construct inside the online shopping adoption model built by Chan (2001), which examined the connection between cultures of the United States and Korea concerning the utilisation of online vendors.

This study is presented with confidence that it is the first comprehensive research explaining the influence of cognitive factors (Social Cognitive Theory) on the adoption

and the usage of e-commerce systems, as no definite model for Social Cognitive theory has been built to date. Additionally, this study will introduce new terms (such as e-commerce self-efficacy, technology anxiety and personal innovation in information technology) that have not been previously used. These terms were developed in view of the literature resulting from studies in related fields like information technology, information systems and another specific software researches (e.g. Anderson, 1996; Thatcher and Perrewe, 2002). Constructs belonging to Social Cognitive Theory were also used in this model (such as general self-efficacy, e-commerce self-efficacy, trait anxiety, technology anxiety), in addition to an additional two constructs that were originally used in IS (system ease of use and system experience). This model empower the research in the marketing area, from which two constructs were taken (risk aversion and user trust).

The model is shown in Figure 4.1

Figure 4.1: E-commerce self-efficacy model



4.3.1 Construct Definitions

The research model has twelve constructs. The definitions for these constructs are summarised in Table 4.1.

Table 4.1: Construct definitions

Construct	Definition
<i>E-commerce system</i>	<i>The procedure of buying, selling, transferring or exchanging product, services, and/or information via computer software networks, including the Internet (Turban et al., 2004).</i>
<i>General self-efficacy (GSE)</i>	<i>Individuals' acuity of their ability to achieve across a variety of different situations.</i>
<i>E-commerce self-efficacy (ESE)</i>	<i>A judgment of one's capability to use and buy through an electronic commerce system.</i>
<i>System experience</i>	<i>Previous e-commerce system usage. Tylor and Todd (1995), Eagley and Chaiken (1993); and Fishbein and Ajzen (1975) found that knowledge gained from past behaviour will help to shape behaviour, because in part experience makes knowledge more accessible in memory.</i>
<i>Outcome expectation</i>	<i>The expected consequences of behaviour when using the ecommerce system</i>
<i>E-commerce system ease of use</i>	<i>The level to which the end-user likes the system and finds it easy to use (Martocchio and Webster, 1992).</i>
<i>Risk aversion</i>	<i>In decision-making, risk aversion is the tendency to avoid options associated with uncertain outcomes that differ in their desirability (Baron, 1994).</i>
<i>User trust</i>	<i>A user's confident belief in the company's e-commerce system (Macintosh and Lockshin, 1997; Tax et al., 1998).</i>
<i>Trait anxiety</i>	<i>The general feeling of fear when confronted with problems or challenges (Thatcher and Perrewe, 2002).</i>
<i>Technology Anxiety</i>	<i>Fear of e-commerce system use or learning to use this technology, reasons for fear (e.g., pressing the wrong key or fear of other possible mistakes).</i>
<i>Personal innovation in information technology (PIIT)</i>	<i>The willingness of an individual to try out any new information system.</i>
<i>Self-esteem</i>	<i>The extent to which a person feels positive about her/himself.</i>

4.3.2 Personal Innovation in Information Technology (PIIT):

Individuals' dissimilarities are a crucial factor in the execution of any technological innovation, as stated by Agarwal and Prasad (1999). The effect that the differences have has been deeply investigated in a broad variety of areas, including information systems and marketing.

Personal innovation was defined by Hurt et al. (1977) as the individuals' keenness to change. Agarwal and Prasad (1988b, p. 206) defined PIIT as "the willingness of individuals to try out any new information technology". Accordingly, in this study, in which the PIIT function is investigated as a predecessor to e-commerce self-efficacy and technology anxiety, PIIT will be defined as individuals' willingness to experiment with new information systems, like e-commerce (Uray and Ayla, 1997; Thatcher and Perrewe, 2002).

PIIT was demonstrated by Thatcher and Perrewe (2002) as a situation-specific, stable trait which is thought to have an even impact across situations including those that involve information systems. PIIT is suggested to be high for individuals who are seeking out new, mentally or physically "stimulating" experiences. Alternatively, lower levels of PIIT are reported for individuals who have less tolerance for danger, and who are more expected to report general computer anxiety.

It can thus be hypothesised that:

H1: There is a positive relationship between personal innovation in information technology and e-commerce self-efficacy. Personal innovation in information technology will positively influence the e-commerce self-efficacy.

4.3.3 System Experience:

Behaviour has been found to be significantly influenced by previous experiences. Individuals' intention to perform a specific behaviour is shaped by knowledge obtained from past behaviour, partially because experiences allow higher accessibility to knowledge in memory (Taylor and Todd, 1995; Ajzen and Fishbein, 1980; Triandis, 1979; Reagan and Fazio, 1977).

Bandura (1986) argues in the social cognitive theory that previous experiences are the most accurate and dependable source for determining the efficacy of information towards missions in certain domains or similar ones (Fagan and Nell, 2004). In a research study focusing on the information system area, experience has been proven to be a key variable to forecast individuals' self-efficacy and outcome expectations of that technology (Agarwal et al., 2000; Compeau and Higgins, 1995; Igbaria and Livara, 1995; Marakas et al., 1998)

These arguments can obviously be demonstrated in the context of e-commerce where customers who previously succeeded in purchasing items online will develop a higher e-commerce self-efficacy¹⁸ and confidence in using this technology. Simultaneously, customers' expectations of the technology will also increase (for example, reduced costs, advanced options, faster delivery, and 24/7 availability).

Therefore, we hypothesise that:

H2a: There is a positive relationship between system experience and e-commerce self-efficacy. System experience will positively influence e-commerce self-efficacy.

¹⁸ To the author's knowledge, no study on e-commerce systems has taken into account the effect of e-commerce systems' experience on e-commerce self-efficacy.

H2b: There is a positive relationship between system experience and the end-users' outcome expectation. System experience will positively influence the end-users' outcome expectation.

As reported by Vician and Brown (2003), the steadiest finding established by studies was the negative relation between prior technology experience and computer anxiety. Generally, people with higher experience are less expected to feel anxious when challenged with new information systems with which they are less familiar (Fagan and Nell, 2004).

In e-commerce, customers who have previously purchased items online and used e-commerce transaction systems will suffer less anxiety and feel more relaxed while using them.

In the field of information technology (IT) a direct relationship between prior experience and technology usage has been confirmed in previous studies (Fagan and Nell, 2004, Igbaria et al., 1996; Marakas et al., 1998; Thompson et al., 1991; Taylor and Todd, 1995). In view of the fact that e-commerce and IT have similar characteristics (for example, both are advanced technologies), consumers experienced in buying by means of e-commerce systems will be more confident in using this technology again.

Researches focused on gender have often – yet not always – indicated higher levels of experience and usage of information systems for males than females (Durndell and Haag, 2002 in eastern Europe; Brosnan and Lee, 1998 in the UK; Balka and Smith, 2000, in the USA).

4.3.4 E-commerce System Ease of Use

Explaining the reasons why people choose to accept or reject certain technologies is known to be among the most difficult issues in information systems research (Swanson 1988). According to Bandura (1997) in the self-efficacy theory, one of the factors that affect self-efficacy is emotional arousal. This study will investigate the impact the ease of use has on the usage of e-commerce.

Self-efficacy researchers in addition to Bandura (for example, Bandura et al., 1980; Gist and Mitchell, 1992; Wood and Bandura, 1989a) have continually highlighted the concept that the relative complexity of tasks is also an important factor that must be considered as it determines successful performance in e-commerce besides self-efficacy. In this study, ease of use refers to the level to which the end-user likes the system and finds it easy to use (Martocchio and Webster, 1992; Carey, 1992; Davis et al., 1989).

Behaviour is influenced by self-efficacy. Many researchers have attempted to investigate the effect of positive feedback and the favourability of it on self-efficacy (Stone and Stone, 1985; Wofford and Goodwin, 1990; Gist, 1987). Social cognitive theory offers a foundation for understanding the feedback's influences on self-efficacy (Bandura, 1986,1991). If the individual likes a certain area, then this – under some circumstances – can substantially affect her/his beliefs and actions. For instance, TV preferences are almost exclusively based on influence; yet regarding computers, the proof is still unclear. In a study conducted by Thompson et al. (1991), no connection was established between liking computers and their actual use of them by managers. Later, another study by Compeau and Higgins (1995) proved that a positive relation existed between the liking of PCs and their use among managers. As social cognitive theory and other behavioural theories provide a theoretical support for such a link between individuals' liking for technology utilisation (ease of use) and the actual

behaviour, this is worth further study. In 1995, Henry and Stone confirmed a positive connection between both technology's ease of use and technology self-efficacy and technology's ease of use and outcome expectation.¹⁹ Self-efficacy decreases and stress increases in reaction to the failure to perform a specific task (Hancock, 1990, Eastin and LaRose, 2000). In the context of e-commerce, friendly user interfaces and navigation systems will make the user feel more capable of interacting with it without difficulties, which will increase her/his self-efficacy for that particular system or domain. At the same time, user expectations of that system will increase, as easy-to-use systems make motivation (benefits and outcome expectations) more obvious to customers.

As a result, it can be hypothesised that:

H3a: There is a positive relationship between e-commerce systems' ease of use and e-commerce self-efficacy. E-commerce systems' ease of use will positively influence the e-commerce self-efficacy.

H3b: There is a positive relationship between e-commerce systems' ease of use and the end-users' outcome expectation. E-commerce systems' ease of use will positively influence the customers' outcome expectation.

4.3.5 Self-esteem

Self-esteem is defined by Gergen (1971) as: the level to which a person's sense is positive about her/himself, which provides a measurement of the concept, ranging from

¹⁹ Most of the technology self-efficacy research sought the impact of self-efficacy on the ease of use. This study will investigate the impact of ease of use on e-commerce self-efficacy, with the support of previous research (see Henry and Stone, 1995), to attempt to find solutions to improve e-commerce self-efficacy.

low to high. This definition has become popular among researchers, since it illustrates self-esteem as the assessing component of self-concept. Generally, self-esteem is viewed as a trait unfolding an individual's emotional appraisal of her/himself. Differently, self-efficacy is an assessment – mostly non-evaluative – of one's capability of accomplishing a certain task (Anderson, 1993).

In another study, self-esteem is described as the degree to which an individual likes her/himself (Brockner, 1988; Anderson, 1993). For the most part, high or low levels of self-esteem influence people when they positively or negatively assess themselves, respectively. Moreover, self-esteem is constant at all times and in all circumstances. The effect self-esteem has on self-efficacy has been stated and proven in several studies (Stone and Stone, 1985). It is commonly understood that people enjoying high levels of efficacy have better prospects of new tasks, which results in higher confidence while using new tools and technology. Therefore, it can be hypothesised that:

H4: There is a positive relationship between self-esteem and e-commerce self-efficacy. Self-esteem will positively influence e-commerce self-efficacy.

4.3.6 Trait Anxiety

Trait anxiety (TA) was defined by Spielberger et al. (1970) as a common tendency to undergo a state of anxiety when contending with troubles or challenges. Tellegen (1985) argued that individuals are more expected to suffer anxiety through time and across situations, as TA is comparatively stable.

Both anxiety and cognitive efficiency have been believed by researchers for a long time to be strongly associated. Yerkes and Dodson (1980) tried to simplify this relationship by suggesting a U-shaped relationship model to represent anxiety and cognitive

performance. This model and other related research material suppose that very low anxiety levels increasing to fairly average levels will trigger more cognitive resources to become more accessible and foster the rate of mental operations (Suri and Monroe, 2001). Anxiety is probably the best domain for recognition and differentiation of the trait-state. Trait anxiety is identified as a person's general disposition to be anxious, whereas state anxiety refers to the anxious effect of situational frustration (Spielberger, 1966; Usala and Hertzog, 1991).

Trait anxiety is regarded as a major element of personality in most modern personality theories, as indicated by Thatcher and Pamela (2002) (see Digman, 1990, for a review). Spielberger, Gorsuch and Lushene (1970) offered a straightforward definition of trait anxiety, describing it as "relatively stable individual differences in anxiety proneness" (p. 3). Wilson et al. (1999) stated that trait anxiety is conceptualised as fixed or stable attributes of personality, whereas they demonstrated state anxiety as a momentary manner of anxiety that depends on the situation. In order to discover and forecast the association between a person's respiratory distress and trait anxiety, Wilson et al (1999) built a model that indicated the following results:

- Individuals suffering high levels of trait anxiety will be more likely exposed to significant increase in state anxiety compared to those with lower levels of trait anxiety.

Trait anxiety, according to Murata, et al. (2004), represents the general propensity to be anxious as a personality characteristic, whereas state anxiety is described as the level of anxiety at a particular moment. High trait anxiety causes individuals to organise situations, while for individuals who are low in trait anxiety, personal adequacy is evaluated more as a threat (Spielberger et al. 1973, 1983).

Suri and Monroe (2001) demonstrated how mental efficiency starts to deteriorate if the arousal intensity surpasses a supposed optimal point on the arousal scale. According to

this theory, it has been suggested that such analysis can be also valid for anxiety and its impact on both memory and responsiveness (Christianson, 1992; Eysenck, 1982). That is to say, reasonable degrees of anxiety are supposed to assist learning and memory performance; nevertheless, consecutive intensifying in these levels of anxiety beyond the optimal anxiety level will lead to lower degrees of learning and memory operating (Christianson, 1992). Anxiety experienced while using e-commerce systems is perceived as a form of domain-specific trait anxiety. Thus it is hypothesised that:

H5: There is a negative relationship between customers' trait anxiety and e-commerce self-efficacy. Customers' trait anxiety will negatively influence the e-commerce self-efficacy.

4.3.7 Technology Anxiety

State anxiety demonstrates personal feelings of tension, anxiety, and concern which vary in strength and over time (Spielberger et al., 1973, 1983). Computer anxiety is defined as “the fear of impending interaction with a computer that is disproportionate to the actual threat presented by the computer” (Howard et al., 1986, p. 630). A similar definition for computer anxiety was offered by Bozionelos (2001), who explained that the concept stands for the destructive emotions and cognitions evoked either in real or imaginary dealings with computer-based technology. In a study by Anderson (1995), a positive significant relation was found between mathematics and computer anxiety. This observation was also reported in other 10 research reports, as pointed out by Rosen and Maguire (1990).

In a study by Thatcher and Perrewé (2002), they explained how social cognitive theory indicated how self-efficacy and anxiety influence each other (Bandura, 1977, 1986, 1997). As implied in the SCT, individuals who suffer higher levels of anxiety may report lower levels of efficacy; while as their efficacy rises, they report decreased

anxiety. Despite the reciprocal nature of this relation, SCT research has found that efficacy beliefs are the major influence on individuals' decision-making regarding their ability to perform tasks (Bandura, 1986).

H6a: There is a negative relationship between customers' technology anxiety and e-commerce self-efficacy. Customers' technology anxiety will negatively influence the e-commerce self-efficacy.²⁰

Computer utilisation is expected to be negatively influenced by feelings of anxiety, due to the fact that people are expected to avoid behaviours that give rise to anxious feelings. Many studies have illustrated a relationship between computer anxiety and usage (Compeau and Higgins, 1995b; Igabaria et al., 1989; Webster et al., 1990). People who interact intensively and or/frequently with computers are usually computerphrenics (less anxious), while those who are more anxious are less expected to use computers (Igabaria and Iivari 1995). These remarks suggest that anxiety must be taken into consideration when studying computer usage.

Additionally, in Webster (1989), computer anxiety has been linked to negative beliefs about computers, difficulties while playing with them, and evasion of technology. Individuals who produce desired and better consequences are those who feel more relaxed while using the machine.

²⁰ To the author's knowledge, no study on e-commerce systems has taken into account the effect of technology anxiety on the e-commerce self-efficacy.

H6b: There is a negative relationship between customers' technology anxiety and intention to use e-commerce system. Customers' technology anxiety will negatively influence the intention to use e-commerce system.²¹

Emotional experience has been proven to have a major influence on individuals' decision-making (Maner, 2007; Loewenstein et al., 2001), as feelings like anger, fear and disgust can guide individuals' choice for a certain course of action (Lerner and Keltner, 2001). Examining these arguments allows the assumption of a relationship between anxiety and the basic forms of risk-avoidance while making a decision. In two separate studies by Maurer and Simonson (1984) and Bozionelos (2001), the behavioural expressions of computer anxiety were listed as follows:

- Avoidance of both computers and areas where computers are placed
- Extreme and unnecessary concern with computers
- Attempts to interrupt the necessary utilisation of computers
- Negative remarks regarding computers.

The occurrence of anxiety indicates the existence of potential threat and improves individuals' resistance to threat, as it promotes psychological responses in reaction and initiates actions of threat avoidance, which is considered a key element in the risk-avoidance decision-making (Barlow, 1988; Butler and Mathews, 1987).

In two surveys by Anderson (1995) and Morrow et al. (1986), which included 108 males and 65 females, no considerable relation was found to explain dissimilarities regarding computer anxiety and attitudes towards computers based on gender. However, in another study by Dambrot et al. (1985) that included 599 female and 342 male

²¹ To the author's knowledge, no study on e-commerce systems has taken into account the effect of technology anxiety on the e-commerce usage.

college students, females were found to be less comfortable towards computers, obtained lower marks in a computer skills test, and had less prerequisite ability and experience in mathematics.

- **Difference between anxiety and perceived risk**

The difference between anxiety and perceived risk was explained in a study by Eisenberg et al. (1996), who identified anxiety as an emotional state, associated by negative prospects of outcomes or concerns about how serious these outcomes can turn out to be (for example, Beck, 1976). Therefore, emotions and associated concerns are the main characteristics assessed by measures of anxiety (like a state or a personality trait).

For example, the state or trait anxiety inventory queries individuals' feelings of being protected, relaxed, tensed or strained. It also asks whether they take distressing situations keenly, and whether they are in a state of tension or turmoil (Spielberger et al., 1970). However, it does not particularly ask about decision-making.

Concerning decision-making, risk aversion is identified as consumers' tendency to refrain from options that are related to unknown results that might differ from their desired expectations (Baron, 1994). It is highly logical that apprehensive individuals would refrain from taking risks, as they believe bad outcomes are the most probable. No preceding researches have ever indicated the existence of a relation between risk aversion and anxiety as an emotional tendency affecting decision-making.

4.3.8 General Self-efficacy (GSE)

As stated by Bandura (1986) in relation to the social cognitive theory, people's beliefs provide the basis for their level of motivation, emotional conditions, and actions rather than what is objectively the situation. Because the self-efficacy theory presents clear

strategies on how to develop and improve the excellence of human performance, such as motivation and accomplishments, it is regarded as a critical component of the social cognitive theory (Bandura, 1995; Siu, 2007). Bandura, in his social learning and social cognition theories, portrayed self-efficacy as a dynamic, many-sided conviction system functioning selectively across different activity fields and different circumstantial difficulties. Bandura (1989, 1997) and Litt (1988) argued that self-efficacy is essential, as it influences an individual's capacity and motivation to put control into effect.

Social cognitive theory, as structured by Bandura (1986, 1987) and Chen et al. (2001), states that self-efficacy beliefs diverge in three areas²²:

- Level or magnitude: the degree of a task's difficulty.
- Generality: the level to which belief's degree and strength generalise across tasks and circumstances.
- Strength: the certainty of successfully performing a particular level of task difficulty.

Bandura, in 1977, defined self-efficacy as “the belief in one's ability to perform a task or more specifically to execute a specified behavior successfully” (p. 79). As observed, the self-efficacy was first presented as very task-specific, which caused researches to be conducted according to this belief. Later on, attempts to investigate the concept as a comprehensive whole resulted in the construction of general self-efficacy (GSE) (Woodruff and Cashman, 1993).

General self-efficacy is described as “one's belief in one's overall competence to effect requisite performances across a wide variety of achievement situations” (Eden, 2001, p. 73) or as “individuals' perception of their ability to perform across a variety of different situations” (Judge et al., 1998a, p. 170). Even though GSE is derived from the idea of

²² These dimensions have been explained in more detail in Chapter 3.

self-efficacy generality explained in social cognitive theory (Bandura, 1997), GSE is viewed as a separate concept. Self-efficacy is differentiated from GSE as it is a relatively flexible, task-specific belief, while GSE is a relatively constant, characteristic-like, general belief of capability (Chen et al., 2000; Chen et al., 2001). In two studies, researchers attempted to find a reliable measurement to evaluate self-efficacy that is unrelated to particular situations (Sherer et al., 1982; Kim and Kim, 2005). They emphasised efficacy expectations (self-efficacy) as being generalised to an individual's overall behaviour rather than particular behaviour. In 1982, Sherer et al. brought a measure for the General Self-Efficacy Scale (GSES) into being and developed a factor-based model of three sub-dimensions:

- Initiative: willingness to initiating behaviour
- Effort: willingness to pay out power in carrying out the mission
- Persistence: perseverance while facing difficulty

The previous measurement accords with Bandura's statement that self-efficacy expectations control an individual's early decision to start a behaviour, pay out power, and persist in carrying on, regardless of difficulties (Bandura, 1986). Differences between individuals in motivation, attitudes, learning, and task execution can be explained significantly through GSE (for example, Chen et al., 2000; Judge et al., 1997).

Gibbons and Weingart (2001) and Siu et al. (2007) also discriminated between task-related and general self-efficacy, since self-efficacy varies collectively across tasks and performance areas and in constancy over time and circumstances. The highest level of aggregation entails general self-efficacy, explained as "one's belief in one's overall competence to effect requisite performances across a wide variety of achievement situations" (Eden, 2001, p. 73). At the lowest level, one's capability of successfully

finishing a certain task in particular circumstances is referred to as self-efficacy. In short, the level of aggregation positively influences the stability of self-efficacy.

Individuals differ in motivation and affect, according to trait and state differences. Kanfer and Heggstad (1997) and Chen et al. (2000) distinguished between these variations and clearly outlined associations between different kinds of personality differences and performance.

State-individual differences are flexible and restricted to particular tasks; on the other hand, trait-individual differences are not limited to a particular task or circumstance and are relatively steady over time as personality and cognitive ability.

Specific-task self-efficacy (SSE) is a motivational state, and general self-efficacy (GSE) is a motivational trait (Eden, 1988, in press; Gardener and Pierce, 1998; Chen et al., 2001). Some past experiences (actual experience, vicarious, verbal persuasion, psychological states) affect both GSE and SSE. Nevertheless, Eden (1998) points to the fact that GSE is much more resilient to short-lived experiences than is SSE.

Accumulative successes and failures through an individual's life-time are most responsible for shaping her/his GSE (Shelton, 1990).

Differences between individuals in motivation, attitudes, learning, and task performance can be explained significantly through GSE. For instance, it was found through Judge and Bono's (2001) meta-analysis that GSE and self-esteem are positively related to task performance. Generally, GSE summarises individuals' overall lasting tendencies to consider themselves as capable or incapable of successfully accomplishing task demands in various situations.

As stated by Eden (1988), Chen et al. (2001), Shelton (1990) and Sherer et al. (1982), GSE positively impacts on SSE across tasks and situations (that is, GSE) "spills over" into particular situations, as observed through the relationship between it and SSE in a

variety of tasks. Consequently, individuals with higher GSE perform better through varying tasks and situations.

In e-commerce context, individuals with higher GSE are those who:

- Express higher motivation to accomplish new tasks.
- Are hard-working and seek achievement
- Expect to encounter less risk in e-commerce

Based on these factors, individuals capable of purchasing exactly the item that they want from web vendors are more likely to trust a web vendor and make purchases in the future (Kim and Kim, 2005; Chen et al., 2000). Consequently, it can be hypothesised that:

H7: There is a positive relationship between general self-efficacy and e-commerce self-efficacy. GSE will positively influence e-commerce self-efficacy.

4.3.9 E-commerce Self-efficacy (ESE):

Self-efficacy is described as an individual's belief that s/he has the needed abilities and skills to successfully perform a particular task. In 1986 Bandura presented the term specific self-efficacy (SSE) which refers to one's belief in abilities to mobilize the motivation, cognitive resources, and courses of action needed to meet specified situational demands. SSE relates to one's confidence of being able to accomplish specific performance levels (Wood and Bandura, 1989).

Stajkovic and Luthans (1998, P. 244) distinguished between GSE and SSE by explaining how SSE is characterised as “a dynamic, multifaceted belief system that operates selectively across different activity domains and under different situational demands, rather than being a decontextualized conglomerate”. Conversely, and according to Bandura (1997b, p. 42) GSE is “not tied to specific situations or

behaviour” but takes a broader view to a “variety of situations” (Sherer et al., 1982, p. 664).

Consistent with the definition of SSE, this thesis will describe e-commerce self-efficacy as one’s judgment of being capable to successfully use and perform transactions through an electronic-commerce system. Experimental researches during the past 10 years have revealed the effect of self-efficacy on individuals’ decision to use information systems. Hill, Smith and Mann (1987), for example, have confirmed the relation between self-efficacy and some work-performance measures (for example, adaptability to using computer and information systems).

In 2002, Durndell and Haag illustrated the latest statistics in the UK, which showed that only 17% of registered computing students at university are females (HESA, 2000). Moreover, this observation was also noticed in the USA, where more males than females tend to study computing, with increased indications that the proportion of females is actually decreasing (Durndell and Haag, 2002; Balka and Smith, 2000; Holdstock, 1998). The truth that gender influences one’s choice to study computing has also been found in school choices both in the UK (Roger and Duffield, 2000) and in the USA (Farenga and Joyce, 1999). The phenomenon is now quite clear and it needs to be investigated especially with the extensive spreading of the Internet, which has added a new dimension to the issue (Gackebach, 1998). General researches in the computer domain have also indicated higher levels of self-efficacy and confidence in males.

Bandura (1986) has demonstrated how special self-efficacy can be used to predict task performance outcomes, mainly because the outcomes to be measured have been clearly identified. So in conclusion, specificity that is applied to specific performance situation needs to be obtained in order to use SSE in predicting outcomes (Bandura, 1986, 1997; Marakas et al., 1998; Yi and Hwang, 2003). Self-efficacy judgments are perceived to

shape outcome expectations since the outcome one presumes is obtained mainly from the belief of how well one can perform the specified task (Bandura, 1997,Compeau and Higgins, 1995b).

Compeau and Higgins (1995) found that computer self-efficacy also influenced expectations about the future outcomes of computer use, such as job performance and personal accomplishment.

In terms of e-commerce particularly, research has generally supported positive relations between efficacy, a range of performance measures and outcome expectations (Gist and Mitchell, 1992; Stajkovic and Luthans, 1998, Schwoerer et al., 2005).

Outcome expectations are estimates that a behaviour will produce particular outcomes (Oliver and Shapiro, 1993; Eastin and LaRose, 2000) but it depends greatly on how well the individual believes s/he can perform the task; therefore, self-efficacy judgments are consecutively related to outcome expectations (Bandura, 1977). Oliver and Shapiro (1993) observed that the stronger a person's self-efficacy beliefs, the more likely it is that s/he will aim to successfully accomplish the desired outcome.

Nowadays, and in the context of e-commerce, these observations mean that there should be a positive connection between self-efficacy and the expectation of positive outcomes of e-commerce use. These outcomes²³, as mentioned earlier, can be reduced costs, more saved time, better quality, and the ability to consult and discuss products with consumers around the world. All these expectations will increase positively with consumers' belief of being capable of using the system to purchase items.

Thus, it can be hypothesised that:

²³ To the author's knowledge, no study on e-commerce systems has taken into account the effect of consumers' e-commerce self-efficacy on the consumers' outcome expectation.

H8a: There is a positive relationship between e-commerce self-efficacy and end-users' outcome expectation. E-commerce self-efficacy will positively influence the end-users' outcome expectation.

Differences that individuals have in their tendencies to experience different emotions can be an important factor in shaping cognitive processes linked with decision-making (Lerner and Keltner, 2000). Emotions operate as the most important type of information, indicating the existence of specific intimidations to be avoided or rewards to be acquired (Schwarz and Clore, 1983; Shackelford et al., 2000). Cognitive responses, in turn, are promoted by emotions, which facilitates the evasion of danger and the acquirement of rewards (Maner et al., 2005). Relating to decision-making, some emotions – like anger – encourage decision-making biases that increase one's acceptance for risk, whereas other emotions – like disgust – encourage the decision-making processes associated with risk avoidance (Fessler et al., 2004).

People described as low in self-efficacy are less certain of their ability to impeccably perform the transactions of buying, selling or returning items online. So, if any of their online merchandises do not turn out satisfactorily, they will be most probably unable to take care of this problem by returning the purchased item and they will refrain from contacting web vendors to buy products. On the other hand, highly efficacious people are willing to perform transactions with almost any web vendor without hesitation and be able to take care of any defected items themselves by directly returning them (Kim and Kim, 2004).

The higher the customers' self-efficacy while dealing with an e-commerce portal, the more positive outcome expectation they will probably have and the more they will trust

the vendor. This study expands the term of e-commerce self-efficacy to a situation-specific self-efficacy.

The extent to which one believes²⁴ in her/his overall proficiency to accomplish a successful task across a wide variety of achievement situations influences her/his special self-efficacy in the domain of e-commerce.

Therefore, it can be hypothesised that:

H8b: There is a negative relationship between e-commerce self-efficacy and customers' risk aversion. E-commerce self-efficacy will negatively influence the customers' risk aversion.

H8c: There is a positive relationship between e-commerce self-efficacy and user trust. E-commerce self-efficacy will positively influence the customers' trust.

As stated by Bandura (1997), self-efficacy refers to one's belief in her/his ability to perform a task successfully and here in e-commerce it is suggested that self-efficacy plays a significant role in determining behavioural intention (Taylor and Todd, 1995).

Self-efficacy perceptions were characterised by Hsu and Chiu (2003) as a significant predictor and precursor to computer technology use; this hypothesis is maintained by researching the utilisation of computers. The relationship between technology self-efficacy, the choice to use technology and adoption has been confirmed by numerous studies. A new variable was presented by Compeau and Higgins (1995, 1999), Davis et al. (1989), Hill et al. (1987), Igbaria and Iivari (1995), Burkhardt and Brass (1990) and

²⁴ To the author's knowledge, no study in e-commerce systems has taken into account the effect of consumers' e-commerce self-efficacy on the consumer's risk aversion.

Maish (1979), which is the user's feeling of "being prepared". This variable is considered similar to the concept of "self-efficacy" and has also been found to be related to the degree of use. Internet self-efficacy was positively related to Internet usage in the context of the Digital Divide (Eastin and LaRose, 2000).

Special self-efficacy was suggested for consideration as a new variable in the adoption process.

"... consumers with high self-efficacy are more active, attempt to proactively manage situations, and more likely to initiate innovative decisions, as opposed to those with low self-efficacy who avoid difficult tasks and are passive" (Tabak and Barr, 1999, p. 252).

In 1987, Hill et al. observed that the decision to use technology is considerably related to self-efficacy. Compeau and Higgins (1995b, 1999) also revealed a direct positive connection between computer self-efficacy and computer usage. This positive relationship between web-specific self-efficacy and electronic services utilisation was also noted by Hsu and Chiu (2003), Burkhart and Brass (1990), Compeau and Higgins (1995, 1999) and Oliver and Shapiro (1993). In the context of e-commerce, self-efficacy is also supposed to be directly related to the usage of e-commerce, since customers are more likely to attempt and continue this behaviour as long as they feel capable of successfully performing needed tasks.

Therefore, the following hypothesis is proposed:

H8d: There is a positive relationship between e-commerce self-efficacy and the intention to use e-commerce systems. E-commerce self-efficacy will positively influence the intention to use e-commerce systems.

4.3.10 Outcome Expectation

Bandura (1986), in his social cognitive theory, stated that persons are more likely to take on behaviours that they suppose will be rewarded. It is important to understand that self-efficacy and outcome judgments are two separate concepts according to Bandura, as he states in a research paper published in 1982: “In any given instance, behavior would be best predicted by considering both self-efficacy and outcome beliefs” (Bandura, 1982, p. 140).

Studies directly concerned with measuring outcome expectation in the IT literature are limited in number. In 1989, researchers Davis et al. conducted a study on MBA students in which they detected a development of behavioural intentions about using a word-processing program, derived from expectations that it would enhance their performance in the program. Previously, Smith and Mann (1987) demonstrated that individuals’ choice to gain knowledge of a programming language was highly influenced by outcome expectations.

In the area of computing technology specifically, individuals’ intentions are significantly shaped by outcome expectations (Compeau and Higgins 1995b), since outcome expectations are a key originator of usage behaviour. Both Bandura’s research on aggressive behaviour in children (1971) and IS researches by Davis et al. (1989), Hill et al. (1987), Pavri (1988) and Thompson et al. (1991) provided positive support for the debate on outcome expectations. This study will be the first to offer a comprehensive exploration of the relationship between e-commerce utilisation and outcome expectations.

Outcome expectations are demonstrated in the e-commerce context²⁵ clearly through the increased utilisation of this technology by consumers who expect higher quality, lower prices, extended availability (24/7), and a wider variety of products while shopping online. The extra value individuals expect out of simple tasks they are capable of performing will create a major motivating factor for them to use the system. Therefore, we hypothesise that:

H9: There is a positive relationship between customers' outcome expectations and intention to use e-commerce systems. Customers' outcome expectations will positively influence the intention to use e-commerce systems.

4.3.11 Risk Aversion

Risk is defined as “a situation where the future outcome is unknown but a probability can be placed on each possible outcome” (Byrne, 2005, p. 22). This definition of risk is one of several explanations provided by researchers to precisely identify the concept of risk. In 1960, the marketing community encountered the concept of risk for the first time when Raymond Bauer argued that consumer behaviour is risk-taking behaviour, since a consumer's actions can create some unanticipated results, some of which may be unpleasant (Moore, 2004). Perceived risk is based on two elements: a cognitive and an affective component, as maintained by Dowling and Staelin (1994) who constructed the most common definition of risk in marketing literature as “the consumers' perception of uncertainty and adverse consequences of buying a product or service” (p. 119).

²⁵ To the author's knowledge, no study on e-commerce systems has taken into account the effect of consumers' outcome expectation on e-commerce usage.

In 2001, Miyazaki and Fernandez suggested that perceived risk is related negatively to the degree to which individuals contact web vendors to purchase items.

The definition of risk aversion is cited by Bao et al. (2003) as “the extent to which people feel threatened by ambiguous, and have created beliefs and institutions that try to avoid these” (Hofstede and Bond, 1984, p. 419).

People who feel more threatened by risky and confusing situations are those with higher risk aversion (Hofstede, 1991). Therefore, researchers conceived the strong effect risk aversion can have on consumer’s decisions and behaviour (Shimp and Bearden, 1982). As clearly observed in consumption habits, individuals with low risk aversion feel more enthusiastic about obtaining new products or advanced technologies while in contrast, those with high risk aversion feel more reluctant to buy such items, as the performance of these products is more unclear and ambiguous than that of products and labels they already recognise (Steenkamp et al., 1999).

Thus we can hypothesise that:

H10: There is a negative relationship between customers’ risk aversion and intention to use e-commerce systems. Customers’ risk aversion will negatively influence the intention to use e-commerce systems.

4.3.12 User Trust

O’Donnell (2002) defines consumer trust as the consumers’ belief that the vendor, that is, a firm or website, will accomplish the transaction as the consumer expects. The twenty-first century has witnessed a huge growth in the number of electronic transactions, due to the increased trust in technology, which promotes its utilisation, acceptance, and adoption by users (Sukar, 2005).

The concept of user trust is becoming more important equally to both experts and academics (Lippert, 2001b, 2001c, 2001d). The concept of technology trust attempts to measure the user's trust in the inanimate IS technologies: hardware and software, operating on a daily basis (Lippert, 2001a, 2002).

Surprisingly, Heijden et al. (2001) did not observe any explicit relation between users' trust in stores and their behaviour towards online purchasing. The explanations provided by Heijden contradict a previous study conducted by Jarvenpaa et al. in 1999. However, Heijden et al. (2001) warned that their study excluded substandard websites and they suggested that a deeper analysis and understanding of the matter can be accomplished by diverging the levels of quality covered through the study (O'Donnell, 2002).

In two separate studies both Gefen (2000) and Kim and Kim (2005) demonstrated how purchase intentions are being significantly shaped by users' trust in web-vendors. As an example, they showed how consumers' low trust in web-vendors makes them less willing to engage in e-commerce transactions. Panichpathom (2000) has also confirmed the existence of an association between risk and trust. Therefore, we hypothesise that:

H11: There is a positive relationship between users' system trust and intention to use e-commerce systems. Users' system trust will positively influence the intention to use e-commerce systems.

4.4 Summary of the Research Hypotheses

The research hypotheses are summarised in Table 4.2.

Table 4.2. Summary of the research hypotheses

Research Hypotheses
H1: There is a positive relationship between personal innovation in information technology and e-commerce self-efficacy. Personal innovation in information technology will positively influence the e-commerce self-efficacy.
H2a: There is a positive relationship between system experience and e-commerce self-efficacy. System experience will positively influence the e-commerce self-efficacy. H2b: There is a positive relationship between system experience and the end-users' outcome expectation. System experience will positively influence the end-users' outcome expectation.
H3a: There is a positive relationship between e-commerce systems' ease of use and e-commerce self-efficacy. E-commerce systems' ease of use will positively influence the e-commerce self-efficacy. H3b: There is a positive relationship between e-commerce systems' ease of use and the end-users' outcome expectation. E-commerce systems' ease of use will positively influence the customers' outcome expectation.
H4: There is a positive relationship between self-esteem and the intention to use e-commerce systems. Self-esteem will positively influence the intention to use e-commerce systems.
H5: There is a negative relationship between customers' trait anxiety and e-commerce self-efficacy. Customers' trait anxiety will negatively influence the e-commerce self-efficacy.
H6a: There is a negative relationship between customers' technology anxiety and e-commerce self-efficacy. Customers' technology anxiety will negatively influence the e-commerce self-efficacy. H6b: There is a negative relationship between customers' technology anxiety and the intention to use e-commerce system. Customers' technology anxiety will negatively influence the intention to use e-commerce system.
H7: There is a positive relationship between general self-efficacy and e-commerce self-efficacy. GSE will positively influence the e-commerce self-efficacy.
H8a: There is a positive relationship between e-commerce self-efficacy and the end-users' outcome expectation. E-commerce self-efficacy will positively influence the end-users' outcome expectation. H8b: There is a negative relationship between e-commerce self-efficacy and customers' risk aversion. E-commerce self-efficacy will negatively influence the customers' risk aversion. H8c: There is a positive relationship between e-commerce self-efficacy and user trust. E-commerce self-efficacy will positively influence the users' trust. H8d: There is a positive relationship between e-commerce self-efficacy and the intention to use e-commerce systems. E-commerce self-efficacy will positively influence the intention to use e-commerce systems.

H9: There is a positive relationship between customers' outcome expectations and intention to use e-commerce systems. Customers' outcome expectations will positively influence the intention to use e-commerce systems.

H10: There is a negative relationship between customers' risk aversion and the intention to use e-commerce systems. Customers' risk aversion will negatively influence their usage of e-commerce systems.

H11: There is a positive relationship between users' trust and the intention to use e-commerce systems. Users' trust will positively influence their usage of e-commerce systems.

4.5 Summary and Conclusions

In Chapter 4, several theoretical perspectives have been presented through brief discussions, with the purpose of gaining deeper insights into individuals' response to new technologies and the related factors. These arguments included the theory of reasoned action and the technology acceptance model. The limitations of these theories have also been emphasised by examining the adoption and usage processes of computers, in that they failed to explain the cognitive factors influencing individuals' usage of the technology. These theories do not support an explicit explanation of how individuals' expectations of their capabilities influence their behaviour.

In this chapter, the research model derived from Social Cognitive Theory (Bandura, 1986) has also been presented. This model contains constructs such as trait anxiety, technology anxiety, general self-efficacy, e-commerce self-efficacy and outcome expectation, and other constructs that were taken from IS researches were included in the research model. The model also includes the concept of customers' risk aversion, which originated from the marketing research area, as it is very important to consider individuals' anxiety about new technology and its effect on customers' risk aversion. The more deeply this area is investigated, the more essential it is to connect the model in this study to the concept of customer trust. Therefore, the research area of "Marketing Information Systems" will be highly empowered through this study. The hypotheses to

be tested have been derived from the research model and prior empirical studies. The next chapter will examine the research design and methodology in addition to the conceptualisation and operationalisation of constructs.

CHAPTER 5.

THE METHODOLOGY USED FOR EMPIRICAL RESEARCH

5.1 INTRODUCTION

The previous chapter has discussed the conceptual base, study model and theories of the introduced research, with the intention of evaluating the construct and experimentally examining the hypotheses originating from the research model. The purpose of this chapter is to explain the methodology adopted for empirically assessing the hypotheses presented in the previous chapter. This includes a discussion of the empirical methodology, methods of data collection, sampling strategy and an outline of the analytical procedures. This chapter is divided into thirteen sections. The second section explains the research design. The research paradigm is explained in section three.

The quantitative methodology is explained in section four. The nature of this study is presented in section five. The unit of analysis is presented in section six. Section seven shows the time scope for this study. Data collection and the reduction of errors in the research are discussed in section eight. Section nine presents the differences among the concepts, operations and measures, and provides an example to confirm the idea. Developing the survey's scenario is discussed in section ten. The sampling strategy is presented in section eleven. Section twelve explains the importance of taking ethical issues into consideration in social research, and finally, in section thirteen, the conclusion is presented.

5.2 Research Design

Research design is described as “a plan and structure of investigation so conceived as to obtain answers to research questions” (Kerlinger, 1986, p. 280). In light of this definition, research designs can be pointed to as an overall method or plan of the research, allowing the researcher to solve research questions as precisely, objectively, realistically and cost-effectively as possible. These plans must be methodically and explicitly formulated and performed in order to produce empirical proof supporting the research problem (Kerlinger, 1986). This research study primarily focuses on the question: *what is the impact of self-efficacy on the usage of e-commerce systems?*

The efforts of Sekaran (1992) and Babbie (2004) were of great value in guiding and directing the phases of research design and methodology for the presented study (see Table 5.1), and a comprehensive discussion of these phases follows.

Table 5.1: General Aspects of Research Design And Methodology

Sections	Research Design	Methodology
5.3	Research Paradigm	Post-positivism
5.4	Research Approach	Quantitative-free Simulation
5.5	Nature of the Study	Exploratory, Explanatory
5.6	Unit of Analysis	Individuals
5.7	Time Horizon	One-shot (Cross-sectional)
5.8	Data-collection Methods	Personal Survey

5.3 Research Paradigm

Conventional social academics have claimed that the social world can be analysed and understood through science (Neuman, 2003). This social science should bring together a precise organised examination of the social world with logical thinking to produce new and useful information regarding human relations. This belief has been verified, as science is now the dominant approach to conceiving knowledge in the contemporary world. Social science research approaches are categorised in five main types; these types can be also perceived as research tradition, research program, or scientific

paradigm. The five approaches are: positivist (classical), the post-positivist (interpretive), the critical social science, the feminist and post-modern.

In order to understand the characteristics of reality, to recognise the connections among variables and to identify suitable techniques for performing a specific research, researchers need a group of “basic beliefs”, referred to as a paradigm (Guba and Lincoln, 1994). The positivism (classical) approach is strongly related to the scientific method and it requires researchers to be objective and impartial. This paradigm suggests that problem-solving should begin with formulating assumptions, which are then exposed to practical testing using quantitative methods (Buttery and Buttery, 1991). Quantitative methods, as confirmed by Guba and Lincoln (1994), offer objective results and an unmistakable understanding of reality.

As reality is believed to be computable with no errors in positivism (Sweeny, 2000), by means of precise and accurate measures (Neuman, 2003), it has been criticised by researchers, for it uses only theoretical laws and formulae that are not applicable to the real lives of individuals, thereby reducing people to statistics. In light of the preceding reasons, this approach has been found as inappropriate for use in this study, as the study discusses unpredictable elements in a social, complicated, actual life experience (Perry et al., 1997).

As positivism has been believed to have several weaknesses, another approach was developed to overcome them, post-positivism. This approach is frequently employed in social studies (Guba and Lincoln, 1994) and it suggests that despite the need to discover the existing real world, this world is separate from researchers and exposed to diverse perceptions (Easton, 1998). Perceptions as stated here are visualised as windows from which one can achieve a better picture of a specific reality, but not reality itself. Briefly, post-positivism encourages the utilisation of different measures and varying

observations, as each one of them suffers different types of errors and drawbacks. Later, triangulation is put into operation on these flawed sources of data, in order to obtain an enhanced picture of reality (Sweeney, 2000; Trochim, 2003).

Those who adopt this paradigm in their researches are more likely to lay emphasis on deductive logic in which research is affected by the theory indicated, mainly in the form of formal writing (Onwuegbuzie, 2002). This research adopts post-positivism, as emphasised through the presentation of various fallible perspectives, and at the same time recognising the possibility of bias (Trochim, 2003).

5.4 Quantitative Methodology

Generally, research methodologies present solutions to strategic decisions concerning the selection of data-gathering methods in addition to tactical decisions concerning balancing procedures and measurement, samples and data analysis (Zikmund, 2003).

Despite the fact that the concepts of methodology and paradigm are often used interchangeably, a methodology is generally perceived as a segment of a paradigm (Guba and Lincoln, 1994). Through this research we used quantitative methodology techniques to gather data intended for research problem examination. This segment will justify the usage of this methodology and explain it.

In a study by Neuman (2003), he argued that quantitative research employs a language of variables, theory, units of analysis and causal clarifications. The core idea of quantities theory relies on variables and relations existing among them, which is also the main objective of this research. Furthermore, quantitative methods provide tools for evaluating concepts, evaluating design stages, and dealing with sampling matters, which makes them very useful in conceiving the comprehensive preparation prior to data-

gathering and analysis. This approach exploits a deductive mode to investigate the relationships between variables as well.

This research combines both the post-positivism paradigm and quantitative methods in order to achieve a better understanding of the research problem and higher quality of the research outcomes. Post-positivism emphasises the impartiality of the researcher and recognises the likelihood of bias, while quantitative methods employ statistical measures and control procedures that reduce the bias degree and confused variables as much as possible (Emory and Cooper, 1991). Additionally, quantitative methods address largely many of the issues of trustworthiness, procedures, and the internal/external validity of measures (Guba and Lincoln, 1994).

This research intends to empirically test the relationships among the variables in the study model by means of a measurement procedure, which is a compound of the three aspects: conceptual, operational and empirical measures.

5.5 Nature of the Study

Social science research studies make use of three common natures of research, mainly exploratory, explanatory and descriptive studies (Sekaran, 1992; Babbie, 2004). An exploratory research is utilised to develop an initial understanding of the phenomena. Explanatory research is used to uncover and state relationships between various features of the phenomena. A descriptive study is conducted to describe an accurate measurement and statement of the characteristics of the phenomena.

The nature of this study is considered both exploratory and explanatory, as it investigates the social, emotional and individual variables that can describe consumers' behaviour in relation to the use of e-commerce systems.

5.6 Unit of Analysis

In a study by Babbie (2004), analysis units are composed of “those things that we examine in order to create summary descriptions of all such units and explain differences among them” (p. 95). These units are required to be suitably exemplified for the theoretical and practical operationalisation of the research, as the research results can become distorted, affecting by this the clarity and precision of conclusions (Babbie, 2004). Social research usually examines individuals, two-person interactions, groups or organisations, and social artifacts as analysis units (Sekaran, 1992; Babbie, 2004). Human behaviour, or to be precise, the actor or actors engaging, in behaviour towards an object and a location or environment should be carefully considered, because actors, behaviour and objects exist in frameworks (Ditsa, 2004).

Psychological issues like professed self-efficacy, anxiety, and outcome expectations are all investigated in this study as they can influence individuals’ attitudes towards utilising e-commerce.

To sum up, the unit of analysis in this study is an individual using the Internet to purchase a product or service.

5.7 Time Scope

Time exists among the most influential factors in social science research. Scientists can either choose between a *cross-sectional* or *longitudinal study’s* time horizons (Sekaran, 1992; Babbie, 2004). Researchers conducting a cross-sectional study allocate a limited duration (days, weeks, months) to gather all data needed for the study. This technique causes the unit of analysis to be examined at one point of time to answer the research question (Khalil and Elkordy, 2005). Therefore, *cross-sectional studies* are also termed *one-shot studies* as well (Sekaran, 1992). Conversely, *longitudinal studies* allocate a

longer frame of time to investigate the unit of analysis (Sekaran, 1992; Babbie, 2004). However, the many drawbacks associated with the use of longitudinal studies, such as the heavy burden of time and resources needed to accomplish them and unanticipated changes in the unit of analysis or the research environment, which can affect the generalisability of the research, produce a general avoidance of these studies (Babbie, 2004). Longitudinal studies generally attempt to predict behaviour; however, this study is focusing on explaining consumers' attitudes to the usage of electronic commerce, rather than forecasting it. For the reasons mentioned above, cross-sectional (one-shot) analysis is more appropriate for this study.

5.8 Data-collection Methods and Free Simulation Experiment

In order to test the hypotheses introduced in the research model, a method that engages individuals in a free simulation of real-life situations has been adopted. This approach can be of great assistance in the research, as it facilitates the observation of individuals' performance in very "reality-like" situations (Al Shibly, 2006; Starub et al., 2005). This method is described as "free", since the researcher attempts not to control any variables in the environment. In this research, the most valuable outcome of employing free simulation is the revitalisation of online shopping processes in the brains of participants as the elements of psychological reactions are summoned to the minds of involved individuals while they are experiencing the technology or performing a certain transaction. The main reason behind the selection of this methodology is that it can elucidate individuals' answers to the survey, based on the latest transaction they have performed. Techniques used in this study will produce higher accuracy of the information collected, as the situation is directly related to a real and recent situation

faced by participants, thus addressing the shortcomings in earlier studies (Kim and Kim, 2005).

There are many ways to conduct a survey: self-administered, face-to-face, questionnaires, focus groups, telephone surveys or home delivery survey are all valid methods to gather needed information (Babbie, 2004). Lately, the Internet has come onto the scene as a new way of surveying individuals (Sekaran, 2000). In order to understand and evaluate the suitability of each method for this survey, following is a brief explanation of each:

- Internet survey: as indicated by its name, this questionnaire is delivered by e-mail over the Internet to the respondents and explained in order for them to answer it.
- Mail questionnaire: as indicated by its name, this questionnaire is delivered to the respondents by mail and explained in order for them to answer it.
- Telephone questionnaires: questions and answers are verbally expressed and documented over the phone.
- Personal survey: means that the researcher will contact the participants face-to-face and explain the survey to them, in order for them to answer it. The quotas for respondents will be carried out later and will depend on the exact subject of the questionnaire and statistics meaningful for making conclusions that can be generalized to the greater population. The questionnaire contains the set of questions (open or multiple-choice), helps to collect information to prove or disprove hypotheses and to analyse society's opinions.

Table 5.2 clearly exhibits the relative advantages and disadvantages of these four main surveying methods.

Table 5.2 Comparing survey methods

	<i>Survey Methods</i>			
Dimensions	Internet	Mail	Telephone	Personal
Complex instrument	Poor	Poor	Good	Excellent
Control of collecting data environment	Poor	Poor	Fair	Excellent
Control of interview effects	Excellent	Excellent	Fair	Poor
Cost	Excellent	Fair	Good	Poor
Diversity of questions	Fair	Fair	Poor	Excellent
Follow-up	Poor	Excellent	Excellent	Poor
Geographically dispersed sample	Excellent	Excellent	Good	Poor
Item non-response	Poor	Poor	Excellent	Excellent
Interviewer probing and explanation	Poor	Poor	Good	Excellent
Obtaining sensitive information	Good	Good	Fair	Fair
Quantity of data	Fair	Fair	Good	Excellent
Respondent anonymity	Excellent	Excellent	Fair	Poor
Respondent cooperation	Poor	Poor	Good	Excellent
Opportunity to think about questions	Excellent	Excellent	Poor	Poor
Response rate	Fair	Fair	Poor	Good
Scheduling requirement	Excellent	Excellent	Fair	Poor
Speed	Excellent	Poor	Excellent	Fair
Total count of excellent rating	7	6	3	8

Source: synthesised by Al Shibly (2006) from: Cavana (2000), Sekaran (2000) and Fink (2006).

Personal surveys come first, as they are rated 8, next come Internet surveys, rated 7, then mail surveys, rated 6. Therefore, the decision was made for this study to take on

and perform personal surveys, to be used also as part of a free simulation experiment as well (refer to Chapter 5.8). This experiment involved participants in an un-administered session, logging on to a selected e-commerce website (Amazon.com), acting as if they were purchasing items online and then responding to the questionnaire. Such a design is considered suitable for usage in our study as it:

1. Provides simple access to popular e-commerce sites.
2. Effortlessly gives respondents real assessment cases (Al Shibly, 2006; Straub et al., 2005).

The usage of this study design has been noted in many researches, including the success of IS and the study of interactions of human and computers (Straub et al., 2005).

In the present study and as indicated previously, the main purpose of using this technique is to identify variables, outcome variables and existing relations between them.

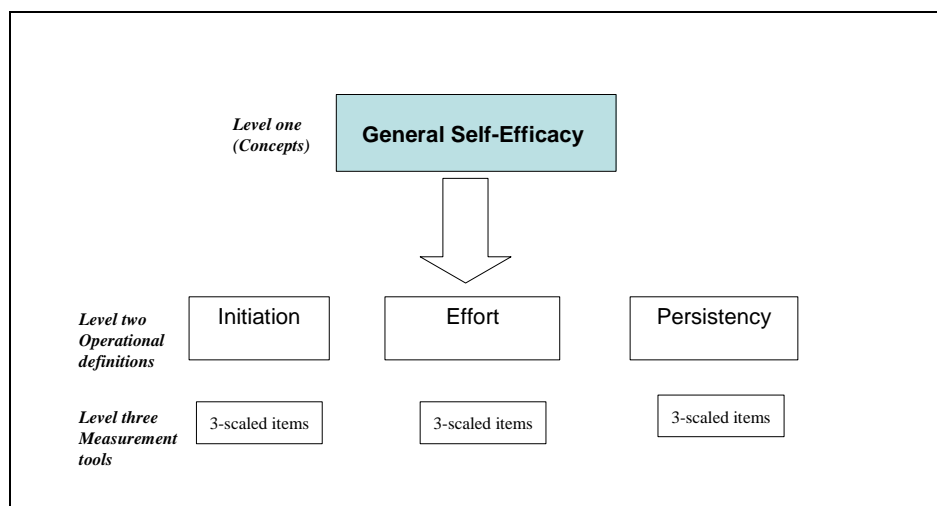
5.9 Conceptualisation, Operationalisation and Measures

Prior to the initiation of the data-gathering process, the researcher is expected to distinguish the concepts relevant to the problem (Davis and Cosenza, 1993; Zikmund, 2003; Neuman, 2003). In this section the difference between concepts, operations and measures will be identified; moreover, the association among them will be demonstrated through an example.

Constructs are defined as a widespread idea about a class of objects, attributes, occurrences, or processes, according to Zikmund (2003). Conceptualisation – as stated by Neuman (2003) – is the procedure of taking a construct and cultivating it by giving it a conceptual or theoretical definition. Both Zikmund and Neuman (2003) agreed that in

order to create a meaningful description for a concept, an operational definition is needed whereby actions or operations that are essential to measure it are identified. The languages of theory and empirical measures are equally important in operationalisation. The construct measurement process often starts with conceptualisation, followed by operationalisation and finally the use of measurement tools (Neuman, 2003). Figure 5.1 illustrates the connection between concepts, operation definitions, and measurement tools in this research; for example, general self-efficacy is the major concept and is personalised into three constructs, each measured using different numbers of scaled items.

Figure 5.1: The concept (construct) of general self-efficacy



Source: synthesised by the author.

5.10 Developing the Survey's Scenario

As this study sample consists mainly of university students who use Amazon.com for their common online purchases like university books. Mara (2000) showed that Amazon.com provides the best e-commerce experience in terms of selling online books, thus the popular site was identified by the researcher and his adviser as the best site on

which to operate the test²⁶. One scenario was given to students, whereby they were provided with the home URL of the website (www.amazon.com) and asked to act as if they wanted to purchase a book. As seen in Table 5.3, a scenario was developed regarding this purchase of a book, whereby participants accessed the site through their home PCs or laptops and experienced the procedures of buying, but without essentially fulfilling the transaction. Later, they were asked to answer the survey questions.

Table 5.3 The study scenario

Website	The Scenario
Amazon.com	Imagine that you are planning to purchase a book for your personal use. That book is not available at your local library, Use the electronic commerce website www.amazon.com to research possible book you would consider buying. Please DO NOT actually buy anything from the online store. You are only required to research the information available and see if you can find a book that you like. Once you have found a book that you are satisfied with, please fill out the following information.

5.11 Sampling Strategy

The most common type of sampling design in IS research is convenience sampling, as discussed by Pinsonneault and Kraemer (1993). However, they pointed out that expanding the sample to a larger population cannot be considered statically acceptable, as it does not involve randomly selected people of a true population. Conversely, a study by Price et al. (1995) argued that controlled number of homogenous participants can serve a broader application afterwards. Furthermore, a representative model can be better built in one study, using convenience sampling. Taking into consideration these contradictory theories, the suitability of using a subpopulation to represent the whole

²⁶ More information about Amazon.com has been discussed in page 36.

population (for example, using students to represent generalised tendencies) can only be determined through a methodical comparison of the sample to the full target (Suh, 2003; Gordon et al., 1986).

Specific to the current research, the population includes everyone who is over 18 years of age, with adequate experience in using the Internet, in addition to Internet-connected computers (Al Shiply, 2006). However, the researcher lacked the right to access reliable e-commerce client lists due to privacy policies, confidentiality laws and ethical concerns which complicated the process of recognising a good evocative sample. The second solution investigated by the researcher involved using a web-based survey, but this suggestion was discarded because of technical and procedural complexities.

Finally, the decision was made by the author and five academic experts from information systems and marketing, upon evaluating all available data-gathering techniques and sources. The best solution established was to obtain the sample from the university's student population. The variety of faculties and disciplines in which the students were studying provided different experience levels, in that marketing and information systems students have higher levels of system experience than those from the Arts faculty, which influences both the self-efficacy and anxiety for all the four groups.

Further reasons supporting the validity of selecting a sample of university students are:

- University students are major users of e-commerce systems.
- Many academics, in response to the continuous argument about using university students as a sample, have confirmed the validity of students as subjects (for example, Calder and Tybout, 1999; Chow, 1999).
- The [Graphic, Visualization & Usability Centre's](#) (GVU) 9th WWW User Survey established that the majority of online users are between 21 and 30 years old,

located generally in metropolitan cities. According to Forrester (2000), the largest portion of online shoppers are aged 16–22 and one third of them are anticipated to spend more than \$4.5 billion purchasing items online.

- The significance of a system experience (web experience) and perceived ease of use variables inside a model make a homogeneous population (for example, students of different majors and levels) very suitable as a sample (Lynch 1999),
- E-commerce users are generally more educated and web experienced than the average Australian citizen, as indicated by the Australian Bureau of Statistics (2002). This experience is a direct result of university requirements; for example, The University of Wollongong requires students to use the web for research and information exchange.
- Studies targeting Internet users have discovered that the online population is younger, more educated, and more wealthy than the general public (Bellman, Lohse and Johnson, 1999; Jupiter Communications, 1998 and 1999; Kehoe et al., 1999).

With the intention of increasing the possibility of standardising the manner in which people replied to the survey, the researcher employed a free simulation experiment setting, whereby financial matters caused no constraints.

5.11.1 Sample Size

Sample size is considered as one of the most important and serious issues of statistical analysis. Each statistical technique has a different minimum sample size (Hair et al., 1998) depending on the resource and statistical issue (Fink, 2006). Large populations require 100 participants at least, according to researchers (Hair et al., 1998), yet there is

no single criterion that dictates necessary sample size (Hair et al., 1998). In a study by Tabachnick and Fidell (1996), the number of free parameters is considered a good criterion for determining sample size, in that each estimated free construct should have at least 10 respondents. As this study contains 12 construct in the theorised model, it was felt that a sample of 120 would be sufficient.

The size of the model and estimation procedures are also key issues that influence the required sample size. In a fundamental modelling research study, the following two dimensions of model size influence the sample size (Chin et al., 2002):

- A. The reliant variable having the biggest number of free variables affecting it (that is, the largest structural path) in the structural model, or
- B. The scale or block with the biggest number of determining indicators in the measurement model.

Five to ten times of either (a) or (b) – whichever is greater – is believed to be adequate. A multiple of five is good but a multiple of ten is the most desirable threshold. The present study deals with 12 constructs; therefore, the minimum desired sample size for this study is 120. Oppenheim (1992) also recommends an overall minimum of 100 respondents.

In a study by Field (2005), he advises that a researcher should have 10 respondents for each item being investigated in a factor analysis and he suggests a sample size of $50 + 8K$ to be required for linear regression, where K is the number of predictors. By applying the second rule to the current model a sample of 146 will be needed.

Examining all above arguments, it is now clear that a sample of 100 is the minimum sample size desired, which indicates that a sample of 231 would be sufficient.

This study has essentially conducted factor analysis and partial least square (PLS) to the responses of the 231 participants, believing that a response of 42% was realisable, since a convenience sample was applied.

The convenience sample was mainly composed of students from the University of Wollongong.

5.12 Ethical Considerations

In a study by Neuman (2003), ethics are defined as what is or is not lawful to do, or what honest research procedures engage. This research has been designed to adhere to the ethical research guidelines as stated by the Human Research Ethics Committee (HREC) and approved by the Research and Higher Degree Committee of the University of Wollongong (UOW). Ethics approval must be obtained before such a study is performed. However, ethical dilemmas were not expected, due to the non-invasive type of information with which this research is dealing.

The completed questionnaires and all computer-based data were kept in a secured machine all through the study and, the completion of this study, all hard-copy data will be shredded.

Throughout the surveying, Zikmund's (2003) recommendations were followed, as respondents were supported and helped for any enquiry. Moreover, the researcher guaranteed to protect participants' privacy against falsification and abuse (Zikmund, 2003), through comprehensive clarification with regard to the intention of the survey and refraining from asking them to fill in their names or addresses. Any piece of information that can identify individuals was abandoned before moving to the subsequent analysis.

In conclusion, this questionnaire has conformed to the ethical guidelines of the University of Wollongong in all stages of its design and implementation. The research plan has also been approved by the university's Human Research Ethics Committee (see Appendices 2 and 3).

5.13 Conclusion

This chapter has explained the methodology used to test the research questions and hypotheses by illustrating the way in which the positivist paradigm harmonises with this research. Justification for using a quantitative method has also been offered in this chapter. Survey data was obtained in person from 231 university students, as this sample size was found appropriate to generalise the findings. The value of referring to the ethical concerns in all social studies has been analysed. Models and procedures should be differentiated from each other when employing a qualitative method. Concepts, procedures and measures used in this research and the questionnaire development method are elaborated in the next chapter.

CHAPTER 6.

IDENTIFICATION OF CONCEPTS AND MEASURES LEADING TO THE DEVELOPMENT OF THE QUESTIONNAIRE

6.1 Introduction

This chapter offers a description for the setting of constructs illustrated in Figure 4.1 in the study framework. It explains the way a harmonised scale with high inner stability and strength is created through the proper selection of elements for each construct. Wherever the usage of existing procedures or subset of items from the original scales were found achievable, these procedures were applied. The realism and suitability of the questionnaire presented in the study, in addition to the time estimated for its completion, were both guaranteed through pre-pilot and pilot testing conducted in the study.

This chapter is composed of eight sections, in which all constructs, processes and measures in this study are explained based on the literature evaluation. Each section deals with a specific aspect of the study. The second section deals with the process of the development of the questionnaire, whereby the concepts are defined, specified and refined. The third section addresses the initial reliability and face validity of the survey measures. The fourth section represents the pre-pilot test. The fifth section characterises the pilot test. The sixth section explains the survey questionnaire manuscript. The data analysis techniques are introduced in section seven. An overall summary of this chapter is presented in section eight.

6.2 Development of the Survey Instrument

In a study by Churchill (1979), the iterative manner to develop questionnaire items was suggested, and the author therefore developed a list of 73 candidate items to measure various constructs in this study. This has been accomplished through a literature review that focused on the constructs of the combined framework presented in Chapter 4. These constructs include: general self-efficacy, electronic commerce self-efficacy, user trust, personal innovation in information technology, management style, system experience, outcome expectation, e-commerce systems ease of use, trait anxiety, technology anxiety and risk aversion.

Theories presented in the study are examined to quantitatively examine the existence of any relationships between the several hypothesis-affecting factors and e-commerce utilisation through a specially designed instrument. This survey instrument requires a scale for every construct in this research model to be created. Scales that were formerly developed were directly embraced in the study; however, some constructs demanded that these measures be adjusted. Each element is calculated through the usage of a five-point Likert-type scale, varying from “strongly disagree” to “strongly agree”. Below is clarification of each of the measures used in the study.

Table 6.1 illustrates the five-point numerical scale used to collect almost all data from participants. It was selected for three main reasons. Firstly, as indicated by Morgan and Hunt (1994) it is broadly employed by researchers (Morgan and Hunt, 1994) and it provides participants with the ability to express a level of strength and emotions. Secondly, it facilitates an immediate evaluation of respondent answers (Luck and Rubin, 1987). Finally, it simplifies the managing and coding of answers in addition to allowing the suitable application of different statistical techniques (Luck and Rubin,

1987). Briefly, all details were given due attention when constructing measurement and scaling procedures for the questionnaire design process in this research.

Table 6.1: Five-point numerical scale

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Example B: I like shopping online.	1	2	3	4	5

The weighting scheme is kept constant throughout the survey in order to assist in deducing the outcomes of the questionnaire. The Likert scale is used with the intention of concentrating participants' thinking on the question itself; each answer has a corresponding code as follows: strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). This technique helps participants to easily identify their answers without having to write down the numbers that encode their responses (Wiersma, 2000). Throughout the process of developing a proper scale for the questionnaire, a practised statistician (SC)²⁷ assigned by the University of Wollongong (UOW) for research higher degree (RHD) students and several previous studies was consulted in order to guarantee the reliability and validity of the measurement scales. Findings of the reliability test measure of constructs and variables in the research are shown below in Table 4.2. Furthermore, the operationalisation of the social cognitive theory tool and the other tools that are selected for the present research has been elucidated in section 5.2.

²⁷ Qualified Statistician (SC) refers to a statistician appointed by the University of Wollongong (UOW) for research higher degree (RHD) students.

6.2.1 General Self-efficacy Scale

In a study by Bandura (1979, p. 79), self-efficacy has been described as one's belief in her/his ability to successfully accomplish a task or more. Initially, self-efficacy was viewed as a task-specific concept and therefore, many studies were performed accordingly. Later on, researchers started to explore self-efficacy as a global broad-spectrum concept referred to as general self-efficacy. Mercandante et al. (1982) led the way in the development of this concept. The self-efficacy scale was formed by Sherer and his colleagues to measure general self-efficacy scale expectations in educational/professional and social areas. However, a re-evaluation of this scale pointed out higher levels of complexity than those originally stated. It encapsulated traits like intensity, level and generality of efficacy; moreover, it showed suitable associations to other personality measures. In 1993 Steven Woodruff and James Cashman performed a study to assess the reliability and validity of the self-efficacy scale that was developed earlier by Sherer and colleagues. Results highlighted the probability that efficacy exists on three levels, a task-specific, domain, and general level. This definition offers a more comprehensive illustration of efficacy, which is as well better synchronised with the processes of the social cognitive theory. In 1998 a confirmatory factor analysis was conducted by Rudolf Bosscher and Johannes Smit on the professed three factors of the general self-efficacy scale to check whether these factors would appear. Results validated this model, which has been employed in the current research study.

The scales were confirmed to be consistent with Cronbach's alpha equal to 0.69 for the GSE-12 item scale, and for 0.64, 0.63 and 0.64 respectively for initiative, effort and persistence. Each of these three variables had its questions created as follows in table 6.2.

Table 6.2 Items measuring general self-efficacy

Items	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
GSE1: If something looks too complicated I will not even bother to try it.	1	2	3	4	5
GSE2: I avoid trying to learn new things when they look difficult.	1	2	3	4	5
GSE3: When trying to learn something new, I soon give up if I am not initially successful.	1	2	3	4	5
GSE4: When I make plans, I am certain I can make them work.	1	2	3	4	5
GSE5: If I can't do a job the first time, I keep trying until I can.	1	2	3	4	5
GSE6: When I have something unpleasant to do, I stick to it until I finish it.	1	2	3	4	5
GSE7: When I decide to do something, I go right to work on it.	1	2	3	4	5
GSE8: Failure just makes me try harder.	1	2	3	4	5
GSE9: When I set important goals for myself, I rarely achieve them.	1	2	3	4	5
GSE10: I do not seem capable of dealing with most problems that come up in my life.	1	2	3	4	5
GSE11: When unexpected problems occur, I don't handle them very well.	1	2	3	4	5
GSE12: I feel insecure about my ability to do things.	1	2	3	4	5

6.2.2 Electronic-commerce Self-efficacy Scale

The task-specific concept of computer self-efficacy (CSE) was defined by Marakas et al. (1998, p. 128) as “an individual’s perception of efficacy in performing specific computer-related tasks within the domain of general computing”. In another study, Bandura (1986) stated that the customisation of self-efficacy measures, according to the field being studied, enhances prediction. Research findings have validated this statement, as the estimated self-efficacy competence is most precise when realised by specific domain-related measures instead of general measures (Bandura 1989). Computer self-efficacy was defined similarly by Compeau and Higgins (1995) as one’s perception of her/his ability to use a computer. Systems’ usage and users’ learning curves are affected substantially by computer self-efficacy. Later, in 2000, Agarwal et al. expanded the existing perception of self-efficacy in the framework of computer software, whereby general CSE was distinguished from software-specific self-efficacy (SSE). SSE is defined as an individual’s feelings of self-efficacy in relation to using a specific software package. Earlier research on Internet self-efficacy and social cognitive theory provided a solid base for the development of general Internet self-efficacy and web-specific self-efficacy (Bandura, 1997). Internet self-efficacy can be measured by means of traits like the overall achievements and Internet utilisation generally (Hsu and Chiu 2004). Eastin and LaRose (2000) created an eight-item measure of Internet self-efficacy (ISE), but this measure suffered from a lack of items evaluating browsing, message exchange, query and search, and file transfer. Consequently, further attempts to create measures for ISE were initiated. In 2000 Joo et al. constructed a 13-item ISE scale to evaluate the professed capability of using the Internet. In 2001 Torkzadeh and Van Dyke proposed another instrument to assess Internet self-efficacy in terms of surfing/browsing, encryption/decryption, and system manipulation in a three-factor 17-

item approach. Nevertheless, all these instruments suffered from several inadequacies (Hsu and Chiu, 2004; Torkzadeh and Van Dyke, 2001): (a) the tool did not cover all features of worldwide web usage (for example, downloading software and positing to news groups, (b) some of the featured items were probably open to domains other than the Internet (for example, sending a fax), and (c) few features of Internet practice might have been signified to a higher extent on the scale than they should have been (for example, encryption/decryption of e-mail). Marakas et al. (1998) promoted more ‘task-specific’ measures of the computer self-efficacy construct. The present study employs the scale developed by Kim (2004) with modifications to measure the online shopping self-efficacy. Questions/statements were created for this scale as follows in Table 6.3:

Table 6.3 Items measuring electronic commerce self-efficacy

Items	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
ESE1: I am confident that I can obtain relevant information through online sources (e.g., online discussion groups, reputation sites, etc.) on the web vendors from whom I am planning to make online purchases.	1	2	3	4	5
ESE2: I am confident that I am usually able to purchase exactly the item that I want from web vendors.	1	2	3	4	5
ESE3: I am confident that, in case my order does not come through in a satisfactory manner, I am able to take care of the problem(s) on my own.	1	2	3	4	5
ESE4: I am confident that I am able to find a trustworthy web vendor based on ratings (e.g., the number of the stars or the smiley faces) provided by other consumers.	1	2	3	4	5
ESE5: I am confident that, in case the merchandise I have purchased online turns out to be defective, I am able to return it without any problems.	1	2	3	4	5
ESE6: I am confident that, if the web vendor I made an online purchase from would not take back a defective product, I am able to solve the problem through the assistance of a third party (e.g., friends, better business bureaus, or relevant governmental agencies).	1	2	3	4	5

6.2.3 Outcome Expectation Scale

Henry and Stone (1995) measured outcome expectation by five questionnaire items and had a shared variance of 66%. The scales were found to be reliable with Cronbach's alpha equal to 0.90. An 11-item measure of outcome expectations was developed based on a review of existing measures in the IS literature by Compeau and Higgins (1995). These 11 items have been adapted from Davis' (1989) measure of usefulness, which deals primarily with outcome expectations. Similarly, Pavri's (1988) beliefs construct, and three of Thompson et al.'s (1991) constructs reflect the expected consequences of using computers. The measure presented a variety of outcomes that might be associated with computer use, including increased productivity, decreased reliance on clerical support, enhanced quality of task output, feelings of accomplishment, and enhanced status. Respondents were asked to indicate, on a five-point scale, how likely they thought it was that each of these outcomes would result from their use of technology.

For e-commerce outcome expectation, this study has adapted the scale measurement from different studies. The measurements were used by Davis (1989) for perceived usefulness, Thompson et al.'s (1991) constructs reflect the expected consequences of using computers, Henry and Stone (1995) measured outcome expectation by five questionnaire items, and Compeau and Higgins' (1995) 11 items measured for computer outcome expectation. These 12 items were adapted for this study.

The statements presented for this scale follow in Table 6.4:

Table 6.4 **Items measuring outcome expectation**

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
OUE1: In general, I find that buying via e-commerce increases my confidence.	1	2	3	4	5
OUE2: In general, I find that buying via e-commerce assists me to find the best product (e.g., in terms of quality and price).	1	2	3	4	5
OUE3: In general, I find that buying via e-commerce makes it easier for me to get information about the products (through easy search tool).	1	2	3	4	5
OUE4: In general, I find that buying via e-commerce saves time.	1	2	3	4	5
OUE5: In general, I find that It is more flexible to buy via e-commerce (e.g., I can buy at any time, 24 hours a day/360 days a year).	1	2	3	4	5
OUE6: In general, I find that buying via e-commerce opens more choices for different products.	1	2	3	4	5
OUE7: In general, I find that buying via e-commerce enhances my success.	1	2	3	4	5
OUE8: In general, I find that buying via e-commerce makes me control the interaction (the web vendor did not have any effect on my decision).	1	2	3	4	5
OUE9: In general, I find that buying via e-commerce is useful.	1	2	3	4	5
OUE10: In general, I find that buying via e-commerce makes me to feel superior to my peers.	1	2	3	4	5
OUE11: In general, I find that buying via e-commerce makes me less dependent on shopkeepers.	1	2	3	4	5

6.2.4 Self-esteem Scale

Rosenberg (1965) offered a scale to assess self-esteem, designed as a five-point Likert scale varying from “strongly agree” (1) to “strongly disagree” (5). This scale has gained recognition for many reasons, such as its suitable length and common utilisation, in addition to its soundness and dependability, which have been confirmed through many earlier research papers (Anderson, 1993).

In 1986, Ellis and Taylor confirmed that this scale of self-esteem has a coefficient alpha of .86 in an experiment on 86 college business students from the USA. The statements presented for this scale follow in Table 6.5:

Table 6.5 Items measuring self-esteem

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SE1: I always feel like a failure	1	2	3	4	5
SE2: I take a positive attitude toward myself.	1	2	3	4	5
SE3: On the whole I am satisfied with myself.	1	2	3	4	5
SE4: I certainly feel useless at times.	1	2	3	4	5

6.2.5 System Ease of Use Scale

For system ease of use, the scale measurement has been adapted from different studies. The scales used by Henry and Stone (1995) were found to be reliable, with Cronbach’s alpha equal to 0.87. This scale has been adapted for the current study. The statements presented for this scale follow in Table 6.6:

Table 6.6 Items measuring system ease of use

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
EU1: I am often confused when I buy via e-commerce.	1	2	3	4	5
EU2: I make errors frequently when buying via e-commerce.	1	2	3	4	5
EU3: Buying via e-commerce requires mental effort.	1	2	3	4	5
EU4: I find it easy to recover from errors encountered while buying via e-commerce.	1	2	3	4	5
EU5: The e-commerce system is easy to use.	1	2	3	4	5

6.2.6 System Experience Scale

The system experience scale was adapted from Raman and Leckenby's (1998) study.

The scale was formed using four questionnaire items (each with five-point summated scales). The questions posed for this scale follow in Table 6.7:

Table 6.7 Items measuring system experience

Items	Extremely low	Low	Moderate	High	Extremely high
EXP1: How familiar are you with the procedure of buying online?	1	2	3	4	5
EXP2: How would you rate your knowledge about buying online?	1	2	3	4	5
EXP3: How confident are you with your ability to buy online?	1	2	3	4	5
EXP4: How do you rate your experience level of buying online?	1	2	3	4	5

6.2.7 Personal Innovation in Information Technology Scale

The scale for personal innovation in information technology was measured using four items developed by Agarwal and Prasad (1998). In a recent study of cognitive

absorption and technology acceptance, Agarwal and Karahanna (2000) used these items, with Cronbach's alpha equal to 0.87. Thatcher and Perrewé (2002) used these items to measure personal innovation in information technology; the current study has adopted these items; the scales were found to be reliable, with composite reliability of 0.81. The statements presented for this scale follow in Table 6.8:

Table 6.8 Items measuring personal innovation in information technology

Items	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
PIIS1: If I heard about new information technology, I would look for ways to experiment with it.	1	2	3	4	5
PIIS2: Among my peers, I am usually the first to try new information technologies.	1	2	3	4	5
PIIS3: In general, I am hesitant to try out new information technologies.	1	2	3	4	5
PIIS4: I like to experiment with new information technologies.	1	2	3	4	5

6.2.8 Trait Anxiety Scale

The trait anxiety scale was measured using four items from Lehrer and Woolfolk (1982). The current study has used the same items used by Thatcher and Perrewé (2002). The scales were found to be reliable, with composite reliability of 0.88. The statements presented for this scale follow in Table 6.9:

Table 6.9 Items measuring trait anxiety

Items	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
TA1: I picture some future hardship.	1	2	3	4	5
TA2: I can't get some thoughts out of my mind.	1	2	3	4	5
TA3: I keep busy to avoid uncomfortable thoughts.	1	2	3	4	5
TA4: I have to be careful not to let my real feelings show.	1	2	3	4	5

6.2.9 Technology Anxiety Scale

The technology anxiety scale was measured using four items drawn from the computer anxiety rating scale (Heinssen et al., 1987). Compeau and Higgins (1995b, 1999) used these four items to measure computer anxiety, identifying these items as the best items capturing the feeling of anxiety associated with computer use (Thatcher and Perrewe, 2002), Compeau and her colleagues reported composite reliability variations from 0.87 (Compeau and Higgins, 1995b) to 0.92 (Compeau et al., 1999). This study has adapted the same scale used by Thatcher and Perrewe's (2002) study; the composite reliability was 0.94. The statements presented for this scale follow in Table 6.10:

Table 6.10 Items measuring technology anxiety

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
TE-A1: I feel worried about using the e-commerce technology to buy products.	1	2	3	4	5
TE-A2: I am afraid to hit the wrong key, which could cause a problem to my e-commerce transaction.	1	2	3	4	5
TE-A3: I hesitate to use e-commerce technology for fear of making mistakes that cannot be corrected.	1	2	3	4	5
TE-A4: E-commerce technology is a bit frightening.	1	2	3	4	5
TEA-5: E-commerce technology is a bit worrying.	1	2	3	4	5

6.2.10 User Trust Scale

The scale to measure user trust was assessed by using items adapted from Kim (2004); whose scale was adapted from previous studies on online transactions (Gefen, 2000; Jawenpaa et al., 2000). The scale was found to be reliable, with Cronbach's alpha equal to 0.90 for Gefen's (2000) study. The statements presented for this scale follow in Table 6.11:

Table 6.11 Items measuring user trust

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
UT1: In general, The e-commerce websites are trustworthy.	1	2	3	4	5
UT2: In general, The e-commerce website vendor gives the impression that it keeps promises and commitments.	1	2	3	4	5
PT3: In general, The e-commerce website vendor has little concern for its customers.	1	2	3	4	5
UT4: In general, I DO NOT trust the purchasing process on the website as much as I trust traditional purchasing processes (i.e., the local stores).	1	2	3	4	5
UT5: In general, The e-commerce website knows about the items that it deals with (efficient website).	1	2	3	4	5
UT6: The e-commerce website knows how to provide excellent service.	1	2	3	4	5

6.2.11 Risk Aversion Scale

Risk aversion reflects one's general tendency to avoid uncertainty (Hofstede, 1980). Hofstede developed a set of measurements for uncertainty avoidance. The measures are more related to people's behaviour in an organisational context, and thus are not directly applicable to the consumers' general uncertainty avoidance pertaining to purchases (Bao et al., 2003). This study has adopted the scale used by Bao et al. (2003); the scale was formed from three items, and the reliability for the scale was 0.67. The statements presented for this scale follow in Table 6.12:

Table 6.12 Items measuring risk aversion

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
RA1: I avoid buying via the web because it has more product risk (not working, defective product), when compared with traditional ways of shopping.	1	2	3	4	5
RA2: I avoid buying via the web because it has financial risks (fraud, hard to return), compared with traditional methods.	1	2	3	4	5
RA3: I avoid buying via the web because my chance to gain good bargains would be limited.	1	2	3	4	5
RA4: I avoid buying via the web because I would rather stick with the way I am familiar with (traditional way).	1	2	3	4	5
RA5: I avoid buying via the web because I never use something I don't know much about.	1	2	3	4	5
RA6: I always avoid taking risks.	1	2	3	4	5

6.2.12 Intention to Use the E-commerce Technology Scale

As a dependent variable, purchase intention refers to the degree to which a consumer intends to use e-commerce technology for buying her/his products. Gefen (2000) used three items to measure consumer intention to buy from a certain website; the Cronbach's alpha was equal to 0.81. Kim (2004) adapted that scale to his study, and the current study has used Kim's (2004) scale with minor adaptations, The statements presented for this scale follow in Table 6.13.

Table 6.13 Items measuring intention to use e-commerce

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
INI1: I am willing to purchase my product(s) using e-commerce.	1	2	3	4	5
INI2: I am willing to recommend using e-commerce to my friends.	1	2	3	4	5
INI3: I am willing to make another purchase using the e-commerce technology if I found the product I am looking for.	1	2	3	4	5
INI4: I am hesitant to purchase any product(s) using e-commerce technology.	1	2	3	4	5

6.3 Initial Reliability and Face Validity

To prepare the data for the final draft, the initial reliability and face validity were used.

Reliability is concerned with the stability and consistency of measurement; a reliable measure is one which provides consistent results and is relatively free from error

Face validity was used to investigate the instrument after the pilot survey; face validity is concerned with the degree to which the scale items represent the domain of the concept under study. According to Sekaran (2000), face validity is a basic index of content validity, whereby items that are supposed to measure a concept, do, on the face of it, appear to be measuring the concept. Experts in the field were consulted by the author to advise on whether scale items have face validity (Straub et al., 2005; Al Shibly, 2006).

6.4 The Pre-pilot Test

The draft questionnaire was evaluated by a panel of five academics in the fields of marketing and information systems. Afterwards, the five academics were consulted regarding where they commented on the questionnaire and made comments concerning

its ease of use, expected effectiveness, unambiguousness, expressiveness, content validity (that is, that the scale items appeared to measure what they were intended to measure) and the general appropriateness. Feedback was very helpful in determining what changes to apply (for example, changes to individual questions/statements and to the instructions for respondents, such as replacing the word “uncertain” in the five-point Likert scale to “neutral” with the intention of reducing participants’ tendency to frequently make that choice). An extra question was added regarding the ethnic background of respondents, in order to discover any relationship between the ethnic background and e-commerce self-efficacy (see Table 6.2).

Figure 6.1: Example of ethnic background question²⁸

What is your ethnic background? ☐ Australian ☐ Asian

☐ Middle-eastern ☐ Others
(please specify)

Subsequent to these modifications, the questionnaire was transmitted to the next phase of pilot testing. The draft questionnaire, according to expert assessment, was verified to have a satisfactory level of content or face validity for the measurement scale.

6.5 Pilot Testing

Earlier, before handing the questionnaire measures to participants, a group of 18 undergraduate and postgraduate students at the University of Wollongong were used to investigate the following points:

- The time needed to finish the questionnaire
- The face validity and readability of the questionnaire

²⁸ Demographic factors were included after the pre-pilot test which indicated they may have a significant impact on outcomes.

- The existence of any problems or complicated parts of the questionnaire
- Matters of categorisation, age, ethnicity, etc. were considered, in order to guarantee full coverage of the target population.

Table 6.14 shows the demographic data of the pilot study:

Table 6.14: Demographic data of pilot study

Variable	Valid	Frequency	Percentage %
Gender	Male	12	66.6
	Female	6	33.4
Age	18–24	8	44.4
	25–31	4	22.2
	32–38	3	16.6
	39–44	2	11.1
	Over45	1	5.5
Education Level	Undergraduate	8	44.4
	Postgraduate	10	55.6
Ethnic Background	Australian	8	44.4
	Asian	6	33.4
	Middle-eastern	2	11.1
	Others	2	11.1
Total		18	100.0%

Each student's beginning and ending times were recorded in order to calculate the time needed to complete the questionnaire. Then, once students had completed the questionnaire, they were asked to answer the following four questions:

- Did you face any difficulties in completing the questionnaire? Specify ...
- Were the instructions given to you (oral and written) brief and comprehensible?
- Did you stumble upon any difficulty while answering any section or individual question?

- (d) Are there any comments you'd like to add which can help to improve this questionnaire?

Findings and feedback at the end of this pilot study indicated that this questionnaire required 25 minutes for completion. Extra modifications were made to the questions, including rewording and clarification, for example, questions about willingness to buy online were changed from "I am likely to purchase" to "I am willing to buy" and "reluctant" was changed to "hesitant" (see Appendix B).

Once face validity was established and pilot testing was completed, the surveys were administered to students. This next section describes the data collection and processing procedures that were used in this study.

6.6 Survey Questionnaire

After conducting the pilot testing, an improved four-page version of the questionnaire was finally applied. This questionnaire contained seventy-nine questions/statements structured in six sections; seventy-four of these questions required an answer on the scale and six did not. Each question/statement characterised a specific element of the research model and each was chosen for its hypothetical significance and possible relevance to the actual exercise.

The Statistical Consultation Service in the University of Wollongong was contacted frequently to confirm the statistical validity of the study model, hypotheses and questionnaire.

The Questionnaire:

The first page (covering letter): the A-4 sized page printed on the University letterhead presents the signatures of both the main supervisor of this PhD research and

the PhD candidate. A description of the study and its purpose is also provided on this page, in addition to a statement that assures respondents of their privacy. A declaration of the review method applied by the Human Research Ethics Committee (HREC) is included on this page as well, as required by the University of Wollongong, according to the Australian law. Finally, a contact number is provided, in the case that any participant had concerns or questions about the study (see Appendix A).

The second page: the scenario for the questionnaire is explained in plain English. This explanation helps the researcher and reader to call to mind the circumstances that can influence participants' choice to pay money for an online product (see Appendix B).

The third page: offers a detailed description of how respondents should administer this questionnaire, by illustrating two examples as follows: circle the number that communicates your answer, or tick the square that communicates your answer. Then respondents are thanked for taking the time to answer the survey and provided with a definition of e-commerce (see Appendix B).

Part 1: questions requiring answers on the scale: (see Appendix B).

The fourth page: section one is mainly focused on general self-efficacy aspects while section two addresses the elements of e-commerce self-efficacy.

The fifth page: contains four sections, each exploring a different dimension of the concept. Section one explores the outcome expectation dimension, section two is dedicated ease of use of the web. Section three evaluates personal attitudes towards using new technology and finally, section four concerns the broad perception of anxiety.

The sixth page: section one on the sixth page concerns the way respondents view technology anxiety. Section two measures the aspect of trust, section three is about risk aversion and section four investigates participants' willing to shop online.

The seventh page: consists of two sections; the first discusses the construct of self-esteem and the second concerns web experience.

Part 2: demographic questions

On the seventh page:

Question 1: asks whether the participant is male or female.

Question 2: queries participants' level of education:

1. Undergraduate
2. Postgraduate
3. Others.

Question 3: requires respondents to define their age group:

1. 18–24
2. 25–31
3. 32–38
4. 39–44
5. over 45

Question 4: is directed to identifying the respondents' field of study:

1. Commerce
2. Education
3. Informatics
4. Others.

Question 5: requests the weekly income:

1. Less than \$100
2. \$101–200
3. \$201–400
4. \$401–600
5. more than \$600.

Question 6: investigates the ethnic backgrounds of participants:

1. Australian
2. Asian
3. Middle-eastern
4. Others.

Finally, and on the final page of questionnaire, thanks are expressed to the respondents for the great value they have added to this study.

Demographic information is gathered from respondents at the end of the questionnaire, in order to assist them move directly to answering questions that affect the core objective of the survey as soon as they have read the covering letter (Babbie, 2001; Wiersma, 2000).

For a copy of the survey questionnaire, please refer to Appendix B.

Dillman, in 1978, developed the Total Design Methods (TDM), which are a collection of survey procedures that are used to accomplish higher response levels.

The TDM are mainly composed of two procedures:

1. Distinguishing and planning all survey aspects that can influence participants, in an approach that increases reply rates.
2. Arranging efforts in the best way possible to guarantee the full achievement of design goals.

This survey has been designed and implemented according to very precise guiding principles. Through the design phase, every little detail (such as the handling of paper, fonts, order of questions, page format, etc.) has been governed by these rules. Other details like the content and the individualisation of the covering letter, the signing of the latter, and the follow-up appeals to non-respondents were addressed through the implementation. Then, all results were gathered and secured in the researcher's office, located in the Commerce Research Centre, Faculty of Commerce. Raw data and contact information are kept independently in a university-based computer, protected with a password. Only researchers are granted access to these machines. Upon the completion of this study, all hard copy data will be shredded, while the data files will be kept available for a further five years.

6.7 Conclusion

This chapter has provided an overview and explanation of the concepts and their measures represented in Figure 4.1. There are twelve concepts, with seventy-four items.

These are:

The three technology variables:

- system ease of use, with five items.
- system experience scale, with five items.

- personal innovation in information technology, with four items.

The three psychological variables:

- trait anxiety scale, with four items.
- Technology anxiety scale, with five items.
- The self-esteem scale, with four items.

The three mediating variables (perceived self-efficacy):

- General self-efficacy, with 12 items.
- The electronic-commerce self-efficacy, with eight items.
- The outcome expectation scale, with eleven items.

The two moderating variables:

- user trust, with six items.
- risk aversion with six items.

The dependent variable:

- intention to use e-commerce, with four items.

The questionnaire underwent some minor changes according to the pilot testing results; the testing indicated a total of 25 minutes required to fully answer the questionnaire.

The next chapter focuses on the analysis of the main survey.

CHAPTER 7.

SURVEY DATA ANALYSIS

7.1 Introduction

The previous chapter provided a comprehensive explanation of the methodology used to gather information in this study. Methods used in the pre-screening of data besides the measures employed in the study are discussed in this current chapter. Processes applied through data-recording, coding and filtering are described, in the second section, as data preparation. The third section introduces the respondents' demographics. The extensiveness and soundness of scales, along with the reliability-testing techniques applied to the study scale items are all presented in the fourth section; the outcomes are communicated in the fifth section.

The sixth section provides the conclusive form of the construct features and measurement scales produced from the instrument-testing, and the chapter's conclusion is presented in the closing section.

7.2 Data preparation

The process of preparing data entails coding data entry into a database, data-filtering and considering unanswered questions (Fink, 2006).

In the initial process, this research's questions were entirely coded. Immediate visual assessment was performed on all of the unprocessed data when collected. Each data set was numbered as questionnaires were handed in by respondents and then monitored to guarantee its comprehensiveness and clarity. Moreover, the researcher verified whether the questionnaires were answered by appropriate participants or not by examining their

answers. For instance if a respondent answered all questions similarly, then s/he was considered ineligible. This questionnaire was afterwards analysed by being inserted in the statistical package SPSS 15.0 for Windows, along the following lines.

1. Inverse marks corresponded to answers in the negative.
2. The existence of any coding error through the process of data entry was investigated by the researcher and one impartial assistant.

Furthermore, an additional two tests of data recording accuracy were performed. While the first test was an arbitrary test of code, the second focused on the manual assessment of cases. SPSS was used to calculate frequencies for every variable and to check for absent data and outlier answers.

Data resulting from the survey was statistically studied via SPSS™ (version 15.0) and PLS Graph (version 3.00). Five hundred participants took part in the survey in the UOW classes, however, 14 questionnaires were excluded due to the significant number of unanswered questions. Finally, 321 questionnaires were judged as eligible and suitable for analysis. The buying simulation²⁹, in which the respondents previously participated, produced a comparatively high total response rate (46%). The standard error was computed for this study based on the total number of questionnaires and

eligible ones as follows: $\sqrt{\frac{500}{231}} = 2.16$. Despite the fact that the standard error is larger than the estimated sample calculations presented in Chapter Five, the size of the sample was found to be satisfactory to illustrate both the *factor analysis and partial³⁰ least square (PLS) performed*.

²⁹ This process has been explained in Chapter 5.

³⁰ PLS is used in the next chapter.

7.2.1 Coding of Measurement Scales for E-commerce Self-efficacy Model

This section describes how the measurement scale was coded in this research. These scales are illustrated in Table 7.1 as they appear in an outline instrument. 71 scale items were implemented in the survey as follows: general self-efficacy (12 items), e-commerce self-efficacy (6 items), outcome expectation (11 items), ease of use scale (4 items), personal innovation in information technology (5 items), trait anxiety (4 items), technology anxiety (5 items), consumer trust scale (6 items), risk aversion (6 items), self-esteem (4 items), experience (4 items), intention to use e-commerce scale (4 items). The way in which the measurement scale is coded for the e-commerce self-efficacy construct is revealed in Table 7.1.

Table 7.1: Coding of measurement scale for e-commerce self-efficacy model

Construct	Code	Statement
General self-efficacy - GSE	GSE1	If something looks too complicated I will not even bother to try it.
	GSE2	I avoid trying to learn new things when they look difficult.
	GSE3	When trying to learn something new, I soon give up if I am not initially successful.
	GSE4	When I make a plan, I am certain I can make it work.
	GSE5	If I can't do a job the first time, I keep trying until I can.
	GSE6	When I have something unpleasant to do, I stick to it until I finish it.
	GSE7	When I decide to do something, I go right to work on it.
	GSE8	Failure just makes me try harder.
	GSE9	When I set important goals for myself, I rarely achieve them.
	GSE10	I do not seem capable of dealing with most problems that come up in my life.
	GSE11	When unexpected problems occur, I don't handle them very well.
	GSE12	I feel insecure about my ability to do things.

<i>Electronic-commerce self-efficacy – ESE</i>	ESE1	I am confident that I can obtain relevant information via online sources (e.g., online discussion groups, reputation sites, etc) on the web vendors from whom I am planning to make online purchases.
	ESE2	I am confident that I am usually able to purchase exactly the item that I want from web vendors.
	ESE3	I am confident that, in case my order does not come through in a satisfactory manner, I am able to take care of the problem(s) on my own.
	ESE4	I am confident that I am able to find a trustworthy web vendors based on ratings (e.g., the number of the stars or the smiley faces) provided by other consumers.
	ESE5	I am confident that, in case the product I have purchased online turns out to be not working, I am able to return it without any problems.
	ESE6	I am confident that, if the web vendor I made an online purchase from would not take back a faulty product, I am able to solve the problem through the assistance of a third party (e.g., friends, better business bureaus, or relevant
<i>Outcome expectation – OUE</i>	OUE1	In general, I find that buying via e-commerce increases my confidence.
	OUE2	In general, I find that buying via e-commerce assists me to find the best product (e.g., in terms of quality and price).
	OUE3	In general, I find that buying via e-commerce makes it easier for me to get information about the products (through easy search tool).
	OUE4	In general, I find that buying via e-commerce saves time.
	OUE5	In general, I find that it is more flexible to buy via e-commerce (e.g., I can buy any time, 24 hours a day/365 days a year).
	OUE6	In general, I find that buying via e-commerce opens more choices for different products.
	OUE7	In general, I find that buying via e-commerce enhances my success.
	OUE8	In general, I find that buying via e-commerce makes me control the interaction (the web vendor did not have any effect on my decision).
	OUE9	In general, I find that buying via e-commerce is useful.
	OUE10	In general, I find that buying via e-commerce makes me feel superior to my peers.
	OUE11	In general, I find that buying via e-commerce makes me less dependent on shopkeepers.

<i>Ease of use – EU</i>	EU1	I am often confused when I buy via e-commerce.
	EU2	I make errors frequently when buying via e-commerce.
	EU3	Buying via e-commerce requires mental effort.
	EU4	I find it easy to recover from errors encountered while buying via e-commerce.
	EU5	The e-commerce website is easy to use.
<i>System experience – EXP</i>	EXP1	How familiar are you with the procedure of buying online?
	EXP2	How would you rate your knowledge about buying online?
	EXP3	How confident are you with your ability to buy online?
	EXP4	How do you rate your experience level of buying online?
<i>Personal attitude toward new information technology.</i>	PIIT1	If I heard about new information technology, I would look for ways to experiment with it.
	PIIT2	Among my peers, I am usually the first to try new information technologies.
	PIIT3	In general, I am hesitant to try new information technology.
	PIIT4	I like to experiment with new information technology.
<i>Trait anxiety – TA</i>	TA1	I expect future hardship.
	TA2	I can't get some thoughts out of my mind.
	TA3	I keep busy to avoid uncomfortable thoughts.
	TA4	I have to be careful not to let my real feelings show.
<i>Technology anxiety</i>	TE-A1	I feel worried about using e-commerce technology to buy products.
	TE-A2	I am afraid to hit the wrong key, which could cause a problem for my e-commerce transaction.
	TE-A3	I hesitate to use e-commerce technology for fear of making mistakes that cannot be corrected.
	TE-A4	E-commerce technology is a bit frightening.
	TE-A5	E-commerce technology is a bit worrying.
<i>Self-esteem – SE</i>	SE1	I always feel like a failure.
	SE2	I take a positive attitude toward myself.
	SE3	On the whole I am satisfied with myself.
	SE4	I certainly feel useless at times.
<i>User trust – UT</i>	UT1	In general, the e-commerce websites are trustworthy.
	UT2	In general, the e-commerce website vendor gives the impression that it keeps promises and commitments.

	UT3	In general, the e-commerce website vendor has little concern for its customers.
	UT4	In general, I DO NOT trust the purchasing process in the website as much as I trust traditional purchasing process (i.e., the local stores).
	UT5	In general, The e-commerce website knows about the items that it deals with (efficient website).
	UT6	The e-commerce website knows how to provide excellent service.
<i>Risk aversion – RA</i>	RA1	I avoid buying via the web because it has more product risk (not working, defective products) when compared with traditional ways of shopping.
	RA2	I avoid buying via the web because it has financial risks (fraud, hard to return) compared with traditional methods.
	RA3	I avoid buying via the web because my chance to gain good bargains would be limited.
	RA4	I avoid buying via the web because I would rather stick with the way I am familiar with (traditional way).
	RA5	I avoid buying via the web because I never use something I don't know much about.
	RA6	I always avoid taking risks.
<i>Intention to use e-commerce – INI</i>	INI1	I am willing to purchase my product(s) using e-commerce.
	INI2	I am willing to recommend using e-commerce to my friends.
	INI3	I am willing to make another purchase using the e-commerce technology if I find the product I am looking for.
	INI4	I am hesitant to purchase any product(s) using the e-commerce technology.

7.3 Descriptive Statistics of the Participants³¹

Demographic aspects such as age, gender and the educational level of the questionnaire participants are discussed in this section (Francis, 2004). These demographic figures were examined and then summed up in Table 7.2, in order to guarantee that the criteria recognised earlier are acknowledged by clearly illustrating the participants' traits.

³¹ The mean and standard deviation for each item (73 items) are shown in Appendix D.

Table 7.2: Participant characteristics

Parameter		Total	
	Age Group	Frequency	Percentage
Age	18–24	145	62.8
	25–31	49	21.2
	32–38	21	9.1
	39–44	14	6.0
	45 and over	2	0.9
Gender	Male	120	51.9
	Female	111	48.1
Student status	Undergraduate	75	32.4
	Postgraduate	156	67.6

Only 231 of the 246 responses resulting from the 500 survey papers given out to students for the research were found to be useful (see Table 7.1). One hundred and twenty males participated in this survey, which represents 51.9% of the total respondents, while females (111) comprised the remaining 48.1%. As for age groups, the 18–24 year group comes first as a modal group, with 62.8% (145 respondents). Subsequently, the 25–31 group is represented by 21.2% of the total sample, with 49 respondents. Above 32 years is the final group in the set, scoring 15.1% (37 respondents). Examining the level of education results revealed that 75 respondents (32.4%) were undergraduate students, whereas 156 of them (67.6%) were postgraduate students.

7.4 Descriptive Analysis

This section aims to demonstrate the relation between the research demographic factors (gender, age group, level of study, level of Income and nationality) and the main variables on the research e-commerce model (e-commerce self-efficacy, system ease of use, technology anxiety, perception trust, risk aversion, and intention to use e-commerce).

7.4.1 Gender and the Main Research Variables³²

Table 7.3 shows that there is a significant relationship between gender and all six main research variables (e-commerce self-efficacy, system ease of use, technology anxiety, perception trust, risk aversion, and intention to use e-commerce). The table shows that e-commerce self-efficacy, system ease of use, perception trust, and intention to use e-commerce is higher for males than females (there is significant difference: $p \leq .05$, $**p \leq .01$, $***p \leq .001$).

Furthermore, the study found that risk aversion and technology anxiety is higher for females than males (there is significant difference: $p \leq .05$, $**p \leq .01$, $***p \leq .001$)

³² For more detail, see Table 7.3.

Table 7.3: Gender and the main research variables

	Sex	N	Mean	t	df	Sig. (2-tailed)
E-c self-efficacy	female	111	3.16	-3.436	229	** .001
	male	120	3.51	-3.435	227.327	** .001
Ease of use	female	111	3.14	-4.536	229	*** .000
	male	120	3.60	-4.516	220.861	*** .000
Technology anxiety	female	111	2.87	3.426	229	** .001
	male	120	2.43	3.421	225.880	** .001
Perception trust	female	111	3.10	-2.185	229	* .030
	male	120	3.32	-2.182	226.008	* .030
Risk aversion	female	111	2.98	3.587	229	*** .000
	male	120	2.57	3.576	223.507	*** .000
Intention to use e-com	female	111	3.34	-3.012	229	** .003
	male	120	3.72	-3.015	228.464	** .003

* $P \leq .05$, ** $P \leq .01$, *** $P \leq .001$

7.4.2 Age Groups and the Main Research Variables³³

Table 7.4 shows that the age groups have a significant effect on the following e-commerce variables (e-commerce self-efficacy, perception trust, technology anxiety, risk aversion, and intention to use e-commerce). There is a significant effect (* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$). The table shows that the 25–31 years age group has the highest e-commerce self-efficacy, while the 39–44 years age group has the lowest e-commerce self-efficacy.

Moreover, the table shows that the 25–31 age group has the highest intention to use e-commerce, followed by the 45 years and over age group, with 3.63 mean. The age

³³ For more detail, see Table 7.4.

group demonstrating the lowest intention to use e-commerce was the 39–44 years age group. The table shows that there is a negative relationship between age and technology anxiety.

Table 7.4: Age groups and the main research variables

		N	Mean	F	Sig.
E-c self-efficacy	18–24	145	3.34	3.167	*.015
	25–31	49	3.59		
	32–38	21	3.22		
	39–44	14	2.79		
	45 and over	2	3.08		
P-trust	18–24	145	3.14	5.341	***.000
	25–31	49	3.55		
	32–38	21	3.27		
	39–44	14	2.64		
	45 and over	2	3.33		
Ease of use	18–24	145	3.36	2.259	.064
	25–31	49	3.51		
	32–38	21	3.45		
	39–44	14	2.81		
	45 and over	2	3.7		
Technology anxiety	18-24	145	2.65	4.084	** .003
	25-31	49	2.39		
	32-38	21	2.56		
	39-44	14	3.57		
	over45	2	2.8		
Risk aversion	18-24	145	2.81	3.663	** .007
	25-31	49	2.43		
	32-38	21	2.91		
	39-44	14	3.33		
	over45	2	2.66		
Intention to use e-commerce	18-24	145	3.53	3.854	** .005
	25-31	49	3.81		
	32-38	21	3.46		
	39-44	14	2.70		
	over45	2	3.63		

7.4.3 Level of Study and the Main Research Variables³⁴

Table 7.5 shows that, in relation to perception trust and risk aversion, there is a significant difference between undergraduate and postgraduate students. The postgraduate respondents have more trust in e-commerce and lower risk aversion.

Table 7.5: Level of study and the main research variables

	Level of study	N	Mean	t	df	Sig. (2-tailed)
ESE	Undergraduate	147	3.28	-1.545	229	.124
	Postgraduate	84	3.45	-1.615	196.524	.108
EU	Undergraduate	147	3.32	-1.398	229	.163
	Postgraduate	84	3.47	-1.484	204.175	.139
TANX	Undergraduate	147	2.72	1.607	229	.109
	Postgraduate	84	2.50	1.639	183.317	.103
Perception trust	Undergraduate	147	3.11	-2.907	229	** .004
	Postgraduate	84	3.40	-3.076	202.841	** .002
Risk aversion	Undergraduate	147	2.86	2.086	229	* .038
	Postgraduate	84	2.61	2.127	183.271	* .035
INI	Undergraduate	147	3.46	-1.634	229	.104
	Postgraduate	84	3.67	-1.742	206.566	.083

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

7.4.4 Level of Income and the Main Research Variables³⁵

According to Table 7.6, there is significant difference in three research e-commerce variables (system ease of use, risk aversion, and intention to use e-commerce) in relation to the level of income. The table shows that there is a positive relationship between the level of income and intention to use e-commerce. Furthermore, there is a negative relationship between the level of income and risk aversion.

³⁴ For more detail, see Table 7.5.

³⁵ For more detail, see Table 7.6.

Table 7.6: Level of income and the main research variables

		N	Mean	df	F	Sig.
E-c self-efficacy	Less than 100	67	3.18	4	2.954	.021
	101–200	41	3.36	226		
	201–400	80	3.32	230		
	401–600	37	3.59			
	more than 600	6	4.11			
Perception trust	less than 100	67	3.09	4	1.909	.110
	101–200	41	3.23	226		
	201–400	80	3.18	230		
	401–600	37	3.41			
	more than 600	6	3.75			
Ease of use	less than 100	67	3.13	4	4.099	** .003
	101–200	41	3.27	226		
	201–400	80	3.44	230		
	401–600	37	3.70			
	More than 600	6	3.87			
Tech anxiety	less than 100	67	2.87	4	2.351	.055
	101–200	41	2.72	226		
	201–400	80	2.58	230		
	401–600	37	2.34			
	more than 600	6	2.10			
Risk aversion	less than 100	67	2.90	4	2.942	* .021
	101–200	41	2.85	226		
	201–400	80	2.81	230		
	401–600	37	2.47			
	more than 600	6	1.94			
Intention to use e-commerce	less than 100	67	3.31	4	3.294	* .012
	101–200	41	3.55	226		
	201–400	80	3.53	230		
	401–600	37	3.76			
	more than 600	6	4.58			

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

7.4.5 Nationality and the Main Research Variables³⁶

Surprisingly, Table 7.7 shows there is no significant difference between the groups of nationalities and intention to use e-commerce. All the three major nationalities

³⁶ For more detail, see Table 7.7.

(Australian, Asian, and Middle-eastern respondents) have the same level of intention to use e-commerce.

Table 7.7 Nationality and the main research variables

		N	Mean	df	F	Sig.
ESE	Australian	109	3.23	3	1.414	.240
	Asian	70	3.47	227		
	Middle-eastern	36	3.43	230		
	Others	16	3.34			
PT	Australian	109	3.13	3	1.833	.142
	Asian	70	3.29	227		
	Middle-eastern	36	3.40	230		
	Others	16	3.02			
EU	Australian	109	3.26	3	2.078	.104
	Asian	70	3.49	227		
	Middle-eastern	36	3.56	230		
	Others	16	3.21			
TANX	Australian	109	2.74	3	1.601	.190
	Asian	70	2.42	227		
	Middle-eastern	36	2.68	230		
	Others	16	2.8			
RA	Australian	109	2.86	3	.947	.418
	Asian	70	2.72	227		
	Middle-eastern	36	2.64	230		
	Others	16	2.60			
INI	Australian	109	3.49	3	.269	.848
	Asian	70	3.61	227		
	Middle-eastern	36	3.56	230		
	Others	16	3.47			

7.5 Reliability Analysis

The work of Guttman and others during the 1940s has provided a good foundation for Cronbach to develop a widespread approximation of the inner consistency of scale items, and this has been named Cronbach's alpha. This alpha (reliability coefficient) is used to determine the correlation degree of item answers acquired together as a mean inter-correlation measure evaluated through divergences.

In a study by Hair et al. (1998), reliability was defined as how accurate and free of random mistakes the measurement tools are. Real connections linking variables are properly described through reliable measures. The coefficient alpha presented by Cronbach (1957) is a very popular guide among researchers in such situations. This measurement calculates the internal consistency and considers the total count of items in the formula, where an increase in the number will proportionally affect the scale's reliability, even when the approximated average correlations are the same. Accordingly, when the true grade is not calculated by any means and one error component exists, then the alpha's value will be equivalent to zero. The highest alpha value is 1.0, which signifies that items measure absolutely the correct grade and no error component exists at all. A weak operation of sample items as the construct that triggered off the measure being calculated produces a low Cronbach's alpha and vice versa. Social scientists have commonly agreed on a .7 or higher alpha as an optimal value for a set of items to be regarded as a scale (e.g. Francis, 2004). However, exploratory researches –such as this study – apply a range of 0.5–0.6, as it is believed to be adequate.

The coefficients for Cronbach's alpha were calculated for partial subscales of the general self-efficacy scale, outcome expectation scale, ease of use scale, personal innovation in information technology scale, e-commerce self-efficacy scale, technology anxiety scale, user trust scale, risk aversion scale, trait anxiety scale, self-esteem scale, experience scale, and the intention to use e-commerce scale, derived from the data provided by 231 participants. Internal reliabilities for each scale were assessed, and the results are presented in Table 7.8.

Table 7.8: Internal reliabilities for the scales in the study

Scales	Number of items		Cronbach's alpha	
	First stage	Second stage	First stage	Second stage
GSE	12 items	12 items	0.822	0.822
ESE	6 items	6 items	0.868	0.868
OUT	11 items	11 items	0.886	0.886
EU	5 items	5 items	0.833	0.833
PIIT	4 items	4 items	0.865	0.865
TA	4 items	3 items	0.196	0.629
TE-A	5 items	5 items	0.934	0.934
UT	6 items	6 items	0.847	0.847
RA	6 items	6 items	0.887	0.887
SE	4 items	3 items	0.648	0.687
EXP	4 items	4 items	0.925	0.925
INI	4 items	4 items	0.944	0.944

Table 7.8: Internal reliabilities for the scales in the study

The general self-efficacy scale has 12 items; their alpha is 0.822 which is greater than 0.7. The e-commerce self-efficacy scale has 6 items; their alpha is 0.868, the outcome expectation scale has 11 items; their alpha is 0.886. The ease of use scale has 5 items; their alpha is 0.833, the personal innovation in information technology scale has 4 items; their alpha is 0.865. The trait anxiety scale has 4 items; TA2 has been removed to increase the alpha, after which the new alpha is 0.629, which is acceptable for the exploratory study. The technology anxiety scale has 5 items and their alpha is 0.934, which is excellent. The user trust scale has 6 items and their alpha is 0.847, the risk aversion scale has 6 items and their alpha is 0.887. The self-esteem scale has 4 items; SE4 has been removed to increase the alpha, and the new alpha is 0.687, which is

acceptable for the exploratory study. The experience scale has 4 items and their alpha is 0.925, which is excellent. The intention to use e-commerce scale has 4 items and their alpha is 0.944.

7.6 Validity of the Scales

Inner consistency is mostly recognised by using factor analysis. If the data reveal a straightforward factor construction, intercorrelated elements will be self-arranged on separate factors. This is taken as a proof that the indicator elements are contained in one scale and as a proof of discriminate validity as well, showing variations between different scales.

Applying factorial validity was used to analyse the scale items of general self-efficacy scale, outcome expectation scale, ease of use scale, personal innovation in information technology scale, e-commerce self-efficacy scale, technology anxiety scale, user trust scale, risk aversion scale, trait anxiety scale, self-esteem scale, experience scale, and the intention to use e-commerce scale for the research model. The analysis was designed to produce a lower number of underlying factors out of the large number of interconnected variables. Furthermore, it was performed to clarify the interrelation connecting variables and the other variables determining them (Davis, 2001; Al-Hawari and Hasan, 2004; Francis, 2004).

These studies utilised the main components extraction and Varimax with Kaiser normalisation rotation techniques. Initially, the Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were applied to evaluate the data appropriateness for analysis. Then, the numbers of factors that have to be maintained through the factor loading were determined by a scree plot (Francis, 2004). Those factors scoring more than 1 eigenvalue were maintained through the factor

loading (Kaiser's criterion) (Francis, 2004). Moreover, it is necessary that all variables are clearly distinguished in the factor loadings, otherwise they are eliminated.

The cut-off value for the coding of items is used to remove factor loadings below 0.4. This value has been determined for the analysis of underlying factors which are used to clarify variations in the measured items (for example, De Vaus, 1991; Stevens, 1992; Hair et al., 1995; Al-Hawari and Hasan, 2004). Moreover, it is necessary for every item to have an average to high loading that can be explained with one factor (Francis, 2004). The factor analysis of all the constructs stated earlier is presented below.

7.6.1 Perceived self-efficacy (General self-efficacy, E-commerce self-efficacy, Outcome expectation)

Initially, the process starts with calculating the correlation coefficients and examining the weight values. Correlation coefficients linking items are mostly larger than 0.3, as indicated by outcomes, which verifies their appropriateness for factor analysis (Coakes and Steed, 1999).

Additional assessments were performed in order to establish a more precise judgment. The Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were applied to evaluate the data's appropriateness for factor analysis. The KMO statistic indicates a .879 at a weight level of 0.001, as demonstrated in table 7.9

Table 7.9: KMO and Bartlett's test for perceived self-efficacy variables

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.879
Bartlett's Test of Sphericity	Approx. Chi-Square	2972.796
	df	406
	Sig.	.000

Despite the fact that a stricter boundary (cut-off level) should be set at the point of 0.6, according to Garson (2001), the KMO measure is usually required to be larger than 0.5 (De Vaus, 1991; Field, 2000).

Measuring the KMO result against these cut-off levels clarifies that it is especially high. Bartlett's test of sphericity is considerable as well (chi-square = 2972.796 with 406 degrees of freedom, at $p < 0.001$). Appendix F.1 provides an examination of the anti-image correlation matrix, which shows that all measures of sampling adequacies (MSAs) are appropriately over 0.5 (the acceptable level) (Coakes and Steed, 1999). The factor analysis of scale items is verified to be suitable.

Subsequently, the number of factors was calculated through the eigenvalue and the scree plot. As shown in Appendix F.2, the scree plot figure also identifies three components resulting in a distinct break between the first three components and other components (Gebotys, 2001).

Finally, a comprehensive investigation of factor loadings was conducted in order to eliminate low loading items – those below a 0.4 factor loading (De Vaus, 1991; Field, 2000; Garson, 2001; Hair et al., 1995; Stevens, 1992; Eley and Stevenson 1999, Chidambaram, 2003). As a result, GSE7 and OUT10 were removed from the analysis. The outcomes of factor assessment for the general self-efficacy, e-commerce self-efficacy, and outcome expectation scales are listed in Table 7.10.

Table 7.10: Results of factor analysis for the perceived self-efficacy scales (general self-efficacy, e-commerce self-efficacy, outcome expectation).

Items	Factor Loadings		
	1	2	3
GSE1	.065	.604	.174
GSE2	.211	.674	.194
GSE3	.080	.707	.109
GSE4	.132	.481	.030
GSE5	.155	.590	.126
GSE6	-.120	.461	.294
GSE8	.191	.599	.138
GSE9	.005	.412	-.108
GSE10	-.041	.663	-.011
GSE11	.126	.608	.001
GSE12	.173	.614	-.162
ESE1	.443	.181	.464
ESE2	.498	.163	.526
ESE3	.310	.172	.658
ESE4	.434	.194	.641
ESE5	.192	.033	.792
ESE6	.129	-.004	.781
OUT1	.706	-.095	.206
OUT2	.734	.085	.300
OUT3	.724	.117	.298
OUT4	.613	.159	.237
OUT5	.680	.265	.129
OUT6	.674	.229	.120
OUT7	.724	.138	.042
OUT8	.662	.297	-.072
OUT9	.735	.182	.277
OUT11	.590	-.034	.014

7.6.2 Technological Factors (Ease of Use, Personal Innovation in Information Technology, Experience)

A combination of three variables forms the structure of the technological factors, which are personal innovation in information technology (PIIT), ease of use (EU) and experience (EXP), where every variable of these has more than three items.

Technological factor items (EU, PIIT, and EXP) underwent a factor analysis to ascertain their validity. The Bartlett's test of sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy were applied to evaluate the data appropriateness for analysis. The KMO statistic indicates 0.907 at a weight level of 0.000. Both sets of test results are provided in Table 7.11. The fact that the KMO value was larger than 0.6 and Bartlett's test of sphericity was significant (chi-square = 2029.623 with 78 degrees of freedom at $p < 0.000$) (Francis, 2004) indicated that the data was suitable for a factor analysis.

Table 7.11: KMO and Bartlett's test for technological factors

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.907
Bartlett's Test of Sphericity	Approx. Chi-Square	2029.623
	df	78
	Sig.	.000

Subsequently, the number of factors was calculated through the eigenvalue and the scree plot. Three components scoring a greater than one eigenvalue were produced by a preliminary analysis. As demonstrated in Appendix G.2, the scree plot distinguished three components as well that caused an apparent fracture in the middle of the first three components and these ones (Gebotys, 2001). Initial eigenvalues are greater than 1 for each of the three variables.

Finally, a comprehensive investigation of factor loadings was conducted in order to eliminate low loading items – those below a 0.4 factor loading (De Vaus, 1991; Field, 2000; Garson, 2001; Hair et al., 1995; Stevens, 1992; Eley and Stevenson 1999, Chidambaram 2003). Most of the items' loading values – as the result indicate – exceeded the cut-off level. Results of the factor analysis are presented in Table 7.12 for the ease of use, personal innovation in information technology, and experience scales.

Table 7.12: Results of factor analysis for the technological factor scales (ease of use, personal innovation in information technology, experience)

Items	Factor Loadings		
	1	2	3
EU1	.287	.838	.222
EU2	.234	.783	.167
EU3	.132	.658	.026
EU4	.100	.629	.189
EU5	.242	.728	.293
PIIT1	.157	.167	.895
PIIT2	.387	.088	.735
PIIT3	.275	.409	.595
PIIT4	.267	.280	.834
EXP1	.861	.207	.234
EXP2	.861	.194	.267
EXP3	.770	.387	.298
EXP4	.809	.242	.227

7.6.3 Psychological Factors (Trait Anxiety, Technology Anxiety, Self-esteem)

A combination of three variables forms the structure of the psychological factors, which are trait anxiety (TA), technology anxiety (TE-A) and self-esteem (SE), where every variable of these has more than three items. The psychological factor items (TA, TE-A, and SE) underwent a factor analysis to ascertain their validity. The Bartlett's test of sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy were applied to evaluate the data's appropriateness for analysis. The KMO statistic indicates 0.824, at a weight level of 0.000. Both sets of test results are presented in Table 7.13. The fact that the KMO value was larger than 0.6 and Bartlett's test of sphericity was significant (chi-square = 1357.487 with 55 degrees of freedom at $p < 0.000$) (Francis, 2004) indicated that the data was suitable for a factor analysis.

Table 7.13: KMO and Bartlett's Test for Psychological Factors

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.824
Bartlett's Test of Sphericity	Approx. Chi-Square	1357.487
	df	55
	Sig.	.000

Subsequently, the number of factors was calculated through the eigenvalue and the scree plot. Three components scoring a greater than one eigenvalue were produced by a preliminary analysis. In addition, the scree plot distinguished three components as well that caused an apparent fracture in the middle of the first three components and these ones, as demonstrated in Appendix H.1, (Gebotys, 2001). Initial eigenvalues are greater than 1 for each and every one of the three variables.

Finally, a comprehensive investigation of factor loadings was conducted in order to eliminate low loading items – those below a 0.4 factor loading (De Vaus, 1991; Field, 2000; Garson, 2001; Hair et al., 1995; Stevens, 1992; Eley and Stevenson 1999, Chidambaram 2003). Most of the items' loading values – as the result indicates – exceeded the cut-off level. Results of the factor analysis are listed in Table 7.14 for the trait anxiety, technology anxiety and self-esteem scales.

Table 7.14: Results of factor analysis for the psychological factor scales (trait anxiety, technology anxiety, self-esteem)

Items	Factor Loadings		
	1	2	3
TA1	-.027	-.255	.695
TA3	.261	-.053	.757
TA4	.125	-.106	.750
TE-A1	.844	-.042	.053
TE-A2	.860	-.092	.126
TE-A3	.886	-.101	.113
TE-A4	.911	-.118	.135
TE-A5	.875	-.155	.132
SE1	-.134	.496	-.163
SE2	-.032	.891	-.103
SE3	-.125	.863	-.108

7.6.4 Consumer Trust Scale and Risk Aversion Scale

Varimax with Kaiser normalisation rotation was performed to accomplish the principal components' removal on the consumer trust scale and risk aversion scale (12 items).

Further assessments were performed in order to establish a more precise judgment. The Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were applied to evaluate the data's appropriateness for analysis. The KMO statistic indicates .910 at a weight level of 0.000, as shown in table 7.15.

Table 7.15: KMO and Bartlett's Test for User Trust and Risk Aversion

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.910
Bartlett's Test of Sphericity	Approx. Chi-Square	1658.148
	df	66
	Sig.	.000

Measuring the KMO result against these cut-off levels clarifies that it is especially high. Bartlett's test of sphericity is very considerable as well (1658.148 with 66 degrees of freedom, at a significant level of 0.000) (Francis, 2004).

Subsequently, the number of maintained factors was calculated through the eigenvalue and the scree plot, as seen in Figure Appendix I.1. The principal component removal caused a variation expressed in the initial eigenvalues by removed components.

Variations explained by the retained factors through factor analysis are illustrated in Appendix I.2. These factors have generally explained 62.3% of the original variance, as they have eigenvalues greater than 1.

As seen in Appendix I.3, this research has employed the principal extraction and Varimax with Kaiser normalisation rotation techniques to analyse the first groups equalling 1. This means that all variances in every item were explained by all factors. Approximately, 52%–69% variation was justified through these two variables.

Finally, a comprehensive investigation of factor loadings was conducted in order to eliminate low loading items – those below a 0.4 factor loading (De Vaus, 1991; Field, 2000; Garson, 2001; Hair et al., 1995; Stevens, 1992; Eley and Stevenson 1999, Chidambaram 2003). Most of the items were maintained, as their loading values were above cut-off level. The outcomes for the user trust scale and risk aversion scale factor assessment are displayed in Table 7.16.

Table 7.16: Results of factor analysis for the consumer trust scale and risk aversion scale

Items	Factor Loadings	
	1	2
PT1	.660	-.491
PT2	.609	-.506
PT3	.737	-.048
PT4	.745	-.159
PT5	.575	-.439
PT6	.671	-.321
RA1	-.578	.585
RA2	-.575	.599
RA3	-.291	.661
RA4	-.441	.748
RA5	-.390	.719
RA6	.040	.812

7.6.5 Intention to Use E-commerce Scale

The principal component removal was applied on the intention to use e-commerce scale. Further assessments were performed in order to establish a more precise judgment. The Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy were applied to evaluate the data's appropriateness for analysis (outcomes are shown in Table 7.17). The KMO statistic indicates .847 at a weight level of 0.000. The KMO test outcomes have produced greater than .6 values in factor analysis and the Bartlett's test of sphericity measured 934.875 with 6 degrees of freedom, which is highly significant at a level of 0.000 (Francis, 2004).

Table 7.17: KMO and Bartlett's Test for Intention to use E-commerce

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.847
Bartlett's Test of Sphericity	Approx. Chi-Square	934.875
	df	6
	Sig.	.000

Subsequently, the number of factors was calculated through the eigenvalue and the scree plot. The principal component removal causes a variation expressed in the initial eigenvalues by removed components (Francis, 2004). The factor analysis has maintained one factor that has a greater than 1 initial eigenvalue (Francis, 2004), as seen in Appendix J.1.

Eighty-six per cent of the original variance was explained by one factor specifically, as seen in Appendix J.2. Varimax with Kaiser normalisation rotation was performed to accomplish the principal component removal on the intention to use e-commerce scale.

As seen in Appendix J.3, this research has employed the principal extraction and Varimax with Kaiser normalisation rotation techniques to analyse the initial communities = 1. This means that original variations in the item were explained by this factor. Approximately 77%–89% variation was justified through this one factor explanation.

Finally, a comprehensive investigation of factor loadings was conducted in order to eliminate low loading items – those below a 0.4 factor loading (De Vaus, 1991; Field, 2000). Most of the items' loading values – as the result indicates – exceeded the cut-off level. Results of factor analysis are listed in Table 7.18 for the intention to use e-commerce scale.

Table 7.18: Results of factor analysis for the intention to use e-commerce scale

Items	Factor Loadings
INI1	.946
INI2	.957
INI3	.916
INI4	.882

7.7 Conclusion

This chapter has reviewed the sample characteristics and descriptive analysis of the survey data. The overall response rate for the survey is 46%, and this is regarded as being relatively high.

The factor analysis for all scales has provided evidence that the items have loading values greater than 0.4, and graphical displays of the eigenvalues suggest that there is one predominant factor. In addition, factor analysis has been used to define the scales' items, and the loading values of the scales' items were tested.

The factor analysis defines the Scales' items and the loading values of each item. The internal reliability (Cronbach's alpha) values for all the scales are in the acceptable range.

The structure equation model, notably partial least square (PLS), is discussed in the following chapter. It describes the results from the testing of the research hypotheses derived from the proposed conceptual framework and the literature.

CHAPTER 8.

STRUCTURAL EQUATION MODELLING AND HYPOTHESIS-TESTING

8.1 Introduction

This chapter explains the second statistical technique and elaborates on the outcomes of the statistical analysis of the empirical data collected for the study. There are six sections in the chapter. The first section consists of a short introduction. The second section, after an initial review of the Structured Equation Model (SEM) technique focuses on the Partial Least Square (PLS – a special branch of the original SEM). It then explains the method resorted to in analysing and measuring the research model in both types of assessments: a) measurement model assessment, b) structural model assessment. The third section discusses the analysis results of the PLS-Graph output, and the fourth section sheds light on the research hypothesis-testing results. The suitability and effectiveness of the research method are discussed in section five, and the final section summarises the discussion and concludes the chapter.

8.2. Structural Equation Modelling (by Partial Least Square PLS)

8.2.1 Introduction and Background

Empirical research activity has progressed to a level Fornell and Bookstein (1982) described as the second-generation data-analysis methodologies. This level of advancement has been achieved through the success embraced by researchers, advances made in using computing technology and multivariate research analysis, and emphasising a priori theory. A vast body of literature has documented the use of SEM

in behavioural sciences research, particularly the IS field (Gefen et al., 2000). SEM is a second-generation high-profile research technique, used for empirical data analysis, which enables researchers “to answer a set of interrelated research questions in a single, systematic and comprehensive analysis” (Gefen et al., 2000, p. 3). The first-generation techniques, which are part of the MANOVA family, were utilised by some researchers for data analysis, using the regression technique. SEM, on the other hand, by analysing the perceived interrelationships between the dependent and independent variables, explores the overall structural model. It also assesses the measurement model by evaluating the observed items’ loading on their respective passive variables.

The ability to transform measurement errors into a model and embed intangible and abstract constructs in appropriate research models, and to evaluate and ascertain the effectiveness of a priori theory or hypotheses through empirical data, are some of the advantages of the second-generation techniques (Fornell, 1982). These techniques are also able to accommodate several passive variables in the same model, provide for the analysis of the path these variables follow, and combine different variables, such as reflective and formative variables, into one rational coherent whole (Barclay et al., 1995).

This study employs the variance-based approach represented by the (PLS) package along with two SEM approaches, the covariance and variance-based approaches, as they are commonly utilised in management research. The partial least squares (PLS) package is used due to its numerous advantages over the covariance-based approach such as the Linear Structural ReLationships (LISREL). In a study by Joreskog and Wold (1982), LISREL and PLS were investigated as matching approaches, except for their dissimilar methods of trailing models with hidden variables. Fundamentally, PLS is used best for causal-predictive analysis when there is not enough theoretical

information, while LISREL relies more heavily on theories and is better used for confirmatory analysis.

Covariance-based SEM (for example, LISREL) forces intense requirements on data and theory and it also connects indicators with unobservable variables. However, according to Fornell and Bookstein (1982), it suffers two serious problems that do not exist in PLS:

1. The unsuitable solutions – solutions that are outside the acceptable space of the parameters
2. The factor indeterminacy.

Conversely, PLS, according to Chin (1998b), places smaller requirements on measurement scales, sample size, and residual disseminations. The importance of both methods was summarised by Gefen et al. (2000), as follows:

- Covariance-based SEM is created for model-fitting and theory-testing.
- PLS is developed to justify the variance, investigate the significance of relationships, and assist in constructing the predictive theory.

Chin and Newsted (1999) gathered a considerable amount of information on SEM techniques and the differences between them, based on a sequence of factors that consist of methods, hypotheses, approximations of parameters, hidden variable results, epistemic connection linking a hidden variable and its measures, inferences, complicatedness of the model, and sample size. A summary of this comparison is presented in Table 8.1.

Table 8.1: Comparisons between PLS and LISREL

Please see print copy for image



Source: Chin and Newsted (1995).

PLS is known as a powerful method of analysis because of the smaller demands it places on sample size, residual distributions and measurement scales (that is, weather measures are required to be an interval or ratio level) (Wold, 1985). Chin (1998) demonstrated that PLS is suitable for suggesting the nature and the degree of existing or non-existing relations and for offering a suggestion for later testing as well as verifying theory. These features of PLS have encouraged IS researchers to use it more often (Gefen et al., 2000). Compeau et al. (1999) drew attention to the value that can be derived from employing PLS, due to the purpose of research and the prediction-oriented type of study. In 2002, Chatterjee et al. also preferred the PLS technique, as their research contained both formative and reflective indicators. Generally, this research is aimed at evaluating the predictive power of the predecessor variables that forecast the intention to use e-commerce globally, not models or theories. It can be

deduced that the covariance-based SEM is best used to build theories and evaluate models while PLS is best used in predictive applications (Barclay et al., 1995; Chin and Newsted, 1999). Taking these conclusions into consideration led to the choice to employ PLS in this exploratory research, due to its predictive nature and its enhanced capacity in explaining variance (Gefen et al., 2000). Data analysis and research model evaluation were performed using the research PLS Graph.³⁷

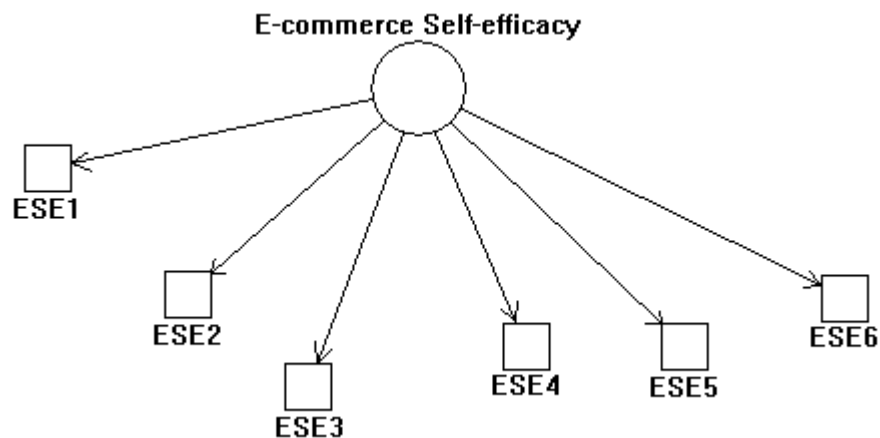
8.2.2 Reflective vs. Formative

Researchers in fields of intra- and interrelationships have broadly employed hidden variables, as testified by Adamantios and Judy (2006). These variables have been calculated by means of reflective (effect) indicators in almost all cases (for example, Schaubroeck and Lam, 2002; Ramamoorthy and Flood, 2004; Subramani and Venkatraman, 2003). Therefore, indicators are perceived as functions of the hidden variable according to established standards, as when modifications take place in the hidden variable, they are displayed as modifications in the visible indicators. In a study by Chin (1998), the reflective model of indicators was clearly described in terms of usage considerations. This measurement model has an important substantive theory behind it. The way a researcher illustrates the construct in relation to the indicators theoretically is the main focus of the question. The charting of arrow for the model should be illustrated towards the outside, if the construct is observed to have a rising effect in relation to the examined measures. For instance, attitude is usually handled this way as answers to the indicators are perceived to be affected by attitude. Besides the hypothetical understanding, the objective of the study is also a principal matter. If the purpose is to clarify or forecast the examined measures, then a reflective design

³⁷ PLS Graph version 3.00.

should be stated in a manner that reduces any indication of the remaining variation for measurement model equations. The final matter deals with the experimental conditions. Sample size and multicollinearity between indicators in every block can conditionally influence the stability of approximations. Therefore, the use of reflective outlining of indicators can highly reduce this confusion, due to the simple regression upon which these parameters approximation are based (Chen, 1998). Upon investigating the previous matters, as most of this research constructs are psychological ones, the constructs will accordingly establish the indicators; and any adjustment in the constructs will certainly be displayed as an adjustment in the indicators as well. Along these lines, it has been hypothesised that nearly all the research constructs (general self-efficacy, e-commerce self-efficacy, user trust, personal innovation in information technology, system experience, outcome expectation, system ease of use, trait anxiety, technology anxiety and risk aversion) are reflective constructs, excluding system experience, which has been illustrated to be a formative construct, given that these constructs are established by their indicators. The relationship between the construct and its indicators, in the case of reflective constructs, is clearly illustrated in Figure 8.1.

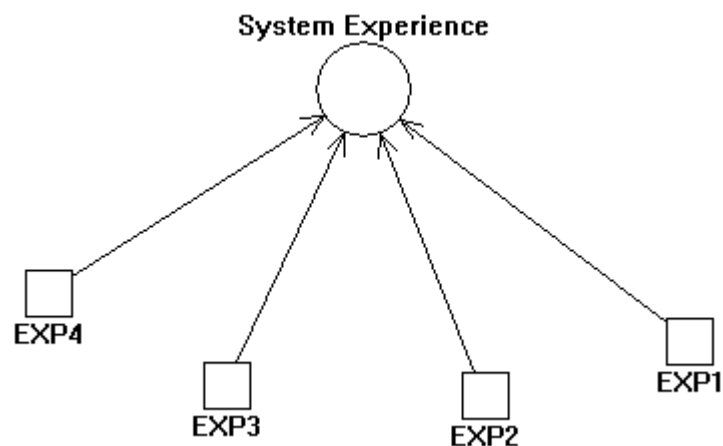
Figure 8.1 Reflective Construct



Source: synthesised by the author.

On the other hand, MacCallum and Browne (1993, p. 533) indicated that “in many cases that the indicators could be viewed as causing rather than being caused by the latent variable measured by the indicators”. These indicators are recognised as formative or causal ones, which cause modifications in the indicators that establish further modifications in the hidden variable value, rather than the other way around (Jarvis et al., 2003; Adamantios and Judy, 2006). The system experience is the only construct that is perceived as a formative construct in the presented research. The connection existing between the construct and its indicators, in the case of a formative construct, is shown in Figure 8.2.

Figure 8.2: Formative construct



Source: synthesised by the author.

8.2.3 PLS Model Measurements

PLS consists of two equations:

1. The measurement model evaluation (outer model).
2. The structural model evaluation (inner model).

Item reliability, convergent validity and the discriminate validity calculation is contained in the PLS outer model while the inner model involves the discovery of the proper nature of relationships among measures and constructs. The sign and the power of the relationships can be signified using approximated path coefficients, whereas the strength of the measures is indicated through items' weights and loadings (Hulland 1999; Croteau and Bergeron 1999).

8.2.3.1 Assessment of the Measurement Model (Outer Model)

8.2.3.1.1 Item Reliability³⁸

In the case of the PLS model, single-item reliability is measured by investigating the loadings of the measures with their relevant construct. As for reflective constructs, satisfactory reliability is indicated by items with a loading value of .70 or above; this suggests a higher common variance among the measure and its construct than the existing error variance, as revealed in a study by Barclay et al. (1995). Newly developed scales can be accepted if they score a minor limit of .6, while items below .5 must be definitely abandoned (Hulland, 1999). Loadings and weights for all study constructs are presented in Appendix D.

The structure and comparative significance of each indicator in the complete construction and/or formation of the construct are described through weights in formative constructs. In the study, the objective behind this operation is not directed to justifying the variance of the examined indicators – as the loadings are misleading indicators – but to increasing variance justified at the level of hidden variable components (Chin, 1998b). The indicators' relative contribution to the construct is characterised by their weights' magnitude (Hair et al., 1998).

³⁸ Item reliability and composite reliability are only applicable to constructs with reflective indicators.

All items with a loading weight below cut-off level (0.5), that is, GSE4, GSE6, GSE7, GSE9 and OUT10 have been removed. Further removal has been performed on items TA1, TA2, SE4, and OUT11 in order to raise the average variance extracted (AVE) to the minimum level of 0.5.

8.2.3.1.2 Convergent Validity (Composite Reliability or Internal Consistency)

The level to which items that should be connected to a construct are really related is recognised as the convergent validity. In a study by Barclay et al. (1995), convergent validity was stated as one of the main reasons of researchers' general tendency to utilise PLS, as it helps them establish the measure (internal consistency) of a reliability measure construct built up by Fornell and Larcker (1981). It is calculated by the sum of the loadings with all squared, divided by the sum of the loadings with all squared, plus the sum of the error terms. Cronbach's alpha is very close to this measure of internal consistency excluding its last deduction that all indicators of the construct contribute similarly. Fornell and Larcker (1981) claimed an advantage of their own measure over Cronbach's alpha, due to its utilisation of item loadings' estimate within the fundamental model. Cronbach's alpha is less general than this measure, which is not affected by how many items there are in the scale. An acceptable compound reliability score is confirmed to be .70 or higher (Barclay et al., 1995). Table 8.2 clearly demonstrates all construct composite reliabilities in this study to be higher than 0.7, which is believed to be acceptable (Barclay et al., 1995).

Table 8.2: Mean, Standard Deviations And Internal Consistencies Of Constructs

Factor	No. of items	Mean	SD	Cronbach's alpha ∞	Composite reliability
Personal innovation	4	3.37	1.07	0.87	0.91
Experience	4	3.28	1.16	0.93	0.95
Ease of use	5	3.37	1.04	0.84	0.88
Self-esteem	3	4.10	0.79	0.69	0.81
Trait anxiety	2	2.73	1.11	0.58	0.83
Technology anxiety	5	2.64	1.12	0.93	0.95
General self-efficacy	8	3.82	0.93	0.82	0.86
E-commerce self-efficacy	6	3.34	1.05	0.85	0.87
Outcome expectation	9	3.49	0.98	0.90	0.92
Risk aversion	6	2.77	1.10	0.89	0.91
User trust	6	3.21	0.99	0.85	0.89
Intention to use e-commerce	4	3.54	1.04	0.94	0.96

8.2.3.1.3 Discriminate Validity

Discriminate validity indicates the extent to which a given construct is different from other constructs. In PLS analyses, in order to assess the discriminate validity of the measures, three aspects need to be verified:

1) Average variance extracted

Fornell and Larcker (1981) suggested the use of the measure average variance extracted (AVE). The AVE should be greater than 0.5, which indicates that more than 50 per cent of the items' variance is confined by the construct (Chin, 1998b). Table 8.3 shows that the AVEs for all models' constructs exceed 0.5, which is considered to be acceptable (Chin, 1998b).

2) Square root of the average variance extracted

The Average variance extracted (AVE) calculated for every measure must be higher than all the variances shared between the measures and superior to 0.50 (Fornell and Larker, 1981). [This sentence isn't complete. As you've started it with "If", the word "then" should come after 1981), followed by an explanation.] Table 7.3 shows the square root of the Average Variance extracted, \sqrt{AVE} (the construct should share more variance with its measures than it shares with other construct in a model). Table 7.3 shows the correlation matrix for the constructs. The diagonal of this matrix is the square root of the Average Variance extracted. For adequate discriminate validity, the diagonal elements (square root of the Average Variance extracted) should be significantly greater than the off-diagonal elements in the corresponding rows and columns. As Table 8.4 demonstrates, the \sqrt{AVE} are acceptable for the current research (the \sqrt{AVE} for each construct is greater than the off-diagonal elements in the corresponding rows and columns).

Table 8.3 The average variance extracted of constructs

Factor	AVE	\sqrt{AVE}
Personal innovation	0.722	0.849
Experience	0.817	0.904
Ease of use	0.610	0.781
Self-esteem	0.588	0.767
Trait anxiety	0.702	0.837
Technology anxiety	0.791	0.889
General self-efficacy	0.512	0.716
E-commerce self-efficacy	0.565	0.752
Outcome expectation	0.551	0.742
Risk aversion	0.640	0.800
User trust	0.581	0.762
Intention to use e-commerce	0.857	0.926

Table 8.4 Correlation of the constructs

	PIIT	Experience	Ease of	Self-es	Trait an	Technology	General s	E-commerce	Outcome ex	Risk aver	Trust	Intention commerce
PIIT	0.849											
Experience	0.630	0.904										
Ease of use	0.560	0.589	0.781									
Self-esteem	0.960	0.228	0.307	0.676								
Trait anxiety	-0.164	-0.245	-0.329	-0.289	0.837							
Technology a	-0.538	-0.664	-0.689	-0.258	0.345	0.889						
General s-eff	0.222	0.243	0.447	0.433	-0.257	-0.401	0.716					
E-commerce	0.497	0.631	0.662	0.270	-0.192	-0.706	0.363	0.752				
Outcome exp	0.508	0.573	0.656	0.249	-0.147	-0.617	0.399	0.661	0.752			
Risk aversion	-0.583	-0.651	-0.689	-0.176	0.275	0.702	-0.281	-0.671	-0.620	0.800		
Trust	0.484	0.579	0.692	0.193	-0.246	-0.692	0.364	0.703	0.694	-0.755	0.762	
Intention to u	0.561	0.705	0.725	0.239	-0.198	-0.732	0.306	0.772	0.707	-0.7591	0.643	0.926

3) Loadings and cross-loadings (confirmatory factor analysis)

Cross-loading offers an additional examination to differentiate validity. The PLS-Graph version 3.0 does not support the cross-loading procedure. Therefore, manual computing is used to determine cross-loading values, where this calculation includes associations between hidden variable component scores and other indicators besides their particular LVs (Chin, 1998). This simply means that each group of indicators is predicted to load higher for its own LV than indicators for other LVs (Vatanasakdakul et al., 200).

Outcomes from the cross-loading process by PLS are displayed in Table 8.5. Clearly, outcomes indicate a good loading in each construct's items. Hidden variables had their own indicators loaded higher, which indicates that the loading in each scored higher than any vertical and horizontal routes. Another study by Chin (1988) verified that hidden component values certainly forecast every indicator in its block in an improved performance over indicators in other blocks.

Therefore, the validity of criteria employed in this research has been established and proven to be valid.

Tables 8.3, 8.4 and 8.5 illustrate the evaluation of discriminate validity, and clearly illustrate that this research is free of problems.

Table 8.5 Loadings and cross-loadings of measures

	Calculate										
	PIIT	EoU	Self-est	Trait	TAnx	GenSE	ECSE	Outcome	RiskAve	Percepti	Intentio
PIIS1	0.89	0.42	0.00	-0.07	-0.41	0.09	0.40	0.41	-0.46	0.33	0.41
PIIS2	0.81	0.37	-0.01	-0.10	-0.42	0.11	0.41	0.38	-0.50	0.41	0.45
PIIS3	0.78	0.55	0.20	-0.22	-0.48	0.27	0.42	0.43	-0.48	0.41	0.50
PIIS4	0.92	0.53	0.10	-0.13	-0.50	0.19	0.46	0.48	-0.52	0.45	0.53
EU1	0.52	0.91	0.27	-0.31	-0.61	0.41	0.63	0.59	-0.61	0.60	0.66
EU2	0.45	0.84	0.24	-0.32	-0.62	0.44	0.56	0.61	-0.58	0.55	0.61
EU3	0.29	0.62	0.14	-0.26	-0.42	0.26	0.27	0.23	-0.35	0.32	0.31
EU4	0.34	0.65	0.23	-0.21	-0.36	0.21	0.37	0.34	-0.45	0.41	0.41
EU5	0.51	0.84	0.23	-0.21	-0.62	0.33	0.60	0.62	-0.64	0.70	0.71
SE1	0.08	0.22	0.57	-0.23	-0.19	0.39	0.26	0.21	-0.16	0.13	0.19
SE2	0.06	0.18	0.89	-0.23	-0.15	0.36	0.10	0.11	-0.08	0.10	0.11
SE3	0.06	0.28	0.86	-0.21	-0.24	0.30	0.19	0.21	-0.13	0.19	0.21
TA3	-0.18	-0.29	-0.23	0.84	0.34	-0.25	-0.18	-0.14	0.23	-0.22	-0.17
TA4	-0.07	-0.27	-0.24	0.84	0.23	-0.23	-0.13	-0.09	0.23	-0.18	-0.17
EA1	-0.47	-0.61	-0.15	0.26	0.84	-0.34	-0.61	-0.58	0.59	-0.60	-0.65
EA2	-0.44	-0.56	-0.21	0.31	0.87	-0.35	-0.60	-0.52	0.57	-0.57	-0.60
EA3	-0.50	-0.65	-0.21	0.28	0.90	-0.35	-0.67	-0.56	0.69	-0.66	-0.71
EA4	-0.52	-0.63	-0.23	0.32	0.93	-0.40	-0.61	-0.55	0.64	-0.63	-0.68
EA5	-0.43	-0.59	-0.26	0.33	0.90	-0.30	-0.58	-0.51	0.61	-0.58	-0.61
GSE1	0.17	0.33	0.20	-0.24	-0.25	0.68	0.22	0.23	-0.22	0.23	0.22
GSE2	0.31	0.41	0.22	-0.22	-0.38	0.73	0.34	0.37	-0.32	0.33	0.35
GSE3	0.15	0.27	0.31	-0.17	-0.22	0.76	0.22	0.24	-0.13	0.21	0.15
GSE5	0.10	0.33	0.31	0.03	-0.26	0.60	0.27	0.28	-0.19	0.26	0.24
GSE8	0.12	0.22	0.20	-0.07	-0.21	0.65	0.25	0.35	-0.15	0.23	0.19
GSE10	0.03	0.20	0.43	-0.30	-0.21	0.65	0.13	0.10	-0.09	0.12	0.10
GSE11	0.11	0.26	0.23	-0.27	-0.33	0.64	0.20	0.24	-0.18	0.21	0.13
GSE12	0.01	0.27	0.40	-0.30	-0.24	0.63	0.11	0.23	-0.12	0.25	0.12
ESE1	0.39	0.52	0.22	-0.14	-0.48	0.29	0.70	0.52	-0.52	0.44	0.55
ESE2	0.38	0.55	0.28	-0.17	-0.64	0.30	0.78	0.60	-0.65	0.63	0.71
ESE3	0.35	0.45	0.14	-0.15	-0.55	0.28	0.76	0.45	-0.50	0.54	0.56
ESE4	0.40	0.58	0.13	-0.15	-0.60	0.33	0.80	0.59	-0.53	0.65	0.67
ESE5	0.38	0.41	0.11	-0.13	-0.49	0.16	0.77	0.37	-0.40	0.42	0.50

ESE6	0.35	0.37	0.09	-0.09	-0.34	0.11	0.70	0.32	-0.32	0.33	0.41
OUT1	0.29	0.37	0.04	-0.09	-0.42	0.08	0.45	0.70	-0.46	0.51	0.46
OUT2	0.43	0.49	0.19	-0.06	-0.54	0.23	0.57	0.80	-0.61	0.59	0.64
OUT3	0.41	0.51	0.17	-0.08	-0.46	0.27	0.58	0.79	-0.48	0.55	0.56
OUT4	0.41	0.48	0.12	-0.06	-0.43	0.29	0.47	0.68	-0.37	0.43	0.48
OUT5	0.36	0.46	0.18	-0.08	-0.42	0.36	0.43	0.76	-0.36	0.45	0.46
OUT6	0.37	0.43	0.18	-0.13	-0.44	0.33	0.43	0.74	-0.43	0.50	0.54
OUT7	0.32	0.36	0.15	-0.03	-0.39	0.26	0.36	0.73	-0.40	0.46	0.42
OUT8	0.30	0.48	0.19	-0.14	-0.35	0.38	0.31	0.66	-0.32	0.39	0.38
OUT9	0.45	0.63	0.21	-0.26	-0.59	0.33	0.59	0.80	-0.60	0.62	0.67
RA1	-0.51	-0.57	-0.09	0.22	0.63	-0.16	-0.57	-0.53	0.85	-0.67	-0.66
RA2	-0.50	-0.56	-0.17	0.16	0.63	-0.16	-0.60	-0.52	0.86	-0.68	-0.69
RA3	-0.37	-0.54	-0.08	0.23	0.40	-0.15	-0.39	-0.38	0.72	-0.53	-0.54
RA4	-0.53	-0.61	-0.11	0.25	0.64	-0.23	-0.58	-0.60	0.90	-0.66	-0.70
RA5	-0.51	-0.59	-0.15	0.26	0.60	-0.29	-0.58	-0.56	0.83	-0.62	-0.68
RA6	-0.31	-0.39	-0.12	0.24	0.41	-0.30	-0.35	-0.28	0.62	-0.39	-0.48
UT1	0.46	0.64	0.17	-0.22	-0.62	0.31	0.64	0.63	-0.67	0.86	0.76
UT2	0.46	0.63	0.18	-0.29	-0.66	0.32	0.66	0.66	-0.65	0.84	0.75
UT3	0.15	0.30	0.19	-0.06	-0.34	0.14	0.30	0.26	-0.43	0.63	0.40
UT4	0.33	0.42	0.11	-0.15	-0.50	0.20	0.42	0.41	-0.53	0.67	0.50
UT5	0.35	0.53	0.07	-0.19	-0.48	0.32	0.48	0.52	-0.58	0.77	0.59
UT6	0.35	0.51	0.11	-0.14	-0.49	0.26	0.54	0.55	-0.56	0.77	0.55
INI1	0.54	0.66	0.23	-0.23	-0.70	0.28	0.75	0.66	-0.76	0.78	0.95
INI2	0.54	0.69	0.20	-0.19	-0.71	0.27	0.74	0.70	-0.76	0.80	0.96
INI3	0.48	0.61	0.10	-0.13	-0.61	0.24	0.65	0.63	-0.69	0.66	0.92
INI4	0.50	0.67	0.24	-0.19	-0.68	0.25	0.66	0.58	-0.71	0.68	0.88

8.2.3.2 Assessment of the Structural Model (Inner Model)

The hypothetical-based connections existing among constructs are characterised by the inner or structural model as structural paths. In two separate studies by Chin (1998) and Gefen et al. (2000), paths were observed to have distinct weightings determined by the specifications of the inner and outer model. These paths are explained to be equal to uniform regression. The evaluation of the inner model is connected to the measurement of path, where an R^2 index and the bootstrap are the crucial proportions. The connection between the constructs and a least satisfactory level, as signified by the structural path, is 0.10. The significance of the individual paths can be assessed practically by means of the absolute value of the product of the path coefficient and suitable correlation coefficient, as stated by Falk and Miller (1992) and Clark (2003).

Structural model assessment refers to exploring the path coefficients and R^2 's produced by PLS, as stated by Daylami (2004). In terms of regression, PLS path coefficients and standardised beta coefficients are equal. For every dependent variable, regression analysis is akin to the interpretation of the R^2 , where the R^2 values can be used to determine a construct's degree of variance justified by the model (Barclay et al., 1995). Therefore, the power of independent variables in forecasting the dependent variables is established through R^2 values. This power can also be used to indicate a model's effectiveness. The existence of any substantive impact through an independent hidden variable on a dependent hidden variable can be confirmed using R^2 (Fornell and Larcker, 1981) (see Table 8.6 below for R^2 values for this study's research model). The individual R^2 levels must be above the minimal threshold of .10. the forecasting capability of models is measured using path coefficients and R^2 , while the strength of the approximations, or the significance (t-values) of the path coefficients is explored

through re-sampling processes like jackknifing and bootstrapping (Chin, 1998b; Gefen et al., 2000).

Table 8.6: Variance explained by R square³⁹

Dependent Factor	R²
E-commerce self-efficacy	0.60
Outcome expectation	0.54
Risk aversion	0.45
User trust	0.49
Intention to use e-commerce	0.78

The t-statistics of indicators' weights and loadings for the hidden variables and the path coefficients for the measurement model can be approximately calculated by the bootstrapping technique. The implementation of the bootstrap follows a non-parametric manner as "N" estimates of each parameter in the PLS model are acquired through the creation of "N" sample sets. This acquisition of samples is accomplished by substituting the samples from the primary data set.

Hoyle (1999) and Daylami (2004) stated that exploring the path coefficients will help in inspecting the relations between the dependent and independent variables, as this will determine every ancestor variable's relative importance, similar to the way usual deterioration occurs; path coefficients demonstrate the two variables' straight consequence, and the directional connection.

A bootstrapping method is applied to experiment with the hypotheses introduced in Chapter 4. This method is employed to determine the path coefficients and to evaluate

³⁹ More comments on this table will be provided in the next section.

their weight, moreover, it has implemented a re-sampling set at 200, as recommended by the PLS Graph version 3.00. All hypothesised path statistical significances are evaluated among their t-values, see Table 8.8. Appendix K introduces the summary of path coefficients for the study model.

8.2.3.2.1 Direct and Indirect Effects

The ability to investigate both direct and indirect consequences of the connection between constructs in the structural equation models analysis was encountered by Vatanasakdakul (2007). The most essential part of structural equation models is the direct consequence; furthermore, a directional connection among two constructs is considered as a direct consequence. An independent and a dependent construct connection within a structural model is distinguished by every direct consequence, whereas the indirect consequence is described as the independent construct's result on a dependent variable through one or more intervening or mediating variables, as Hoyle (1995) demonstrated.

Version 3.0 of PLS does not provide the indirect effects in its output, as it is limited to only producing the direct effects. Therefore, the indirect effects are computed manually through a simple equation, in which each independent construct path coefficient is multiplied by the dependent construct path coefficient. Direct and indirect effects are both found through SEM; the importance of these effects is clearly demonstrated when calculating the relative significance of the antecedent (independent) constructs. The result of summing both direct and indirect effects – total effects – on every exogenous construct of e-commerce self-efficacy and consumers' intention to use e-commerce is clearly displayed in Table 8.7.

In order to deeply explore the relationship among constructs in this research work, an examination of direct and indirect effects has been performed. The findings of this research indicated that the most active interpreter of users' intention to use e-commerce is e-commerce self-efficacy, with a 65% total effect, followed by risk (28%), then trust (26%), and finally technology anxiety (20%). Results are displayed in Table 8.1.

Table 8.7: The Direct And Indirect Effects Of The Research Constructs

Linkages in the model			Direct effect	Indirect effect	Total effect
			(1)	(2)	(1) + (2)
PIIT	→	E-c self-efficacy	0.007	--	0.007
PIIT	→	Intention to use e-c	--	.002	0.002
Experience	→	E-c self-efficacy	0.224	--	0.224**
Experience	→	Intention to use e-c	--	.055	0.055
Experience	→	Outcome expect	0.163	--	0.163*
Experience	→	Intention to use e-c	--	.021	.055+.021=0.076
Ease of use	→	E-c self-efficacy	0.268	--	0.268**
Ease of use	→	Intention to use e-c	--	.066	0.066
Ease of use	→	Outcome expect	0.339	--	0.339**
Ease of use	→	Intention to use e-c	--	.043	.066+.043=0.109
Self-esteem	→	E-c self-efficacy	0.052	--	0.052
Self-esteem	→	Intention to use e-c	--	.013	0.013
Trait anxiety	→	E-c self-efficacy	0.107		0.107
Trait anxiety	→	Intention to use e-c	--	.026	0.026
Tech anxiety	→	E-c self-efficacy	-0.375		-0.375**
Tech anxiety	→	Intention to use e-c	-0.109	-0.092	-0.201**

General s-efficacy → E-c self-efficacy	0.042	--	0.042
General s-efficacy → Intention to use e-c	--	.010	0.010
E-c self-efficacy → Outcome expect	0.334	--	0.334**
Outcome expect → Intention to use e-c	0.128	--	0.128
E-c self-efficacy → Risk aversion	-0.671	--	-0.671***
E-c self-efficacy → User trust	0.703	--	0.703***
Trust → Intention to use e-c	0.255	--	0.255**
Risk aversion → Intention to use e-c	-0.279	--	-0.279**
E-c self-efficacy → Intention to use e-c	0.245	.187+.179+ .043	0.654***

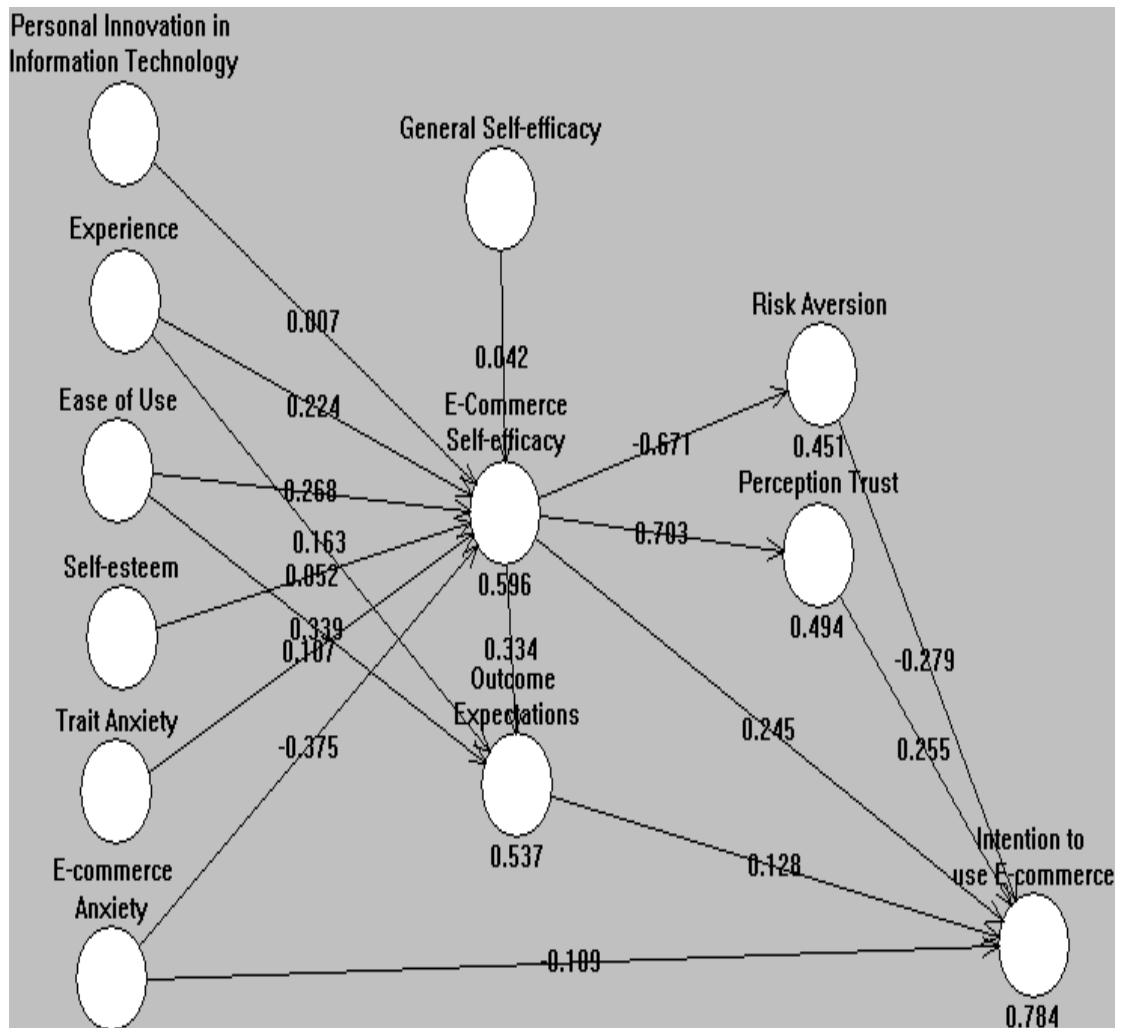
Note: *Significant, **Moderately significant, ***Highly significant.

Source: synthesised by the author.

8.3 PLS Graph Results

The PLS Graph version 3.00 was used to systematically evaluate the properties of the outer and inner model, as illustrated in Figure 8.3 below. The figure summarises the results of the PLS analysis for the overall sample. It shows the direct effects (path coefficient) of independent constructs on the dependent construct, along with R^2 under each dependent construct.

Figure 8.3: E-commerce self-efficacy model: output of PLS⁴⁰



8.4 Testing the Hypotheses

8.4.1 Hypothesis 1: Personal innovation in information technology vs. e-commerce self-efficacy

Hypothesis 1 tested the relationship between personal innovation in information technology and e-commerce self-efficacy. The causal relationship between PIIT and e-commerce self-efficacy revealed no significant relationship for the combined e-

⁴⁰ E-commerce anxiety it is the technology anxiety

commerce self-efficacy infrastructure (path coefficient = 0.007, $p \leq 0.05$). The hypothesis is therefore rejected.

8.4.2 Hypothesis 2a: Experience vs. e-commerce self-efficacy

Hypothesis 2a tested the relationship between experience and e-commerce self-efficacy. The causal relationship between experience and e-commerce self-efficacy revealed a significant positive relationship for the combined e-commerce self-efficacy infrastructure (path coefficient = 0.224, $p \leq 0.01$). The hypothesis is therefore supported.

8.4.3 Hypothesis 2b: Experience vs. outcome expectation

Hypothesis 2b tested the relationship between experience and outcome expectation. The causal relationship between experience and outcome expectation revealed a significant positive relationship for the combined outcome expectation infrastructure (path coefficient = 0.163, $p \leq 0.01$). The hypothesis is supported.

8.4.4 Hypothesis 3a: Ease of use vs. e-commerce self-efficacy

Hypothesis 3a tested the relationship between ease of use and e-commerce self-efficacy. The causal relationship between ease of use and e-commerce self-efficacy revealed a significant positive relationship for the combined e-commerce self-efficacy infrastructure (path coefficient = 0.268, $p \leq 0.001$). The hypothesis is supported.

8.4.5 Hypothesis 3b: Ease of use vs. outcome expectation

Hypothesis 3b tested the relationship between ease of use and outcome expectation. The causal relationship between ease of use and outcome expectation revealed a

significant positive relationship for the combined outcome expectation infrastructure (path coefficient = 0.339, $p \leq 0.001$). The hypothesis is supported.

8.4.6 Hypothesis 4: Self-esteem vs. e-commerce self-efficacy

Hypothesis 4 tested the relationship between self-esteem and e-commerce self-efficacy. The causal relationship between self-esteem and e-commerce self-efficacy revealed no significant relationship for the combined e-commerce self-efficacy infrastructure (path coefficient = 0.052, $p \leq 0.05$). The hypothesis is rejected.

8.4.7 Hypothesis 5: Trait anxiety vs. e-commerce self-efficacy

Hypothesis 5 tested the relationship between trait anxiety and e-commerce self-efficacy. The causal relationship between trait anxiety and e-commerce self-efficacy revealed a significant negative relationship for the combined e-commerce self-efficacy infrastructure (path coefficient = - 0.107, $p \leq 0.05$). The hypothesis is supported.

8.4.8 Hypothesis 6a: Technology anxiety Vs. e-commerce self-efficacy

Hypothesis 6a tested the relationship between technology anxiety and e-commerce self-efficacy. The causal relationship between technology anxiety and e-commerce self-efficacy revealed a significant negative relationship for the combined e-commerce self-efficacy infrastructure (path coefficient = - 0.375, $p \leq 0.001$). The hypothesis is supported.

8.4.9 Hypothesis 6b: Technology anxiety vs. intention to use e-commerce

Hypothesis 6b tested the relationship between technology anxiety and intention to use e-commerce. The causal relationship between technology anxiety and intention to use e-commerce revealed a significant negative relationship for the combined intention to

use e-commerce infrastructure (path coefficient = - 0.109, $p \leq 0.05$). The hypothesis is supported.

8.4.10 Hypothesis 7: General self-efficacy vs. e-commerce self-efficacy

Hypothesis 7 tested the relationship between general self-efficacy and e-commerce self-efficacy. The causal relationship between general Self-efficacy and e-commerce self-efficacy revealed no significant relationship for the combined e-commerce self-efficacy infrastructure (path coefficient = 0.042, $p \leq 0.05$). The hypothesis is rejected.

8.4.11 Hypothesis 8a: E-commerce self-efficacy vs. outcome expectation

Hypothesis 8 tested the relationship between e-commerce self-efficacy and outcome expectation. The causal relationship between e-commerce self-efficacy and outcome expectation revealed a significant positive relationship for the combined outcome expectation infrastructure (path coefficient = 0.334, $p \leq 0.001$). The hypothesis is supported.

8.4.12 Hypothesis 8b: E-commerce self-efficacy vs. risk aversion

Hypothesis 10a tested the relationship between e-commerce self-efficacy and risk aversion. The causal relationship between e-commerce self-efficacy and risk aversion revealed a significant negative relationship for risk aversion (path coefficient = - 0.671, $p \leq 0.001$). The hypothesis is supported.

8.4.13 Hypothesis 8c: E-commerce self-efficacy vs. user trust

Hypothesis 10b tested the relationship between e-commerce self-efficacy and user trust. The causal relationship between e-commerce self-efficacy and user trust revealed a

significant positive relationship for user trust (path coefficient = 0.703, $p \leq 0.001$). The hypothesis is supported.

8.4.14 Hypothesis 8d: E-commerce self-efficacy vs. intention to use e-commerce

Hypothesis 10c tested the relationship between e-commerce self-efficacy and intention to use e-commerce. The causal relationship between e-commerce self-efficacy and intention to use e-commerce revealed a significant positive relationship for the combined intention to use e-commerce infrastructure (path coefficient = 0.245, $p \leq 0.001$). The hypothesis is supported.

8.4.15 Hypothesis 9: Outcome expectation vs. intention to use e-commerce

Hypothesis 9 tested the relationship between outcome expectation and intention to use e-commerce. The causal relationship between outcome expectation and intention to use e-commerce revealed a significant negative relationship for the combined intention to use e-commerce infrastructure (path coefficient = 0.128, $p \leq 0.01$). The hypothesis is supported.

8.4.16 Hypothesis 10: Risk aversion vs. intention to use e-commerce

Hypothesis 11 tested the relationship between risk aversion and intention to use e-commerce. The causal relationship between risk aversion and intention to use e-commerce revealed a significant negative relationship for the combined intention to use e-commerce infrastructure (path coefficient = - 0.279, $p \leq 0.001$). The hypothesis is supported.

8.4.17 Hypothesis 11: User trust vs. intention to use e-commerce

Hypothesis 12 tested the relationship between user trust and intention to use e-commerce. The causal relationship between user trust and intention to use e-commerce revealed a significant positive relationship for the combined intention to use e-commerce infrastructure (path coefficient = 0.255, $p \leq 0.001$). The hypothesis is supported.

Table 8.8 shows the structural model findings and summarises the research hypotheses.

Table 8.8: Structural model findings

Linkages in the model	Hypothesis sign	Standard B	t-value	Results
PIIT \longrightarrow E-c self-efficacy	H1 +	0.007	0.107	Rejected
Experience \longrightarrow E-c self-efficacy	H2a +	0.224	2.797**	Supported
Experience \longrightarrow Outcome expect	H2b +	0.163	2.867**	Supported
Ease of use \longrightarrow E-c self-efficacy	H3a +	0.268	3.969***	Supported
Ease of use \longrightarrow Outcome expect	H3b +	0.339	5.096***	Supported
Self-esteem \longrightarrow E-c self-efficacy	H4 +	0.052	1.023	Rejected
Trait anxiety \longrightarrow E-c self-efficacy	H5 -	0.107	1.971*	Supported
Tech anxiety \longrightarrow E-c self-efficacy	H6a -	0.375	4.536***	Supported
Tech anxiety \longrightarrow Intention to use e-c	H6b -	0.109	2.267*	Supported
General s-efficacy \longrightarrow E-c self-efficacy	H7 +	0.042	0.995	Rejected
E-c self-efficacy \longrightarrow Outcome expect	H8a +	0.334	5.292***	Supported
E-c self-efficacy \longrightarrow Risk aversion	H8b -	0.671	18.441** *	Supported
E-c self-efficacy \longrightarrow User trust	H8c +	0.703	19.847** *	Supported
E-c self-efficacy \longrightarrow Intention to use e-c	H8d +	0.245	5.418***	Supported
Outcome expect e-c \longrightarrow Intention to us e-c	H9 +	0.128	2.863**	Supported
Risk aversion \longrightarrow Intention to use e-c	H10 -	0.279	4.996***	Supported
Trust \longrightarrow Intention to use e-c	H11 +	0.255	3.936***	Supported

Notes: *Significant at $p \leq 0.05$ level (one-tailed test); **Significant at $p \leq 0.01$ level (one-tailed test); *** Significant at $p \leq 0.001$ level (one-tailed test).

8.5 Research Model Goodness of Fit

PLS has as its primary objective the minimisation of error in all endogenous constructs. The degree to which any particular PLS model accomplishes this objective can be determined by examining the R^2 values for the dependent (endogenous) construct (Hulland, 1999).

One result of this difference in objective between LISREL and PLS is that no proper overall goodness-of-fit measures exist for models estimated using the second method. In general, researchers using PLS should report R^2 values for all endogenous (dependent) constructs incorporated in their models (Hulland, 1999).

Hulland (1999) indicated that numerous researchers who used PLS reported R^2 as a measurement of their models' goodness-of-fit. Birkinshaw et al. (1995) stated that the $R^2 = 12$ reported in their research was considered low, while Fornell et al. (1990) indicated that the $R^2 = 64$ reported in their research was considered high; Thus this research model has high $R^2 = 0.78$, which means this model has significant goodness-of-fit. (in the previous section) shows the value of R^2 for all endogenous constructs. All the values of R^2 are high, and the highest value ($R^2 = 0.78$) was for the intention to use e-commerce construct. Given this context, wherein a large number of factors could impact on consumers' intention to use e-commerce, the variance explained by this model is significant. This model has demonstrated goodness of fit.

8.6 Conclusion

PLS has been used to identify the positive and negative significant impacts of the e-commerce self-efficacy and other constructs on the consumers' intention to use e-commerce, along with determining the direct and indirect effects of these constructs. A number of observations can be offered from the results of the structural model analysis.

First, most of the paths (14) are significant and in the direction proposed supporting 14 hypothesised relationships. Second, the model is significant in that it explains 60% of variance in e-commerce self-efficacy, 54% of variance in the outcome expectation, 45% of variance in risk aversion, 49% of variance in user trust, and 78% of variance in consumers' intention to use e-commerce. Third, upon examining what has the greatest impact on consumer's intention to use e-commerce, it can be seen from the total effects (Table 7.11) that the e-commerce self-efficacy is the strongest predictor, with 65%, followed by risk (28%), then trust (26%) and technology anxiety (20%).

In conclusion, until now relatively little work has been completed in this area. This chapter has shown that e-commerce self-efficacy has a significant positive effect on the consumers' intention to use e-commerce. The next chapter focuses on a discussion of the implications of this research and its key contributions.

CHAPTER 9.

DISCUSSION AND CONCLUSIONS

9.1 Introduction

The findings from both the factor analysis and the partial least square analysis were introduced earlier in Chapters 7 and 8. Chapter 9 is the concluding chapter, firstly providing a summary and discussion of the study theories with their outcomes, and the research constructs' result. The chapter then examines the extra value added by this study within the framework of the previous literature (both academic and managerial contributions). The chapter concludes with an assessment of the existing shortcomings of this study and suggestions for future studies.

9.2 Summary of the Main Findings

This study's findings support the viewpoint of the social cognitive theory (SCT) regarding the intention to use e-commerce. Individual behaviour related to online shopping was found to be highly affected by e-commerce self-efficacy, according to the social cognitive theory. Similarly, a significant relationship between e-commerce self-efficacy and behavioural intention was noted through the current study's results.

As shown in Table 9.1, a summary of the research hypotheses and test results are provided under the heading of each research question. While fourteen research hypotheses (H2a, H2b, H3a, H3b, H5, H6a, H6b, H8a, H8b, H8c, H8d, H9, H10, H11) have been supported from the empirical test, three research hypotheses have not (H1, H4, H7).

Table 9.1: A summary of the research questions and hypotheses

Hypothesis	<u>Research Question 1:</u> What are the factors that affect the e-commerce self-efficacy?	Results
H1	Personal innovation in Information Technology will positively influence e-commerce self-efficacy.	No
H2a:	System experience will positively influence e-commerce self-efficacy.	Yes
H3a:	E-commerce system ease of use will positively influence e-commerce self-efficacy.	Yes
H4:	Self-esteem will positively influence e-commerce self-efficacy.	No
H5:	Customers' trait anxiety will negatively influence e-commerce self-efficacy.	Yes
H6a:	Customers' technology anxiety will negatively influence e-commerce self-efficacy.	Yes
H7:	General self-efficacy will positively influence e-commerce self-efficacy.	No
	<u>Research Question 2:</u> What are the impacts and antecedents of e-commerce self-efficacy?	
Q2a	How does e-commerce self-efficacy influence individuals' outcome expectation of using e-commerce?	
H8a:	E-commerce self-efficacy will positively influence the end-users' outcome expectation.	Yes
Q2b	How does e-commerce self-efficacy influence individuals' risk aversion?	
H8b:	E-commerce self-efficacy will negatively influence the customers' risk aversion.	Yes
Q2c:	How does e-commerce self-efficacy influence individuals' e-commerce trust?	
H8c:	E-commerce self-efficacy will positively influence the customers' trust.	Yes
	<u>Research Question 3:</u> How do the users' trust and risk aversion affect their intention to use e-commerce?	
H10:	Customers' risk aversion will negatively influence their intention to use e-commerce systems.	Yes
H11:	Users' trust will positively influence their intention to use e-commerce systems.	Yes

	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?	
H8a:	E-commerce self-efficacy will positively influence the end-users' outcome expectation.	Yes
H8b:	E-commerce self-efficacy will negatively influence the customers' risk aversion.	Yes
H8c:	E-commerce self-efficacy will positively influence the customers' trust.	Yes
H8d:	E-commerce self-efficacy will positively influence the intention to use e-commerce.	Yes
	Research Question 5: What is the impacts of individuals' outcome expectations on their intention to use e-commerce?	
H9:	Customers' outcome expectations will positively influence their intention to use e-commerce systems.	Yes
	Research Question 6: How do emotional factors (anxiety) and technical factors (system experience, system ease of use) affect the users' intention to use e-commerce?	
H5:	Customers' trait anxiety will negatively influence the e-commerce self-efficacy.	Yes
H6b:	Customers' technology anxiety will negatively influence their intention to use e-commerce.	Yes
H2a:	System experience will positively influence the e-commerce self-efficacy.	Yes
H2b:	E-commerce system experience will positively influence the end-users' outcome expectation.	Yes
H3a:	E-commerce system ease of use will positively influence the e-commerce self-efficacy.	Yes
H3b:	E-commerce systems' ease of use will positively influence the customers' outcome expectation.	Yes
	Research Question 7: Is there any difference between male and female in term of intention to use E-commerce?	
	<i>The answer will be discussed from table 9.3</i>	

Table 9.2: Results of the respondents' categorisation of the main study (high, neutral and low)

Factor	Mean	The Results
Personal innovation in information technology	3.37	High
System experience	3.28	High
Ease of use	3.37	High
Self-esteem	4.10	High
Trait anxiety	2.73	Neutral
Technology anxiety	2.64	Neutral
General self-efficacy	3.82	High
E-commerce self-efficacy	3.34	High
Outcome expectation	3.49	High
Risk aversion	2.77	Neutral
User trust	3.21	High
Intention to use e-commerce	3.54	High

9.3 Discussion of the Survey Findings

In this section, the findings of the survey are presented in accordance with the underlying research questions. The results of the hypothesis-testing are discussed under the heading of the related variables and compared with previous findings in the literature.

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)

- Personal innovation in information technology vs e-commerce self-efficacy

Hypothesis H1 was not supported by the results of the study. Contrary to expectations, The personal innovation in information technology did not have a significant relationship with e-commerce self-efficacy and thus indicates that personal innovation in information technology will not improve e-commerce self-efficacy. Inconsistent with

Agarwal et al. (2000) and Thatcher and Perrewe (2002), this study found that consumers with high personal innovation in information technology were equally as likely to be in e-commerce self-efficacy as consumers with low personal innovation in information technology. This is not significant, as some implications can be drawn similar to those discussed above with regard to finding alternate means of fostering perceptions of e-commerce self-efficacy in consumers with low personal innovation in information technology.

Personal innovation in information technology, according to Agarwal and Prasad (1998b, p. 206) is “the willingness of an individual to try out any new information technology”, Also, as shown in Table 9.2, according to Thatcher and Perrewe (2002) there is high personal innovation in information technology. Accordingly those individuals tend to demonstrate higher levels of self-confidence when performing new tasks or when entering new situations. Alternately, individuals who report lower levels of PIIT should have less tolerance for risk (Harris, 1999).

Although e-commerce is new information technology, this study did not verify that there is an impact of personal innovation in information technology on e-commerce self-efficacy; this result may be due to the sample used in this research study (those students already have sufficient information about information technology), or may be due to the scale the study used, as the study found some vagueness in the respondents’ answers of the for this variable.

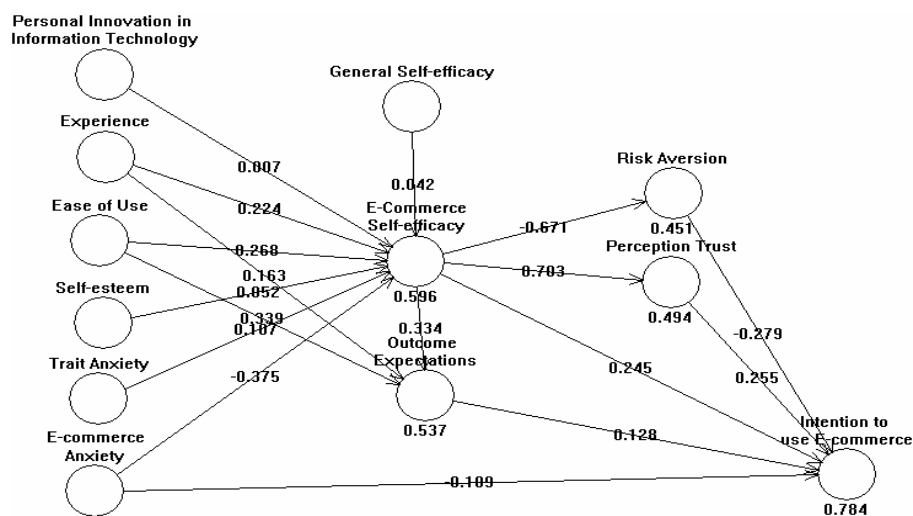
- **System experience vs. e-commerce self-efficacy and outcome expectation**

As expected, Hypotheses H2a and H2b were supported by the study outcomes, as e-commerce self-efficacy and outcome expectation are noticeably related to system experience. Therefore, it can be hypothesised that system experience will enhance e-commerce self-efficacy.

The direct impact that system experience has on e-commerce self-efficacy and outcome expectation varies between 22% and 16%, which is a considerable influence, as seen in Table 8.7.

According to the findings, users' system experience is directly connected to their e-commerce self-efficacy and outcome expectation in a very considerable, momentous and positive way. Therefore, the experience of end-users and the level of their everyday usage of software systems have been recognised as factors influencing e-commerce and online purchasing. Similar satisfaction effects have been established by other researchers (Rafaeli and Sutton, 1986) but have not been explained by the fundamental causal process; instead relationships have been used. As seen in Figure 9.3, system experience implicitly impacts on intention to use e-commerce via e-commerce self-efficacy and outcome expectation. It is proposed that while end-users perform an assessment of their experience level with the system, both their perceptions of e-commerce self-efficacy and outcome expectations can change. Users' judgment of their personal experience with the system can affect this transformation positively or negatively.

Figure 9.1: The e-commerce self-efficacy model⁴¹



⁴¹ E-commerce anxiety it is the technology anxiety

- **Ease of Use vs e-commerce self-efficacy and Outcome expectation**

As expected, Hypotheses H3a and H3b were supported by the study outcomes, as e-commerce self-efficacy and outcome expectation are noticeably related to system ease of use. Therefore, it can be hypothesised that system ease of use will enhance e-commerce self-efficacy.

Systems that are described as unfriendly, undependable, dysfunctional or slow are generally expected to cause dissatisfaction in users. Additionally, if users consider a system to be of low technical quality, they will probably refuse to operate it (Hirschheim and Newman, 1988). Therefore, ease of use is considered to be an essential influential element of e-commerce self-efficacy and outcome expectation.

The influence ease of use has on e-commerce self-efficacy and outcome expectation is a directly explicit one, as seen in Figure 9.1. Attributes causing user-unfriendly systems are hardware or software related, which means that either the system or its software is not very usable or that users have not been equipped with proper training (Lyytinen and Hirschheim, 1987). Davis et al. (1989), for instance, discovered that system ease of use shaped users' behavioural intentions to use the system; it is reasonable that the intention to use e-commerce is affected by ease of use, owing to its influence on e-commerce self-efficacy and outcome expectation. It is indicated that systems described as easy to use by users will be more useful to them and consequently be highly evaluated in terms of task contentment (for example, purchasing without difficulty 24 hours a day, less time consumption, shopping for lower prices, and more productivity). Therefore, intention to use the system is developed through individuals' attitudes regarding their capabilities to operate the system and the level of satisfactory results they may obtain when using it.

- **Self-esteem vs e-commerce self-efficacy**

Hypothesis H4 was not supported by the results of the study. Contrary to expectations, self-esteem did not have a significant relationship with e-commerce self-efficacy and

thus indicates that self-esteem will not improve e-commerce self-efficacy. Inconsistent with previous researches, this study found that consumers with high self-esteem were equally as likely to exhibit e-commerce self-efficacy as consumers with low self-esteem. Although, as shown in Table 9.2, respondents exhibited high self-esteem, this did not affect their e-commerce self-efficacy. There are two possible explanations for this result. The first is that self-esteem has no real effect on consumers' decision to use e-commerce. The second possible explanation, which the author supports, is that many respondents did not want to declare their real feelings about themselves, so most of the respondents' answers to the self-esteem questions were positive. The implication from this result is that there is a need to conduct another study, using a different scale to measure self-esteem. On the new scale, the questions about self-esteem must be indirect, so these questions can measure self-esteem without the respondents being aware of this.

- **Trait anxiety and technology anxiety vs e-commerce self-efficacy**

Hypotheses H5 and H6a were supported by the results of the study. Not surprisingly, system ease of use has a significant relationship with e-commerce self-efficacy and outcome expectation; this indicates that system ease of use will improve e-commerce self-efficacy.

Consistent with previous research (Thatcher and Perrewé, 2002), trait anxiety and technology anxiety were found to have a directly negative effect on e-commerce self-efficacy. As Table 8.7 shows, the effect of technology anxiety (-38%) on e-commerce self-efficacy was greater than the effect of trait anxiety (-11%).

The implication from this result is that technology anxiety is not constant. This anxiety can be reduced by teaching these systems in schools, and training the users in how to use specific systems (e-commerce) and using the media (newspapers, radio, television,

and special reports) to increase information about these systems for the users. That will reduce the technology anxiety and increase the e-commerce self-efficacy, which will result in greater intention to use e-commerce.

- **General self-efficacy vs e-commerce self-efficacy**

Hypotheses H7 was not supported by the results of the study. Contrary to expectations, general self-efficacy did not have a significant relationship with e-commerce self-efficacy and this indicates that general self-efficacy will not improve e-commerce self-efficacy.

There are two explanations for this result. The first is that the general users' expectation about their capability is different when they face specific cases (for example, using e-commerce), so they might assume a high level of capability about themselves generally, but when they face a specific case they find themselves incapable of performing this task. The second explanation is that there is a need to do another study, using a different scale.

9.3.2 Research Question 2: What are the impacts and antecedents of e-commerce self-efficacy?

To answer this question the study needs to answer the following questions:

Q2a: How does e-commerce self-efficacy influence individuals' outcome expectation of using e-commerce? (Hypothesis H8a)

- **E-commerce self-efficacy vs outcome expectation**

Hypothesis H8a was supported by the results of the study. Not surprisingly, e-commerce self-efficacy has a significant relationship with users' outcome expectation. This indicates that e-commerce self-efficacy will improve the outcome expectation. Table 8.7 shows that the direct positive affect of e-commerce self-efficacy on outcome

expectation was 33%. Individuals who had confidence in their ability to use e-commerce had higher expectations of the outcomes of using this technology than those who lacked this confidence. This has implications for increasing the motivation for using this technology.

Q2b: How does e-commerce self-efficacy influence individuals' risk aversion? (Hypothesis H8b)

- **E-commerce self-efficacy vs risk aversion**

Hypothesis H8b was supported by the results of the study. Not surprisingly, e-commerce self-efficacy has a significant negative relationship with risk aversion. This indicates that e-commerce self-efficacy will reduce risk aversion. Table 8.7 shows that e-commerce self-efficacy affects risk version, by 67%, this has an implication for the importance of self-efficacy in reducing risk aversion and increasing users' intention to use e-commerce.

Q2c: How does e-commerce self-efficacy influence individuals' risk aversion? (Hypothesis H8c)

- **E-commerce self-efficacy vs user trust**

Hypothesis H8c was supported by the results of the study. Not surprisingly, e-commerce self-efficacy has a significant positive relationship with user trust. This indicates that e-commerce self-efficacy will increase users' trust in e-commerce systems. Table 8.7 shows that e-commerce self-efficacy has a direct positive effect on users' trust, by 70%. This result shows the importance of self-efficacy in increasing users' trust in e-commerce technology.

9.3.3 Research Question 3: How do the users' trust and risk aversion affect their intention to use e-commerce? (Hypotheses H10, H11)

- **Customers' risk aversion vs intention to use e-commerce systems**

Hypothesis H10 was supported by the results of the study. Not surprisingly, customers' risk aversion has a significant negative relationship with intention to use e-commerce; this indicates that reducing customers' risk aversion will increase their intention to use e-commerce. Table 8.7 shows that risk aversion has a direct negative relation to users' intention to use e-commerce by 28%. This provides a significant reason to reduce risk aversion by increasing self-efficacy, in order to increase users' intention to use e-commerce.

- **Customer's trust vs intention to use e-commerce systems**

Hypothesis H11 was supported by the results of the study. As expected, user trust has a significant positive relationship with intention to use e-commerce; this indicates that increasing users' trust will increase their intention to use e-commerce. Table 8.7 shows that users' trust in e-commerce has a direct positive relationship with users' intention to use e-commerce by 25%. Accordingly there is considerable cause to increase users' trust by increasing their self-efficacy, in order to increase their intention to use e-commerce.

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)

- **E-commerce self-efficacy vs intention to use e-commerce.**

In addition to Hypotheses H8a, H8b and H8c⁴², Hypothesis H8d was Hypothesis H8d was supported by the results of the study. As expected, Customer's e-commerce self-efficacy has a significant positive relationship with their intention to use e-commerce; this indicates that increasing e-commerce self-efficacy will increase customers' intention to use e-commerce.

Table 8.7 shows that e-commerce self-efficacy has a significant positive effect on the users' intention to use e-commerce; the direct effect of e-commerce self-efficacy on users' intention is 25%, but its total effect is 65% (direct effect + indirect effect). The indirect effect occurs through the effect of e-commerce self-efficacy on outcome expectation; the indirect effect is .043. The second indirect effect occurs through the effect of e-commerce self-efficacy on reducing risk aversion and how this will increase users' intention to use e-commerce; this indirect effect is 19%. The last indirect effect of e-commerce self-efficacy occurs through increasing consumers' trust in e-commerce, and how this will increase consumers' intention to use e-commerce; this indirect effect is 18%. Thus the total effect of e-commerce self-efficacy on users' intention to use e-commerce is 65%. This represents the highest significant effect on users' intention to use e-commerce in this study's model (for example, higher than users' trust, and users' risk aversion). This indicates the importance of self-efficacy in determining users' intention to use e-commerce.

⁴² These three hypotheses have been discussed before.

9.3.5 Research Question 5: How do the individuals' outcome expectations affect their intention to use e-commerce? (Hypothesis H9)

- **Outcome expectation vs Intention to use e-commerce**

Hypothesis H9 was supported by the results of the study. Not surprisingly, user's outcome expectation has a significant positive relationship with users' intention to use e-commerce; thus indicating that an increase in users' motivation will increase their intention to use e-commerce. As Table 8.7 shows, the direct effect of users' outcome expectation of using e-commerce on their intention to use this technology is 13%, and this is a significant relation, as Table 8.8 shows. Thus it is very important to increase the motivation (outcome expectations) of the users to encourage them to use this technology (for example, sell products at cheaper prices than in the physical market, provide more options and free delivery).

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)

- **Trait anxiety and technology anxiety vs intention to use e-commerce.**

Hypotheses H5 and H6 were supported by the results of the study. Trait anxiety has less effect on users' intention to use e-commerce (-2%), but it has a significant effect on e-commerce self-efficacy (-11%), according to Table 8.7. On the other hand, technology anxiety has a significant negative relationship on the intention to use e-commerce. This indicates that reducing users' technology anxiety will increase their intention to use e-commerce. As Table 8.7 shows, the direct effect of technology anxiety on users' intention to use e-commerce is -11%, and that is a significant effect. According to Table 8.8, the indirect effect of technology anxiety on users' intention to use e-commerce is -9%, so the total affect of technology anxiety on users' intention to use e-commerce is -20%, which is a significant effect. This result demonstrates the importance of reducing

the technology anxiety by education and training, which will increase users' intention to use e-commerce.

- **System experience and system ease of use vs intention to use e-commerce**

Hypotheses H2a, H2b, H3a, and H3b were supported by the results of the study. In addition to the significant affect of system experience and system ease of use on both e-commerce self-efficacy and outcome expectation; they (system experience and system ease of use) have an indirect affect on the user intention to use e-commerce. That is apparent from table 8.7 (previous chapter).

9.3.7 Research Question 7: Is there any difference between males and females in terms of their intention to use e-commerce?

This study highlights the alarm of the weakness of intention to use e-commerce self-efficacy in females compared with males, and thus result on the weakness in their intention to use e-commerce.

As Table 9.3 shows, there is a significant relationship between gender and e-commerce self-efficacy, system ease of use, technology anxiety, user trust, risk aversion, and intention to use e-commerce. The table shows that e-commerce self-efficacy, system ease of use, user trust, and intention to use e-commerce is higher for males than females (there is a significant difference: $p \leq .05$, $**p \leq .01$, $***p \leq .001$). Furthermore, the study found that risk aversion and technology anxiety are higher for females than males (there is significant difference: $p \leq .05$, $**p \leq .01$, $***p \leq .001$).

As the table shows, the intention to use e-commerce for males (3.72) is higher than the intention for females (3.34) and, according to the two-tailed test, this is a significant difference between males and females.

Table 9.3 Gender and the main research variables

	Gender	N	Mean	t	df	Sig. (2-tailed)
E-c self-efficacy	female	111	3.16	-3.436	229	** .001
	male	120	3.51	-3.435	227.327	** .001
Ease of use	female	111	3.14	-4.536	229	*** .000
	male	120	3.60	-4.516	220.861	*** .000
Tech anxiety	female	111	2.87	3.426	229	** .001
	male	120	2.43	3.421	225.880	** .001
User trust	female	111	3.10	-2.185	229	* .030
	male	120	3.32	-2.182	226.008	* .030
Risk aversion	female	111	2.98	3.587	229	*** .000
	male	120	2.57	3.576	223.507	*** .000
Intention to use e-com	female	111	3.34	-3.012	229	** .003
	male	120	3.72	-3.015	228.464	** .003

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

The previous research on self-efficacy has verified that there is a significant difference in self-efficacy between males and females, in results relating to gender and e-commerce self-efficacy, with significant differences found between males and females. In a study by Galpin et al. (2003), when asked about course-specific self-efficacy, generally female university students were less positive, with significant differences in statements relating to passing and obtaining a first. Thus their intention to do that course was low compared with males.

In a study by Ramalingam and Wiedenbeck (1998), self-efficacy has been observed to be flexible, dissimilar to various other factors connected to involvement in computing. Accordingly, it is possible to boost self-efficacy and gain extra positive outcomes through the adjustment of training methods. Self-efficacy of a specific technology is associated with intention to use that technology (Miura, 1987). Therefore, if an individual intends to make use of a certain technology, the self-efficacy of this individual will be elevated.

Training and education must be provided for females to facilitate and enhance their general intention to use e-commerce, as testified by study results.

9.4 The Contribution to Academic Research

This study makes significant contributions to a number of areas of e-commerce research and practice. These contributions relate to (1) the development of a conceptual model that explains and predicts the intention to use e-commerce; (2) the empirical support for proposed hypotheses based on the integrative research framework and the literature; (3) the research focus on e-commerce self-efficacy as the most important factor related to predicting the intention to use e-commerce; (4) its application to business understanding of e-commerce usage throughout Australia and; (5) the originality in combining an explanatory approach, followed by an empirical confirmatory analysis in a rigorous research methodology for e-commerce.

9.4.1 Academic Research Contribution 1

Four models have provided a theoretical foundation for the model constructs presented in this research. The first model, by Compeau et al. (1999)⁴³ put social cognitive theory into practice for the computer area. The second model, by Thatcher and Perrewé (2002)⁴⁴, applied personal innovation in information technology, trait anxiety, and computer anxiety to computer self-efficacy. Henry and Stone's (1995)⁴⁵ 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

⁴³ This model has been published by *MIS Quarterly*.

⁴⁴ This model has been published by *MIS Quarterly*.

⁴⁵ This model has been published by *Computer Personal*.

(2005)⁴⁶ and used specific self-efficacy (online trading self-efficacy) on 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.

9.4.2 Academic Research Contribution 2

Earlier studies applied social cognitive theory in various areas of research, including medicine, education, computers and specific softwares. This study is considered innovative, as it is the first to apply social cognitive theory in the area of e-commerce. Previously, only one study, by Kim and Kim (2005), addressed this subject, by partially applying social cognitive theory (self-efficacy) in the field of online purchasing. Clearly, the lack of material covering this area has created the need to conduct a focused research study that can explain the way social cognitive theory factors (self-efficacy, outcome expectations, and anxiety) affect users' behaviour concerning e-commerce. It offers robust proof of the major impact of self-efficacy, outcome expectation, and anxiety on customers' intention to use e-commerce. Generally speaking, this study proposes that slightly refined social cognitive theory is valid in the field of e-commerce. This study adds to the academic research area by building a theoretical model that can clarify and forecast the relation connecting exogenous variables of e-commerce and e-commerce self-efficacy in addition to that connecting e-commerce self-efficacy and intention to use e-commerce. Many studies have tackled the subject of e-commerce; however, only a small number of studies have offered and experimentally examined self-efficacy models.

⁴⁶ This model has been published by *IEEE*.

9.4.3 Academic Research Contribution 3

This study is the first study to forecast and explain factors affecting self-efficacy in the framework of e-commerce specifically. In 2005 Kim and Kim conducted a study that tackled online shopping self-efficacy; however, factors that influence e-commerce self-efficacy were not discovered. These factors are established in this study. In a study by Compeau (1995), factors that Bandura, in 1979⁴⁷, confirmed to be influential in e-commerce self-efficacy, in the field of social science, were employed. Factors of potential influence on e-commerce were presented in this study. E-commerce self-efficacy has seven ancestor factors: (personal innovation in information technology, system experience, system ease of use, self-esteem, trait anxiety, technology anxiety, and general self-efficacy).

Four of the original seven factors (system experience, system ease of use, trait anxiety, and technology anxiety) have been confirmed to directly and considerably affect self-efficacy, according to the experimental evaluation.

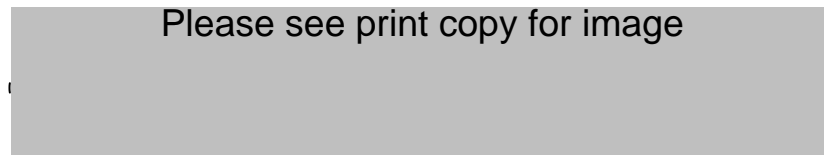
9.4.4 Academic Research Contribution 4

This study contributes to academic research through the recognition of technology anxiety and trait anxiety's influence on e-commerce self-efficacy. Earlier researchers (Compeau, 1995a, 1995b, 1999) have argued that anxiety is affected by self-efficacy, as seen in Figure 9.2. On the other hand, this research has confirmed the reverse relationship, in which technology anxiety and trait anxiety shape e-commerce self-efficacy. Therefore, any alterations made to users' technology anxiety or trait anxiety will influence e-commerce self-efficacy. Additionally, a significant negative relationship was confirmed to exist between technology anxiety and e-commerce self-

⁴⁷ The founder of social cognitive theory.

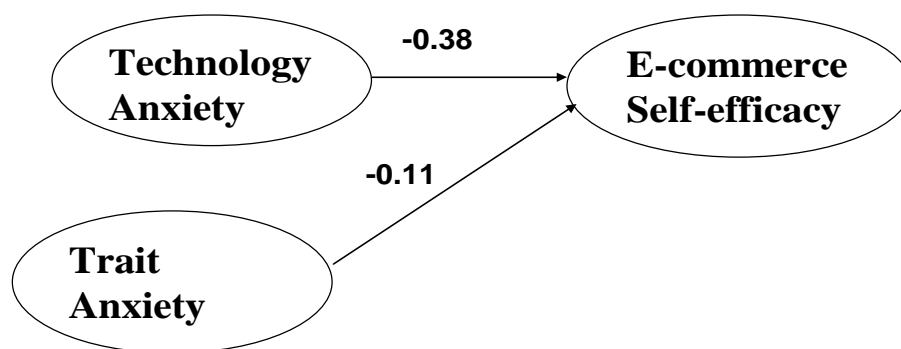
efficacy (-38%) and between technology anxiety and intention to use e-commerce (-11%).

Figure 9.2: Previous research on the relation between self-efficacy and anxiety



Source: Compeau (1995).

Figure 9.3: Current research on the relation between self-efficacy and anxiety



Source: the current research.

9.4.5 Academic Research Contribution 5

The importance of e-commerce is continually growing and therefore this study has supplied a necessary focus on that area by experimentally supporting existing hypotheses forecasting the impact of self-efficacy on users' intention to use e-commerce. The need to follow an objective method has been fulfilled through the experimental analysis process. The need for an integrative structure is clearly supported by research results. However; this study cannot present a solid foundation for a

worldwide complete hypothetical model on the impact self-efficacy has on the intention to use e-commerce, as it is only one study conducted in one country (Australia). Additional varied researches on other samples in different businesses and areas will be of high value.

9.4.6 Academic Research Contribution 6

No previous studies have targeted university students with the intention of discovering self-efficacy's influence on their intention to use e-commerce. Moreover, a small number of studies in Australia have addressed either self-efficacy or e-commerce, but this research is the first one integrating these two elements in the same research.

9.4.7 Academic Research Contribution 7

The seventh contribution derives from the method that has been used to collect the research data. The study used the free simulation method when collecting the data. This method is described as “free”, since the researcher attempts to not control any variables in the environment. In this research, the most valuable outcome of employing free simulation is the revitalisation of the online shopping process in the brains of participants, as the elements of psychological reactions are brought to the minds of involved individuals while they are experiencing the technology or performing a certain transaction. The main reason behind the selection of this method for this study is that it can elucidate individuals' answers to the survey, based on the latest transaction they have performed. Techniques used in this study will produce a higher accuracy of information collected, as they are directly related to a real recent situation faced by participants.

9.4.8 Academic Research Contribution 8

The methodology utilised in this research has produced the final contribution made by this study to academic research. A thorough two-stage methodology was employed: the first stage involved an investigative approach, whereby a comprehensive review of the literature concerning the practice and application in e-commerce and self-efficacy was performed. This stage has produced the model of e-commerce self-efficacy, and clarified the research questions by means of the justified framework. Confirmatory experimental analysis was conducted in the second stage, on a considerable sample, to satisfy the study questions and theories.

9.5 The Managerial Contribution

In addition to the contributions made to academic research, this research has proactively provided a concentrated understanding of e-commerce, corresponding to actual companies' managerial approaches. Many complications are challenging managers in their efforts to employ e-commerce, as they lack clear awareness of this technology's value and its impact on organisational revenue. This study will assist managers and organisations in the course of outlining their e-commerce plans. The method constructed and employed by this research organises and combines self-efficacy factors in addition to providing justification for consumers' self-efficacy, which will provide managers with a clear model for customer behaviour in the framework of e-commerce. Gaps that exist in earlier literature tackling the influence of self-efficacy on customer behaviour in the e-commerce framework have been revealed using this method. The following managerial contributions illustrate a number of examples illustrating those gaps:

9.5.1 Managerial Contribution 1

The intention to use e-commerce is directly, explicitly and positively affected by both e-commerce self-efficacy and outcome expectation. It is proposed that individuals with higher levels of e-commerce self-efficacy and outcome expectation are more likely to perform an online transaction than those experiencing lower levels of these concepts. Additionally, higher levels of intention to use e-commerce can promote online transactions, expanding companies' revenues as a result. (Igbaria and Greenhaus, 1992; Henry and Stone, 1995).

9.5.2 Managerial Contribution 2

Increasing users' trust and reducing their risk aversion have both been proven to be remarkably affected by e-commerce self-efficacy (70% and 67% respectively). Managers can benefit from this suggestion, as it encourages them to determine the best approach to boost their customers' self-efficacy.

9.5.3 Managerial Contribution 3

According to the study findings, four additional concepts influence individuals' intention to use e-commerce, through the interceding variables of e-commerce self-efficacy and outcome expectation. These concepts are trait anxiety, technology anxiety, system experience and system ease of use. Therefore, if managers succeed in positively affecting all or some of these four concepts, then e-commerce self-efficacy and outcome expectation will also be positively affected. Companies' revenue will increase accordingly when the previous four concepts positively change individuals' intentions to perform an online transaction and their actual practice of it.

9.5.4 Managerial Contribution 4

In a study by Swanson (1974), it was testified that customer satisfaction with a system is essential for later utilisation of it. Swanson, in his study, defined the concept of user appreciation as the judgment made by a user to determine what worth the new technology can provide and how it would be useful in achieving personal goals. Steady factors such as demographics, character, or cognitive traits are less capable of being quickly altered and affected than a user's expectations throughout the execution process (DeSanctis, 1983). Management and system designers can make use of this important inference, as systems are often created without taking any notice of or reducing "people impacts" (Counte et al., 1985). Additionally, it draws attention to the considerable profits that can result from adopting a user-centred design. As a result, any factor that can negatively influence the success of e-commerce must be eliminated in the design phase (Henry and Stone, 1995).

9.5.5 Managerial Contribution 5

Henry and Stone (1995) stated that end-users and customers must be provided with managerial assistance and appropriate instruction, by engaging them in the phases of development of e-commerce soft-ware. Offering these forms of support by managers and Management Information Systems (MIS) in the early stages increases the stated positive impacts, especially if they are personally and directly offered to users. Hartwick and Barki (1994) testified that the success of any system should be built on users' participation and involvement, as they are fundamental elements of success. In addition to allowing users to participate, benefits (for example, saving time, 24 hours/7 days per week availability, lower prices, wider variety) and personal outcomes (for example, experiencing empowerment and achievement) that will help users achieve better

outcomes must be illustrated to them. This user participation produces a feeling of “user ownership”, as stated by Walton (1989). This situation of user empowerment strengthens system self-efficacy and outcome expectations for users, through boosted awareness of empowerment, ownership and self-rule about the system, which will encourage system usage and consequently deliver higher revenues for the company (Hackman and Oldham, 1975). This result is explained through the fact that users who judge themselves as capable of using the system are more likely to utilise this system, as they regard it as a way to accomplish positive results (lower prices, wider variety, availability for 24 hours a day, time savings, and accessibility to more information concerning the products).

9.4.6 Managerial Contribution 6

The media are a very important tool that can be used to boost self-efficacy, as they provide information that increases awareness of the environment (Bandura, 1988). Similarly, in the context of e-commerce, any extra information provided to individuals will increase their self-efficacy. Newhagen (1994) revealed the possibility of using the media to forecast self-efficacy, in that the higher levels of exposure to instructive media talks (for example, press, national TV news programs) signified boosted self-efficacy. Additionally, specific task self-efficacy has been discovered to be considerably influenced by listening to radio talk programs. These programs can emphasise feelings of self-efficacy for spectators or listeners as they listen to people like themselves discuss their thoughts. As the media improve viewers’ knowledge and information about any technology specifically, they can simultaneously be utilised to decrease technology anxiety. Along these lines, usage of that technology will be increased. Specific to e-commerce, the media in all their forms: newspapers, TV, and radio, can be utilised through broadcasting extra knowledge and awareness regarding e-commerce. This knowledge can address aspects such as usage methods, problems that can occur through

the purchasing process online and the way complaints – if any – can be made. Offering such information will produce higher e-commerce utilisation, as customers' anxiety decreases and self-assurance increases.

9.4.7 Managerial Contribution 7

E-commerce system designers/developers, implementers and managers of organisations can derive benefit from the important implications derived from the study's results and discoveries. In real practice, those responsible for creating and managing e-commerce operations are highly advised to bear in mind the significant impact of social factors that shape individuals' intention to utilise e-commerce: (trait anxiety, technology anxiety, outcome expectations, system experience, and system ease of use). As stated before, users must play a role in developing and influencing the development of e-commerce systems to build a suitable knowledge base, allowing them to effectively use the systems. Moreover, a user-centric approach must be followed by developers, through creating user-friendly e-commerce tools that maintain related information for any item for users throughout their session. This study's results prove that the e-commerce self-efficacy, system experience, system ease of use, and technology anxiety clearly shape users' intention to use e-commerce systems. Therefore, organisations should aim to boost users' self-efficacy, outcome expectations, system ease of use, and system experience in addition to reducing their technology anxiety, in order to enhance e-commerce acceptance and usage. This can be achieved through:

First: companies should increase their awareness of self-efficacy and how to promote it. According to a study by Bandura (1986), four sources of self-efficacy promotion can be used:

- Guided mastery: this is considered that the best way to boost self-efficacy; as a real successful practice of the behaviour will help users to develop high self-efficacy. Moreover, if users frequently succeed in operating the system, they will be more self-assured of their ability. These findings draw attention to the importance of training, as it is believed that practice is a significant part of training. Applying this suggestion can build individuals' confidence in conjunction with their expertise.
- Modelling: this only requires an illustration of the behaviour demonstrated by an individual watched by a trainee. Assessments of self-efficacy perception and execution in the framework of training can be effectively improved through modelling (Compeau and Higgins, 1995). Social persuasion as well can have a positive impact on self-efficacy through training, as continual assurance to users of their ability to successfully accomplish tasks and master the technology associated to it can build better self-confidence.
- Verbal persuasion: the influence that verbal persuasion has on self-efficacy differs significantly according to the perceived integrity of the persuaders, their reputation, reliability, skill and confidence (Bandura, 1977). Verbal persuasion has proven to be of great impact on efficacy belief and outcome expectation, in addition to encouraging changes in behavioural intentions (Maddux et al., 1982). The value of the persuaders' credibility has been deeply examined and analysed, due to its influence on verbal persuasion, because the more believable the supplier of information, the more likely are efficacy expectations to change. However, this field is in need of further investigation.
- Some physiological situations, especially those related to feelings of anxiety, may reduce individuals' self-efficacy, as they connect these feelings to their inability (Bandura, 1986) and therefore suffer a decrease in self-efficacy. In a study by Webster,

et al. (1990), it was established that playful behaviour and teaching can reduce technology anxiety through the process of training.

Second: offering an up-to-date technology that can support challenging market-oriented information that is essential to satisfy the needs of customers.

Third: locating resources related to e-commerce besides technical ones. An example of these resources is the customer support centres that offer the expertise of specialised e-commerce team to users. Members of such teams must be familiar with business and communication skills in order to serve customers better.

Fourth: guaranteeing the accessibility of these related resources (human, financial and information) that organisations need to offer for their users to guide them through the system.

Fifth: involving, teaching, and training customers through both development and implementation phases in order to increase their system experience and capability of operating it (Ditsa, 2003; Khalil and Elkordy, 2005).

Sixth: involving users in the system development work in order to create favourable user attitudes towards the systems. User involvement would allow user concerns over performance and rewards to be addressed before irretrievable investments are made in design efforts. E-commerce designers/implementers and managers of organisations are advised to find some means of addressing users' concerns in the development and implementation phases.

Seventh: developing positive customer attitudes, which can be accomplished through practices that include customers in the design and development phase. Following this practice can focus efforts more intensively on users' needs and expectations, without extra expenditure in the design phase. It is strongly recommended that organisations

seek the best way through which they can better tackle users' concerns in early phases of systems development

Eight: making sure that the offered e-commerce system is compatible with systems that potential users may be using at present.

9.6 Limitations of the Study

Four items represent the potential limitations that could evolve as a result of the employed research approach. These limitations are:

- The cross-sectional model employed in this research.

The model used in the free simulation questionnaire represents only users' behaviour in a bounded duration of time and does not explain how this behaviour can change later on. Users' attitude can be measured over a longer duration in further studies, using a longitudinal model that can help in identifying any changes of behaviour.

- The sample investigated through the research.

This limitation is a direct result of the student-based sample collected from the University of Wollongong in Australia. Despite all literature and proofs used to defend the selection of this sample, outcomes may still be constrained in terms of universality to un-represented individuals. Therefore, there is a need for extra research to evaluate how applicable this study's findings are to various populations and placement of tasks.

- The instruments used to measure data.

Despite the fact that almost all the constructs used for the questionnaire instrument have good psychometric properties and were either implemented or customised, extended research to enhance some of these construct is recommended. Four of the constructs

presented in the research would benefit from improvement. These constructs are general self-efficacy, trait anxiety, self-esteem, and personal innovation in information technology. The ambiguity of general self-efficacy and personal innovation in IT scales while performing the main survey suggests that they should be revised. As for self-esteem and trait anxiety, their scales should be modified, due to the researcher's need to indirectly obtain honest responses from participants. The successful accomplishment of any upcoming study agenda in knowledge management researches relies on the existence of trustworthy and valid measurement instruments.

Additionally, this study aimed to examine the predecessor variables of e-commerce self-efficacy (personal innovation in information technology, system experience, self-esteem, system ease of use, trait anxiety, technology anxiety, and general self-efficacy) and e-commerce self-efficacy then explained the way in which e-commerce self-efficacy influences the intention to use e-commerce. Further research can be conducted to measure the indirect in addition to the direct impact resulting from the exogenous variables of general self-efficacy, trait anxiety, technology anxiety, self-esteem, personal innovation in information technology, system ease of use, and system experience on the intention to use e-commerce. This will then clarify additional variations in customers' intention to use e-commerce.

- The narrow geographical reporting.

This limitation is a result of the geographical location (Australia) where this study has been conducted. Additional research performed in other nations will almost certainly support and confirm the findings related to forecasting consumers' intention to use e-commerce, in spite of the established reliability and validity of the suggested combined research framework.

The limitations explained above will be an excellent source for future researchers, as they offer many possibilities for overcoming all limitations or weakness points, which will be significantly important to e-commerce researchers and managers.

Even with the existing limitations, this study offers very helpful insights for those interested in the analysis of customers' intention to use e-commerce. Additionally, it contains useful suggestions from which organisations utilising e-commerce can benefit. Therefore, the limitations recognised previously will form the basis for further suggested research.

9.7 Areas for Future Research

Future research investigating e-commerce self-efficacy and outcome expectations should focus not only on the corresponding causal relationships, but also on the effectiveness of techniques created to boost e-commerce self-efficacy and outcome expectations. Furthermore, the four factors (guided mastery, modelling, social persuasion, and physiological states) stated by Bandura (1986) as influencing individuals' self-efficacy in their interaction with society must be applied to verify their boosting effect on self-efficacy within the e-commerce context. Research in this field should also be persevered with to ensure enhancements to both e-commerce self-efficacy and outcome expectation scales. The best way to achieve this goal is by carrying out additional cross-organisational researches by means of longitudinal data-gathering practices. Bandura (1986) has confirmed the existence of a reverse connection relating self-efficacy and outcome expectation which produces the necessity of applying the research model and examining the way outcome expectation can influence e-commerce self-efficacy. Moreover, the impact self-efficacy has on various web-providers, as users' trust varies depending on the product offered by the web-provider, must be examined in order to augment the validity of the research.

Finally, the direct influence of personal innovation in information technology, system experience, and system ease of use on customers' intention to use e-commerce should be investigated as well, as indicated by the study's findings

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Appendix A: Research consent form

University of Wollongong



Consent Form for University Students

“The Impact of Perceived Self-efficacy on the intention to Shop on-line”

Researcher: Mahmoud Al-dalahmeh

I have been given information about **“The Impact of Perceived Self-efficacy on the people intention to Shop on-line”**. I have discussed this research project with Mahmoud Al-dalahmeh. This is part of a PhD degree supervised by A/P Ann Hodgkinson from the Faculty of Commerce at the University of Wollongong.

I also consent to participate in a survey to be conducted by a researcher. I understand that my contribution will be confidential and that there will be no personal identification in the data that I agree to allow to be used in the study. I understand that there are no potential risks or burdens associated with this study.

I have had an opportunity to ask Mahmoud Al-dalahmeh any questions I may have about the research and my participation. I understand that my participation in this research is voluntary and I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not affect my relationship with the Faculty of Commerce at the University of Wollongong in any course/program I am doing there.

If I have any enquires about the research, I can contact Mahmoud Al-dalahmeh (0401549565 and/or A/P Ann Hodgkinson 4221 4026). If I have any concerns regarding the way the research is or has been conducted, I can contact the Ethics Officer, Human Research Ethics Committee, University of Wollongong on 42214457.

By signing below I am indicating my consent to participate in the research. I understand that the data collected from my participation will be used primarily for a PhD thesis, and will also be used in summary form for journal publication, and I consent for it to be used in that manner.

Signed

Date

.....

...../...../.....

Name (please print)

.....

Appendix B: Study survey



INFORMATION SHEET FOR RESEARCH PARTICIPANTS

“THE APPLICATION OF INFORMATION SYSTEMS IN MARKETING A STUDY OF EMPOWERMENT IN ELECTRONIC COMMERCE TECHNOLOGY USAGE”

Researcher: Mahmoud Al-dalahmeh
Supervisors A/P Ann Hodgkinson
Dr Ali Salman Saleh

Thank you for showing an interest in this research project. Please read this information sheet carefully before deciding whether or not you wish to participate. Participation in the study is entirely up to you.

Purpose: I am conducting a survey as partial fulfilment of the requirements for the degree of Doctor of Philosophy at the University of Wollongong Australia. The university website is "www.uow.edu.au". My doctoral research concern is to determine if **Perceived Self-efficacy and other psychological factors like general Anxiety and Technology anxiety may affect on the intention to use the Technology.** More specifically, on using the E-commerce technology.

Description: The purpose of this survey is to provide and identify some Psychological factors that may affect people's intention to buy online. Like Perceived self-efficacy, outcome expectation, general anxiety and technology anxiety. In this survey I ask your opinion about these aspects, I also ask some background information about the demographical data such as age, sex, education, ethnic background. All survey items are confidential.

Your help and participation is highly appreciated.

Confidential: your responses will be treated in strict confidence by Faculty of Commerce, the University of Wollongong and the researcher. Any result reported will be done in aggregate to protect your anonymity and will not show any participant identity.

Ethics Officer: if you have any concern about the conduct of the study, then please contact Ethics Officer, University Of Wollongong/ Illawarra Area Health Service Human Research Ethics Committee on (02) 42214457.

Please note that the Human Research Ethics Committee of the University of Wollongong has reviewed this study

This scenario is given to you to recall your memory for the conditions that may affect your decision to buy online.

Survey's Scenario

Imagine that you are planning to purchase a book for your personal use. That book is not available at your local library, Use the electronic commerce web site www.amazon.com to search possible book you would consider to buy. Please DO NOT actually buy anything from the online store. You are only required to search the information available and see if you can find a book that you like, once you have found a book that you are satisfied with, please fill out the following information.

General Instructions

Most of the scales used in this survey use a rating system with descriptions at either end. The end points of the scales take the form of statements such as: "strongly disagree" to "strongly agree". You are asked to answer by checking one of the choices provided. See example below.

For most questions simply circle the number that corresponds to your answer, as in the examples below.

Example:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Example B: I like Shopping Online.	1	2	3	4	5

For most questions simply tick in the square (a) that corresponds to your answer, as in the examples below.

Example:

What is your gender	<input checked="" type="checkbox"/> Male	<input type="checkbox"/> Female
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We would like to know your confidence with your ability to handle the problems of every day life	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
GSE1: If something looks too complicated I will not even bother to try it.	1	2	3	4	5
We would like to know your motivation to buy through E-commerce system.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
OUE1: In general, I find that buying via E-commerce increases my confidence.	1	2	3	4	5
OUE2: In general, I find that buying via E-commerce assists me to find the best product (e.g. in terms of quality and price).	1	2	3	4	5
OUE3: In general, I find that buying via E-commerce makes it easier for me to get information about the products (through easy search tool).	1	2	3	4	5
OUE4: In general, I find that buying via E-commerce saves time.	1	2	3	4	5
OUE5: In general, I find that It is more flexible to buy via e-commerce (e.g. I can buy any time, 24 hours' a day/360 days a year).	1	2	3	4	5
OUE6: In general, I find that buying via E-commerce opens more choices for different product.	1	2	3	4	5
OUE7: In general, I find that buying via E-commerce enhances my success.	1	2	3	4	5
OUE8: In general, I find that buying via E-commerce makes me control the interaction (the web vendor did not have any affect on my decision).	1	2	3	4	5
OUE9: In general, I find that buying via E-commerce was useful.	1	2	3	4	5
OUE10: In general, I find that buying via E-commerce makes me to feel superior between my peers.	1	2	3	4	5
OUE11: In general, I find that buying via E-commerce makes me less dependent on shopkeeper.	1	2	3	4	5
We would like to know your belief about the E-commerce web Site(s) ease of use	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
EU1: I am often confused when I buy via E-commerce.	1	2	3	4	5
EU2: I make errors frequently when buying via the E-commerce.	1	2	3	4	5
EU3: Buying via E-commerce requires mental effort.	1	2	3	4	5
EU4: I find it easy to recover from errors encountered while buying via E-commerce.	1	2	3	4	5
EU5: I find it easy to buy via the E-commerce technology.	1	2	3	4	5
We would like to know your Personal attitude toward using new technology.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PIIT1: If I heard about new information technology, I would look for ways to experiment with it.	1	2	3	4	5
PIIT2: Among my peers, I am usually the first to try new information technologies.	1	2	3	4	5
PIIT3: In general, I am hesitant to try new information technology.	1	2	3	4	5
PIIT4: I like to experiment with new information technology.	1	2	3	4	5
We would like to know your perception of your general anxiety.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
TA1: I expected future hardship.	1	2	3	4	5
TA2: I can't get some thought out of my mind.	1	2	3	4	5
TA3: I keep busy to avoid uncomfortable thoughts.	1	2	3	4	5

INI3: I am willing to make another purchase using the E-commerce technology if I found the product I am looking for.	1	2	3	4	5
INI4: I am hesitant to purchase any product(s) using E-commerce technology.	1	2	3	4	5
We would like to know your perception of your self.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SE1: I always feel like a failure.	1	2	3	4	5
SE2: I take a positive attitude toward myself.	1	2	3	4	5
SE3: On the whole I am satisfied with myself.	1	2	3	4	5
SE4: I certainly feel useless at times.	1	2	3	4	5
TE-A4: E-commerce technology is a bit frightening.	1	2	3	4	5
TE-A5: E-commerce technology is a bit worrying.	1	2	3	4	5
We would like to know your perception (expectation) of trust worthiness regarding the E-commerce web site(s).	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
UT1: In general, The E-commerce web sites are trustworthy.	1	2	3	4	5
UT2: In general, The E-commerce web site vendor gives the impression that it keeps promises and commitments.	1	2	3	4	5
UT3: In general, The E-commerce web site vendor has little concern for its customers.	1	2	3	4	5
UT4: In general, I DO NOT trust the purchasing process in the web site as much as I trust traditional purchasing process (i.e. the local stores).	1	2	3	4	5
UT5: In general, The E-commerce web site knows about the items that it deals with (efficient web site).	1	2	3	4	5
UT6: The E-commerce web site knows how to provide excellent service.	1	2	3	4	5
We would like to know your perception (expectation) of Risk when you buy goods online.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
RA1: I avoid buying via the web because it has more product risk (not working, defective product) when comparing with traditional ways of shopping.	1	2	3	4	5
RA2: I avoid buying via the web because it has financial risk (fraud, hard to return) compare with traditional methods.	1	2	3	4	5
RA3: I avoid buying via the web because my chance to gain good bargains would be limited.	1	2	3	4	5
RA4: I avoid buying via the web because I would rather stick with the way I am familiar with (traditional way).	1	2	3	4	5
RA5: I avoid buying via the web because I never use something I don't know much about.	1	2	3	4	5
RA6: I always avoid taking risk.	1	2	3	4	5
We would like to know about your shopping decision and your willingness to buy using e-commerce technology.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
INI1: I am willing to purchase my product(s) using e-commerce.	1	2	3	4	5
INI2: I am willing to recommend using E-commerce to my friends.	1	2	3	4	5

We would like to know your E-commerce web experience.	Extremely low	low	Moderate	High	Extremely high
EXP1: How familiar are you with the procedure of buying online.	1	2	3	4	5
EXP2: How would you rate your knowledge about buying online.	1	2	3	4	5
EXP3: How confident are you with your ability to buy online.	1	2	3	4	5
EXP4: How do you rate your experience level of buying online.	1	2	3	4	5

EXP: How frequently do you buy online?	Extremely low	low	Moderate	High	Extremely high	Never, please write down
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If Never, please why.....

Section One: Demographic questions

- What is your gender? ☐ Male ☐ Female
- What is your level of study? ☐ Under Graduate ☐ Post Graduate
☐ Others
 (please specify)
- What is your age group? ☐ 18-24 ☐ 25-31 ☐ 32-38
☐ 39-44 ☐ Over 45
- Which faculty are you from? ☐ Commerce ☐ Art ☐ Others
☐ Informatics ☐ Education (please specify)
- What is your average weekly income? ☐ Less than 100 ☐ 201-400
☐ 101-200 ☐ 401-600 ☐ more than 600
- What is your ethnic background? ☐ Australian ☐ Asian
☐ Middle Eastern ☐ Others.....

Appendix C: Research Ethics Application

Research Office use only

HE 05/

UNIVERSITY OF WOLLONGONG/ILLAWARRA AREA HEALTH SERVICE

Human Research Ethics Committee

**INITIAL APPLICATION FOR APPROVAL TO UNDERTAKE
RESEARCH INVOLVING HUMAN PARTICIPANTS
(A separate application is required for each project)**

Please answer questions in terms understandable to the layperson.

1. Descriptive Title of Project: Critical Success Factor of Electronic Commerce Technology Usage in Australia: E-Commerce Self-efficacy.

2. 7 line summary of project aims: This study is concerned with identifying the key factor which influences an individual's desire to use the E-Commerce Technology. To this end it is concerned with Perceived self-efficacy, the construct which appears to provide the most appropriate means for understanding the desire to use the E-Commerce technologies. The study will seek to examine the nature of E-Commerce self-efficacy, and to develop a model to explore the nature of the emotional and cognitive factors which seem to impinge upon its development.

3. Name Position/Appointment Institution Qualifications

Chief Investigator(s) (Academic or Professional)

Mahmoud Al-dalahmeh PhD Candidate Faculty of Commerce PhD Candidate

Address for Correspondence (1st named investigator):

34/2 Madoline Street, Gwynneville NSW 2500

Contact Phone Number: 0401549565

Fax:

Email: mad248@uow.edu.au

Other Participating Researchers: (names/address/contact details of other researchers working on this project):

No One

4. Where will potential participants be approached by the researchers to seek their participation in the research and where will research activities involving participants be conducted:

Any suitable time and place for UOW students.

Purpose and Funding of Project

5.a Is this: _____ Staff Research (University of Wollongong)

_____ Staff Research (Illawarra Area Health Service)

Yes _____ Student Research (Post grad. degree or subject)

Course undertaken _____ PhD Candidate

Unit/ Faculty/Department _____

Supervisor: A/P Ann Hodgkinson _____

_____ Other (Please specify e.g. for external people who want to research Uni students or IAHS clients)

5.b What is the source and amount of funding from all sources for this research?

Source (Name of Organisation / Funding Scheme)	Amount
No Fund for this research	

5.c Is there any affiliation or financial interest between the sponsor/funding body and the researcher(s) or supervisor associated with this research? If Yes, Please declare.

NO

5.d Are there any conditions placed on this research by the funding body? (please provide details) YES/NO

NO

- 5.e Is a copy of the HREC approval to be forwarded to the Granting Body?
YES/NO

If YES, please advise of any deadlines:

NO

6. Has this research project been reviewed by any other Institutional Ethics Committee? (for example multi-centre research) YES/NO

If YES, include a copy of any correspondence the sponsor or researcher has entered into with the other Ethics Committee(s) to this point.

NO

7. Research Categories

Please mark the research categories relevant to this research proposal. See guidelines for descriptions of the categories. At least one category should be marked for each grouping. For "Other", please specify.

If your research only involves participants and research procedures from a-d under A Participants and B Research Procedures Used, it may be open to expedited review by the Chair of the HREC. In that case, submit only one copy of your application (please see guidelines regarding expedited review).

A PARTICIPANTS

- a. Healthy members of the community
- ☒ b. University students
- c. Employees of a specific company/organisation
- d. Members of a specific community group, club or association
- e. Clients of a service provider
- f. Health Service clients (e.g. users/clients of a health service)
- g. School children
- h. Hospital in-patients
- i. Clinical clients (e.g. patients)
- j. Aboriginal/Torres Strait Islander people
- k. Members of socially disadvantaged groups
- l. Cadavers/ cadaveric organs
- m. Other: _____

Expected age(s) of participants – please circle one or more

Children (under 14) Young people (14-18) ☒ Adults (> 18)

B Research procedures used

- ☒ a. Anonymous questionnaires/ surveys

- b. Coded (potentially identifiable) questionnaires/ surveys
- c. Identifiable questionnaires/ surveys
- d. Examination of student work, journals etc
- e. Examination of medical, educational, personnel or other confidential records
- f. Observation (overt)
- g. Observation (covert)
- h. Interviews (structured or unstructured)
- i. Telephone interviews
- j. Procedures involving physical experiments (e.g. exercise, reacting to computer images)
- k. Procedures involving administration of substances (e.g. drugs, alcohol, food)
- l. Physical examination of participants (including eg. blood glucose, blood pressure and temperature monitoring)
- m. Collection of body tissues or fluid samples
- n. Surgical procedures
- o. Other: _____

C Research areas

- a. Qualitative research
- ☒ b. Social Science research
- c. Humanities research
- d. Educational research
- e. Health research
- f. Psychological research
- g. Comparison or evaluation of drugs or surgical or other therapeutic devices
- h. Comparison or evaluation of clinical procedures
- i. Comparison or evaluation of counselling or training methods
- j. Investigation of the effects of an agent (drug or other substance)
- k. Investigation of bio-mechanical processes
- l. Biomedical research
- m. Epidemiology
- n. Genetic research
- o. Other: _____

8.a Does the project involve the use of drugs?
YES/
NO

If YES give details: NO

Is the research clarified as a:

☒ CTN Trial CTX Trial Other (Please detail)

8.b Does the project involve the use of a surgical or other therapeutic device? (please detail)
YES/
NO

NO

- 8.c** If you answered YES to 8a. or 8b., is there any business or similar association between the researcher and the supplier of a drug or surgical or other therapeutic device to be used in the trial? (please detail).

If you answered YES to 8a. or 8b., please include the budget for this trial including information about capitation fees, payments to researchers, institutions or organisations involved in the research, current and consequential costs and costs which may be incurred by participants.

Please include evidence of arrangements to ensure adequate compensation to participants for any injury suffered as a result of participation in the trial. (Indemnification forms and, if the research is being undertaken in a private practice, evidence of adequate and appropriate insurance coverage)

- 9. Justify the design of your proposed research and describe what you want participants to do.
Please provide an explanation, in terms understandable by a non-expert reader. For student researchers, please provide (in no more than 2 pages) the background to this project (Attach extra sheets if necessary)**

Neuman (2003) argued that quantitative research employs a language of variables, theory, units of analysis, and causal clarifications. The core idea of quantities theory relies on variables and relations existing among them which is as well the main objective of this research. Furthermore, quantitative methods provide tools for evaluating concepts, evaluating design stages, and dealing with sampling matters which makes it very useful in conceiving comprehensive preparation prior to data gathering and analysis. This approach exploits a deductive mode to investigate the relationships between variables as well. In this research we are measuring the Perceived Self-efficacy for the Participants and other Psychological factors in most of the previous studies this factor has been measured using 5likert scale so in my study I follow the same methodology and the same valid and reliable scale.

In the introduction examples has been given to participants to show them the way they can answer the survey.

Example:

For most questions simply circle the number that corresponds to your answer, as in the examples below.

Item	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
I am confident that I am usually able to purchase exactly the item that I want from web vendors.	1	2	3	4	5

For most questions simply tick in the square (a) that corresponds to your answer, as in the examples below.

Example:

What is your gender	<input checked="" type="checkbox"/> Male	<input type="checkbox"/> Female
---------------------	--	---------------------------------

Internet has made the world very small. Through internet, individuals can sell their products and promote them without opening shops or recruiting sales men. This process can be done through the assistance of internet marketing i.e. Electronic Commerce. Through the www (world-wide-web), marketers can show off their products, businesses and services to very wide categories of people. The introduction of this new technology allows various means for retailers to promote and trade their businesses. E-commerce according to Laudon (2003, P.10): "the use of internet and the web to transact business. More formally, digitally enabled commercial transactions between and among organizations and individual"

(Lee, 2001) conclude that "even though the last few years have witnessed an explosive growth in electronic commerce activities in many parts of the world, very little is known about the exact nature, dynamics and impact of this phenomenon. There is a certain paucity of systematic investigations reported in the literature"(P. 3, E-commerce and IT).

In 2000 Nolan Norton Institute (NNI) published a study entitled 'Australia falling behind in e-commerce development'. This study investigated Australia's slowness of adoption and use of e-commerce compared to the US and Europe.

limited number of research studies employed appropriate reference theories to investigate the factors that influence users' behaviour towards Electronic Commerce

adoption and usage. In the e-commerce area were looking and focused at the Trust in the e-commerce, perceived ease of use of this technology, perceived usefulness of this technology, but before we even get to this stage we need to study the cognitive factors and emotional factors which affect on consumers decision to use or not to the e-commerce technology .

Self-efficacy belief according to Koul and Rubba, (1999) influence person's thought patterns, feelings and actions; in different words, they influence the total of human behaviour. Self-efficacy belief provides the base for human motivation, well-being, and personal achievement.

Kim (2004) stated that "There is a need to examine the effect of self-efficacy (both general self efficacy and online transaction self-efficacy) on the purchase intention".

10. Please provide a brief statement of the ethical considerations relevant to the proposed research; specifically in relation to the participants' welfare, rights, beliefs, perceptions, customs and cultural heritage both individual and collective. (Attach an extra sheet if necessary)

Neuman (2003) argues: "Ethics define what is or is not legal to do, or what moral research procedures involve". Therefore, this research will follow the ethical research procedures of the ethics guidelines of the Research and Higher Degree Committee of the University of Wollongong (UOW) by the Human Research Ethics Committee (HREC). Ethical clearance will be obtained prior to conducting research. This research does not deal with invasive information; so ethical problems are not anticipated. All identifying information will be removed prior to subsequent analysis. During this research, the completed questionnaires and any computer-based data will be securely stored.

During the surveying, respondents will not be asked to participate in an unpleasant way. Instead, they will be encouraged to respond (Salant and Dillmant, 1994; Zikmund, 2003). Moreover, in this research, privacy and protection from misrepresentation and exploitation will

be guaranteed for respondents (Zikmund, 2003) by explaining the purpose of the survey and not asking for their names and addresses.

In brief, ethical guidelines of the University of Wollongong were followed in all stages of this research.

11. Referring to the categories of participants to be involved in this project identified in question 7, above, What is the rationale for selecting participants from this/these group/s?

Reasons supporting the validity of selecting a sample of university students are:

- University students are major users of E-commerce systems.
- Many academics in response to the continuous argument on using university students as a sample have confirmed the validity of students as subjects (e.g., Calder and Tybout, 1999; Chow, 1999).
- The [Graphic, Visualization, & Usability Centre's](#) (GVU) 9th WWW User Survey established the majority of online users are between 21 and 30 years old located generally in metropolitan cities. According to Forrester (2000), the largest portion of online shoppers are aged 16-22 and 1/3 of them are anticipated to spend more than \$4.5 billion purchasing items online.
- The significance of a system experience (web experience) and perceived ease of use variables inside a model make a homogeneous population (e.g., students of different majors and levels) very suitable as a sample (Lynch 1999),
- E-commerce users are generally more educated and web experienced than the average Australian citizen as indicated by the Australian Bureau of statistics, 2002. This experience is a direct result of university requirements; for example, The University of Wollongong requires students to use the web on the side of course for research and information exchange.

12. **How will potential participants be approached initially and informed about the project? Please explain in detail and include copies of any letters, advertisements or other recruitment information. (e.g. direct approach to people on the street, mail-out to potential participants through an organisation, posters or newspaper advertisements, etc)**

Our target are the student from 4 Faculties at UOW, Faculty of Commerce, faculty of Art, Faculty of Education, Faculty of Informatics, as we believe that the self-efficacy is might be different between the students on those faculties as a result of their knowledge on E-commerce, we will arranged with some lecturers on those faculties so after the class finished They can introduce us to the students and give us a 5 minutes to speak about our research then we will distribute the Questionnaire to the interested students, and asked them to answer it at their suitable time, and they will be informed that we will come back on the same class next week to pick up the Questionnaire, every student fill up the questionnaire will be compensated for a voucher to drink coffee, capacino, flat white, from university coffee shop (La Paradise coffee-shop) next to University Post-office. The student will be given a scenario just to refresh their memory about the last time they purchased on-line.

Survey's Scenario

Imagine that you are planning to purchase a book for your personal use. That book is not available at your local library, Use the electronic commerce web site www.amazon.com to research possible book you would consider buying. Please DO NOT actually buys anything from the online store. You are only required to research the information available and see if you can find a book that you like, once you have found a book that you are satisfied with, please fill out the following information.

- 13.**How many participants in total do you anticipate will be involved in the project? If the research has several stages involving different participants, please provide the total number of participants expected as well as the number of participants involved in each stage.**

Between 180 To 220 students

14. Participant Consent

Attach copies of any letters of invitation, information packages, consent forms, proxy/substitute consent forms, debriefing information, identification cards, contact detail cards, etc.

- 14 a. Is it anticipated that all participants will have the capacity to consent to their participation in the research?**

☒ YES ☐ NO

If NO, please explain why (e.g. children, incompetent participants, etc.) and explain how proxy or substitute consent will be obtained from the person with legal authority to consent on behalf of the participant (see Guidelines).

- 14 b. For participants who have the capacity to consent, how does the process ensure that informed consent is freely obtained from the participant?**

IT is Clear written on the Questionnaire cover sheet that any one can feel free to withdraw from the Questionnaire any time.

- 14 c. Will written consent from participants be obtained?**

☒ YES ☐ NO

If NO, please explain why it would be inappropriate or unethical to seek written evidence of consent to this project.

- 15. Are any participants in a dependant relationship with the researcher, the institution or the funding body (for example the researcher's clinical clients or students; employees of the institution; recipients of services provided by the funding body)? If so, what steps will be taken to ensure that participants are free to participate or refuse to participate in the research?**

NO

- 16. How does the project address the participants' freedom to discontinue participation? Will there be any adverse effects on participants if they withdraw their consent and will they be able to withdraw data concerning themselves if they withdraw their consent?**

It is clear written on the Survey cover sheet, by this statement

Complaints: if you have any complaints about the conduct of the study, then please contact

Complaint Officer, University Of Wollongong/ Illawarra Area Health Service
Human Research Ethics Committee on (02) 42214457.

- 17. Does the project involve withholding relevant information from participants or deceiving them about some aspect of the research?**

☒ YES ☐ NO

If YES, what is the justification for this withholding or deception and what steps will be taken to protect the participants' interest in having full information about their participation?

- 18. Will participants be paid or offered any form of reward or benefit (monetary or otherwise) for participation in the research? If so, please detail and provide a justification for the payment, reward or benefit.**

Yes, they will be provided by Coffee voucher for the Paradise Coffee shop inside University of Wollongong, they will be compensated for 2 reasons:

1. To increase the response rate for my survey.
2. To compensate the participants for their time and effort.

- 19. Confidentiality:**

What measures will be taken to protect the privacy of individual subjects in terms of the test results and other confidential data obtained (both in recording the data and in its publication)?

The following statement is on the survey cover sheet.

Confidential: your responses will be treated in strict confidence by Faculty of Commerce, the University of Wollongong and the researcher. Any result reported will be done in aggregate to protect your anonymity and will not show any participant identity.

- 20. Will information collected from data or interview be published?**

YES/

NO

If YES, please indicate what form this will take (Please note that any further use of information which may identify a participant is conditional upon the participant's permission for such use):

Just as aggregate data, on my PhD thesis, and on any academic journal or conference I will publish from it.

- 21. Will any part of the research activities be placed on an audiotape, film, photograph or video-tape?**

YES/

NO

NO

To what purpose will the audiotape, film, photograph or video-tape be used?

For what audience(s) will the audiotape, film, photograph or video-tape be exhibited?

- 22. How will the data (including questionnaires, surveys, computer data, tapes, transcripts and specimens) be held securely, during and on completion of the project?**

All the data will be held at The commerce Research Center/Faculty of Commerce, NO one has an access to this data, just the researcher and his supervisor A/P Ann Hodgkinson. All the raw data will be filled in Excell file on the researcher Computer desck top with pin code for that file,just the researcher and his supervisor has access for these data.

Please confirm that original data will be held securely for a minimum of 5 years (15 years for clinical research).

YES/

NO

If NO, please give reasons why it would be unethical to store the data for this period.

23. Does the project involve the use of invasive procedures (e.g. blood sampling) or the risk of physical harm or emotional distress?

YES/

NO

NO

If YES, give details:

Explain how the risks of harm or distress will be minimised. In the case of risks of emotional distress, what provisions have been made for an exit interview or the necessity of counselling?

24. Does this project involve obtaining information (e.g. data) of a private nature from any Commonwealth/State/Local Government Department or any other Agency, including health records from Area Health Services.

YES/

NO

NO

If YES, which Department (s)/Agency?

Please include copies of any correspondence regarding permission to access this information from a responsible officer of the Agency and complete a Privacy Guideline Form (available from Ethics Officer).

25. Does the research intend to determine whether illegal activity has occurred or anticipate that participants may reveal information about criminal activity ?

YES/

NO

No

If YES, how do you propose to respond to the legal issues raised?

26. Period of Research Clearance Requested (Please specify as near as possible 'start' and 'finish' dates for the conduct of research):

FROM: ...01.../.....09.../.....2007..... TO: ..30...../...09...../.....2007.....

- 27. Any research project that involves the collection of data should be designed so that it is capable of providing information that can be analysed to achieve the aims of the project. Usually, although not always, this will involve various important statistical issues. It is important that the design and analysis be properly planned in the early stages of the project. You should seek statistical advice. The University of Wollongong has a Statistical Consulting Service that provides such advice to research students and staff undertaking research.**

Are statistical issues relevant to this project?

YES/NO

Yes

If so, have you discussed this project with the Statistical Consulting Service?

Yes, with Dr Rober Clark

- 28. Does this project involve the collection or use of personal health information or information relating to the provision of a health service to an individual? This includes general information such as a gymnasium would collect as well as information collected for a medical purpose.**

If so, you need to complete the Initial Application Form Part 2 – Privacy Addition for Health Information. For additional information regarding this please read the document ‘Health Records and Privacy Act’ and the NSW Privacy Commissioners’ Statutory guidelines on research. Both documents are available from the HREC webpage.

YES/NO

NO

- 29. Comments. If you would like to make any comment about the application or the application process please do so.**

DECLARATION BY CHIEF INVESTIGATOR

I, the undersigned, have read the current National Statement on Ethical Conduct in Research Involving Humans:

<http://www.health.gov.au/nhmrc/publications/synopses/e35syn.htm>

and accept responsibility for the conduct of the research activities detailed in this application in accordance with the principles contained in the National Statement and any other conditions laid down by the University of Wollongong's Human Research Ethics Committee.

Chief Investigator's signature/s:

Date:

If the Chief Investigator is a student include:

Supervisor's signature:

Date:

Signature/s of other researcher/s: (The first named researcher will assume responsibility for the project in the absence of the Chief Investigator)

Date:

DECLARATION BY HEAD OF UNIT

As Head of Unit I have responsibility for ensuring that Occupational Health and Safety (OHS) issues surrounding research in the Unit are addressed.

(please tick all relevant boxes)

- ___ I am satisfied that a general risk assessment for the research project addressed in this application has been completed adequately
- ___ I will ensure that a risk assessment specific to this application will be completed prior to commencing the activities described in this application
- ___ I will ensure that there exist appropriate mechanisms to address potential OHS issues that may arise and I have responsibility for implementing those mechanisms
- ___ I will ensure that mechanisms exist for ongoing assessment of the OHS issues related to this research
- ___ This research involves use of radiation, chemicals or biohazards. A Risk Assessment has been conducted and is attached to this application

Head of Unit's Signature.....Date.....

<p>NOTE: RESEARCH MUST NOT COMMENCE UNTIL APPLICATION HAS BEEN FULLY APPROVED.</p>

CHECKLIST

**Applications should be sent to the Ethics Officer, Human Research Ethics Committee,
Office of Research, University of Wollongong, Northfields Ave, Wollongong NSW 2522**

_____ **Original Ethics Application plus appropriate number of copies (See
Guidelines)**

_____ **Consent Form(s)**

_____ **Participant Information Sheet/Package**

_____ **Copies of Questionnaire(s)/Survey(s) or Interview Questions**

_____ **Copies of all documents and other material used to inform potential
participants
about the research including advertisements and letters of invitation.**

_____ **Evidence of permission to conduct research in locations not associated with
the
University of Wollongong**

_____ **Evidence of approval/rejection by other HREC(s), including comments and
requested alternations to the protocol**

_____ **Any form requiring signature by the HREC (one copy)**

_____ **For Clinical Trials : Application Form (original +14 copies), Patient
Information Package (14 copies), Consent Forms (14 copies), Indemnity Form
(14 copies), Protocols (14 copies), Advertisement (14 copies), Summary Sheet
(14 copies), Budget (14 copies), Insurance information (if in Private Practice)
(14 copies), Investigator's Brochure (5 copies), CTN or CTX Form (1 original
copy)**

Form Revised Jan 2003

Appendix D: Descriptive statistic for all survey items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
If something looks too complicated I will not even bother to try it.	231	1	5	3.67	1.020
I avoid trying to learn new things when they look difficult.	231	2	5	3.83	.971
When trying to learn something new, I soon give up if I am not initially successful.	231	1	5	3.82	.956
When I make plan, I am certain I can make it work.	231	1	5	3.70	.896
If I can't do a job the first time, I keep trying until I can.	231	1	5	3.86	.895
When I have something unpleasant to do, I stick to it until I finish it.	231	1	5	3.33	1.012
When I decide to do something, I go right to work on it.	231	1	5	3.49	.982
Failure just makes me try harder.	231	1	5	3.60	.968
When I set important goals for myself, I rarely achieve them.	231	1	5	3.81	.921
I do not seem capable of dealing with most problems that come up in my life.	231	2	5	4.19	.752
When unexpected problems occur, I don't handle them very well.	231	1	5	3.80	.877
I feel insecure about my ability to do things.	231	1	5	3.85	1.004
I am confident that I can obtain relevant information via online sources (e.g., online discussion groups, reputation sites, etc) on the web vendors from whom I am planning to make online purchases.	231	1	5	3.81	.949
I am confident that I am usually able to purchase exactly the item that I want from web vendors.	231	1	5	3.43	1.105
I am confident that, in case my order does not come through in a satisfactory manner, I am able to take care of the problem(s) on my own.	231	1	5	3.23	1.050
I am confident that I am able to find a trustworthy web vendor based on	231	1	5	3.44	1.048

ratings (e.g., the number of the stars or the smiley faces) provided by other consumers.					
I am confident that, in case the products I have purchased online turns out to be not working, I am able to return it without any problems.	231	1	5	3.03	1.059
I am confident that, if the web vendor I made an online purchase from would not take back a faulty product, I am able to solve the problem through the assistance of a third party (e.g., friends, better business bureaus, or relevant governmental agencies)	231	1	5	3.11	1.098
In general, I find that buying via E-commerce increases my confidence.	231	1	5	2.85	1.011
In general, I find that buying via E-commerce assists me to find the best product (e.g. in terms of quality and price).	231	1	5	3.29	1.075
In general, I find that buying via E-commerce makes it easier for me to get information about the products (through easy search tool).	231	1	5	3.66	.937
In general, I find that buying via E-commerce saves time.	231	1	5	3.78	.981
In general, I find that It is more flexible to buy via e-commerce (e.g. I can buy any time, 24 hours' a day/360 days a year).	231	1	5	3.93	.892
In general, I find that buying via E-commerce opens more choices for different product.	231	1	5	3.77	.988
In general, I find that buying via E-commerce enhances my success.	231	1	5	3.13	.996
In general, I find that buying via E-commerce makes me control the interaction (the web vendor did not have any affect on my decision).	231	1	5	3.34	1.021
In general, I find that buying via E-commerce was useful.	231	1	5	3.67	.883
In general, I find that buying via E-commerce makes me to feel superior between my peers.	231	1	5	2.51	1.095
In general, I find that buying via E-commerce makes me less dependent on shopkeeper.	231	1	5	3.29	.996
I am often confused when I buy via E-commerce.	231	1	5	3.42	1.088

I make errors frequently when buying via the E-commerce.	231	1	5	3.73	.927
Buying via E-commerce requires mental effort.	230	1	5	3.02	1.173
I find it easy to recover from errors encountered while buying via E-commerce.	231	1	5	3.09	.979
The E-commerce web is easy to use	231	1	5	3.57	1.027
If I heard about new information technology, I would look for ways to experiment with it.	231	1	5	3.56	1.019
Among my peers, I am usually the first to try new information technologies.	231	1	5	2.88	1.168
In general, I am hesitant to try new information technology.	231	1	5	3.47	1.095
I like to experiment with new information technology.	231	1	5	3.58	.979
I expected future hardship.	231	1	5	3.02	1.063
I can't get some thought out of my mind.	231	1	51	3.13	3.333
I keep busy to avoid uncomfortable thoughts.	231	1	5	2.77	1.077
I have to be careful not to let my real feeling show.	231	1	5	2.68	1.142
I feel worried about using the E-commerce technology to buy products.	231	1	5	2.69	1.102
I am afraid to hit the wrong key which could cause a problem to my E-commerce transaction.	231	1	5	2.65	1.112
I hesitate to use E-commerce technology for fear of making mistakes that cannot be corrected.	231	1	5	2.68	1.150
E-commerce technology is a bit frightening.	231	1	5	2.58	1.104
E-commerce technology is a bit worrying.	231	1	5	2.61	1.144
In general, The E-commerce web sites are trustworthy.	231	1	5	3.22	.977
In general, The E-commerce web site vendor gives the impression that it keeps promises and commitments.	230	1	5	3.40	.894
In general, The E-commerce web site vendor has little concern for its	231	1	5	3.17	.976

customers.					
In general, I DO NOT trust the purchasing process in the web site as much as I trust traditional purchasing process (i.e. the local stores).	231	1	5	2.87	1.225
In general, The E-commerce web site knows about the items that it deals with (efficient web site).	231	1	5	3.37	.899
The E-commerce web site knows how to provide excellent service.	231	1	5	3.24	.946
I avoid buying via the web because it has more product risk (not working, defective product) when comparing with traditional ways of shopping.	231	1	5	3.05	1.156
I avoid buying via the web because it has financial risk (fraud, hard to return) compare with traditional methods.	231	1	5	3.13	1.159
I avoid buying via the web because my chance to gain good bargains would be limited.	231	1	5	2.57	1.065
I avoid buying via the web because I would rather stick with the way I am familiar with (traditional way).	231	1	5	2.79	1.162
I avoid buying via the web because I never use something I don't know much about.	231	1	5	2.58	1.108
I always avoid taking risk.	231	1	5	2.48	.964
I am willing to purchase my product(s) using e-commerce.	231	1	5	3.53	1.042
I am willing to recommend using E-commerce to my friends.	231	1	5	3.46	1.094
I am willing to make another purchase using the E-commerce technology if I found the product I am looking for.	231	1	5	3.65	1.005
I am hesitant to purchase any product(s) using E-commerce technology.	231	1	5	3.49	1.034
I always feel like a failure.	231	1	5	4.31	.715
I take a positive attitude toward myself.	231	1	5	4.01	.794
On the whole I am satisfied with myself.	231	1	5	3.97	.849
I certainly feel useless at times.	231	1	5	3.59	.991
How familiar are you with the procedure of buying online.	231	1	5	3.29	1.168

How would you rate your knowledge about buying online.	231	1	5	3.28	1.143
How confident are you with your ability to buy online.	231	1	5	3.41	1.122
How do you rate your experience level of buying online.	231	1	5	3.13	1.211
Valid N (listwise)	229				

Appendix F.1:

Table of Anti-Image Matrices for Perceived self-efficacy variables

	VF0001	VF0002	VF0003	VF0004	VF0005	VF0006	VF0007	VF0008	VF0009	VF0010	VF0011	VF0012	VF0013	VF0014	VF0015	VF0016	VF0017	VF0018	VF0019	VF0020	VF0021	VF0022	VF0023	VF0024	VF0025	VF0026	VF0027	VF0028	VF0029
AntiImage Covariate VF0001	.443	-.221	-.156	.033	-.104	-.363	.011	-.007	.001	-.150	.052	-.156	-.004	-.005	.002	.072	.006	-.148	.025	.000	-.013	-.125	.076	.003	-.027	.018	-.063	.037	-.015
VF0002	-.221	.359	-.086	-.056	.029	-.104	-.021	-.048	-.003	.022	-.024	.031	-.002	-.021	-.035	-.053	-.021	.053	-.022	.018	.010	.055	-.164	-.038	.014	-.057	.037	.008	-.016
VF0003	-.156	-.086	.475	.000	-.136	-.034	-.157	-.041	-.072	.001	-.042	-.005	-.022	.040	-.007	.004	.002	-.018	.029	.060	-.019	-.083	.150	-.008	-.005	.011	-.014	-.004	-.027
VF0004	.033	-.056	.000	.678	-.188	-.019	-.155	.052	-.052	-.042	-.004	-.006	-.010	.026	-.024	.047	-.040	.008	-.047	.063	-.041	-.134	-.017	.058	-.033	.014	-.024	.073	-.015
VF0005	-.104	.029	-.136	-.188	.521	-.065	.011	-.150	-.003	-.157	.040	.006	-.027	-.160	.058	-.001	.008	.024	.054	-.001	.008	-.016	.029	-.031	.015	-.044	.008	-.001	-.025
VF0006	-.363	-.034	-.034	-.019	-.065	.694	-.103	-.029	-.127	-.010	-.053	.062	.062	.035	-.020	-.102	-.034	.005	.046	-.078	.013	.026	-.077	.032	.031	.058	.054	.020	-.020
VF0007	.011	-.021	-.157	-.155	.011	-.103	.689	-.116	1.10	-.073	.009	.063	.002	.034	-.064	.005	.052	-.005	-.048	-.051	.045	.033	.002	.028	-.005	-.040	.011	-.380	.076
VF0008	-.007	-.048	-.041	.052	-.150	-.038	-.116	.556	-.015	-.018	-.023	-.025	.007	.055	-.005	-.009	.034	-.079	.008	.038	-.022	-.020	-.048	-.013	-.080	.033	-.021	.028	.048
VF0009	.001	-.003	-.072	-.052	-.003	-.127	.110	-.015	.777	-.026	.042	-.009	.000	-.063	.033	.074	.023	-.024	.040	.038	-.035	.055	-.015	.005	-.047	-.010	-.024	-.004	.025
VF0010	-.150	.022	.001	-.042	-.057	-.010	-.073	-.018	-.026	.541	-.208	-.103	-.038	-.038	.020	.035	-.040	.015	.046	-.008	.046	.025	-.013	.008	.018	-.055	-.005	-.028	.064
VF0011	.052	-.024	-.042	-.004	.040	-.053	.009	-.023	.042	-.208	.547	-.155	.007	.020	-.005	-.004	-.015	.029	.024	.005	-.020	.003	.007	.021	-.019	-.029	-.014	.053	-.007
VF0012	-.156	.031	-.085	-.106	.006	.062	.063	-.025	-.008	-.103	-.155	.573	.022	-.042	.013	-.008	.037	.045	-.062	-.016	.035	.011	-.044	-.013	.028	.000	.000	.012	.029
VF0013	-.004	-.002	-.022	-.010	-.027	.002	.002	.007	.000	-.036	.007	.022	.482	-.135	.052	-.078	-.015	-.037	.042	-.020	-.158	-.068	.010	.058	.014	-.020	-.015	.023	-.002
VF0014	-.005	-.021	.040	.026	-.150	.035	.034	.055	-.003	-.038	.020	-.042	-.135	.387	-.129	-.048	-.014	.010	-.024	-.067	-.016	.008	-.010	-.008	.008	.050	-.017	.007	.048
VF0015	.002	-.035	-.007	-.024	.058	-.020	-.064	-.005	.033	.020	-.065	.013	.052	-.129	.488	-.068	-.007	-.055	.023	.001	-.018	-.015	.035	-.007	.002	-.027	-.005	-.063	-.016
VF0016	.072	-.053	.004	.047	-.001	-.102	.005	-.008	.074	.035	-.004	-.008	-.078	-.046	-.068	.414	-.084	-.058	-.027	.012	-.015	-.011	-.004	-.017	-.004	-.018	-.050	.022	.021
VF0017	.006	-.021	.002	-.040	.009	-.024	.052	.024	.023	-.040	-.015	.037	-.015	-.014	-.007	-.004	.483	-.218	-.001	-.008	-.016	-.009	.043	-.058	.008	.037	.021	-.074	-.013
VF0018	-.048	.053	-.018	.008	.024	.005	-.005	-.079	-.024	.015	.029	.045	-.037	.010	-.055	-.059	-.218	.515	-.042	-.007	.011	-.006	-.054	.001	.034	.016	-.017	-.007	.047
VF0019	.025	-.022	.029	-.047	.054	.046	-.048	.008	.040	.046	.024	-.062	.042	-.024	.023	-.027	-.001	-.042	.424	-.083	-.081	-.006	.023	.028	-.122	-.013	-.014	-.077	-.004
VF0020	.000	.018	.068	.063	-.001	-.076	-.051	.020	.028	-.006	.005	-.016	-.020	-.067	.001	.012	-.008	-.007	-.083	.338	-.084	-.002	-.044	.018	-.001	-.017	-.050	.027	-.013
VF0021	-.013	.010	-.019	-.041	.008	.013	.045	-.022	-.035	.046	-.030	.025	-.058	-.016	-.018	-.015	-.016	.011	-.001	-.084	.401	-.003	-.028	-.093	.038	-.027	-.010	.000	-.047
VF0022	-.025	.055	-.083	-.024	-.016	.028	.033	-.020	.055	.025	.003	.011	-.088	.008	-.015	-.011	-.008	-.006	-.006	-.002	-.003	.480	-.174	-.028	-.020	.040	-.020	-.023	-.082
VF0023	.076	-.004	.050	-.017	.029	-.077	.002	-.048	-.015	-.013	.007	-.044	.010	-.010	.025	-.004	.043	-.054	.023	-.044	-.026	-.174	.389	-.103	.016	-.000	-.018	-.031	.005
VF0024	.003	-.030	-.008	.056	-.031	.022	.026	-.013	.005	.008	.021	-.013	.058	-.008	-.007	-.017	-.058	.001	.026	.018	-.083	-.026	-.103	.458	-.078	-.030	-.008	.042	.034
VF0025	-.027	.014	-.005	-.023	.015	.031	-.005	-.000	-.047	.019	-.019	.028	.014	.008	.002	-.004	.008	.024	-.132	-.001	.038	-.020	.016	-.078	.437	-.106	-.015	-.102	.036
VF0026	.018	-.057	.011	.014	-.044	.058	-.040	.023	-.010	-.055	-.029	.000	-.020	.050	-.027	-.019	.027	.016	-.013	-.017	-.027	.040	-.000	-.028	-.106	.522	.002	.025	-.143
VF0027	-.063	.037	-.040	-.024	.008	.054	.011	-.021	-.024	-.005	-.041	.000	-.045	-.047	-.005	-.050	.021	-.017	-.042	-.058	-.030	-.020	-.019	-.008	-.015	.002	.350	.023	-.104
VF0028	.057	.008	-.009	.073	-.001	.020	-.080	.028	-.004	-.026	.053	.012	.023	.007	-.063	.022	-.074	-.007	-.077	.027	.000	-.023	-.031	.042	-.102	.025	.023	.888	-.178
VF0029	-.015	-.018	-.027	-.015	-.025	-.020	.076	.048	.025	.064	-.007	.029	-.002	.048	-.016	.021	-.013	.047	-.004	-.013	-.047	-.062	.005	.024	.026	-.143	-.114	-.178	.588

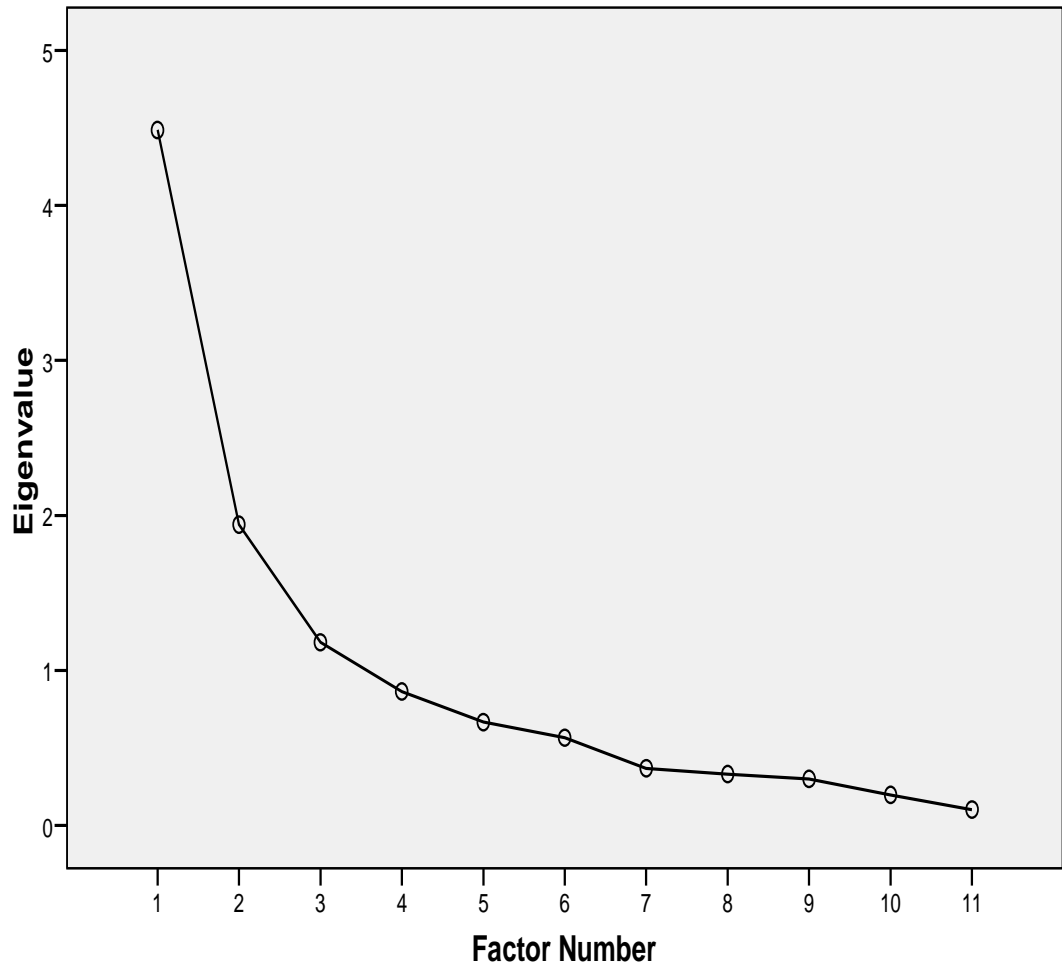
Appendix F.1 (continued)

And-Image Correlation	VAR0001	.769 ^a	-.557	-.121	.081	-.008	-.168	.020	-.014	.138	-.102	.186	-.111	-.009	-.011	.004	.189	.013	-.101	.059	.000	-.030	-.055	.183	.007	-.081	.038	-.180	.087	-.030
	VAR0002	-.557	.829 ^a	-.234	-.119	.066	-.008	-.042	-.111	-.158	.050	-.054	.068	-.004	-.059	-.004	-.139	-.052	.123	-.056	.053	.027	.132	-.172	-.074	.035	-.192	.105	.016	-.035
	VAR0003	-.121	-.234	.861 ^a	.142	-.274	-.059	-.100	-.080	-.110	.002	-.082	-.162	-.045	.095	-.015	.008	.004	-.038	.066	.151	-.042	-.174	.115	-.017	-.010	.022	-.088	-.016	-.051
	VAR0004	.081	-.119	.142	.770 ^a	-.316	-.028	-.227	.084	-.071	-.089	-.007	-.170	-.017	.053	-.080	.080	-.071	.013	-.087	.132	-.079	-.059	-.034	.101	-.081	.023	-.089	.107	-.023
	VAR0005	-.008	.066	-.274	-.316	.802 ^a	-.009	.019	-.278	-.004	-.107	.075	.011	-.053	-.115	.116	-.173	.019	.047	.115	-.182	.018	-.031	.064	-.063	.032	-.084	.207	-.001	-.045
	VAR0006	-.168	-.008	-.059	-.028	-.009	.777 ^a	-.150	-.082	-.173	-.016	-.086	.089	.107	.070	-.085	-.191	-.061	.008	.084	-.158	.024	.045	-.149	.057	.056	.087	.110	.029	-.031
	VAR0007	.020	-.042	-.100	-.227	.019	-.150	.736 ^a	-.187	.151	-.119	.014	.100	.004	.087	-.110	.009	.081	-.008	-.088	-.107	.086	.057	.004	.047	-.008	-.067	.023	-.131	.119
	VAR0008	-.014	-.111	-.080	.084	-.278	-.082	-.187	.888 ^a	-.022	-.033	-.042	-.044	.014	.121	-.010	-.019	.067	-.148	.016	.089	-.047	-.039	-.106	-.025	-.182	.082	-.048	.046	.083
	VAR0009	.138	-.158	-.118	-.071	-.004	-.173	.151	-.022	.889 ^a	-.040	.064	-.134	.000	-.118	.054	.131	.009	-.038	.070	.075	-.062	.089	-.027	.008	-.081	-.015	-.046	-.005	.051
	VAR0010	-.102	.050	.002	-.089	-.107	-.016	-.119	-.033	-.040	.815 ^a	-.382	-.188	-.070	-.084	.038	.075	-.080	.028	.085	-.015	.088	.050	-.029	.016	.040	-.104	-.012	-.043	.113
	VAR0011	.108	-.054	-.082	-.007	.075	-.088	.014	-.042	.064	-.382	.838 ^a	-.277	.013	.045	-.138	-.009	-.000	.054	.071	.012	-.065	.007	.015	.041	-.038	-.073	-.085	.086	-.013
	VAR0012	-.111	.068	-.162	-.170	.011	.089	.100	-.044	-.134	-.188	-.277	.835 ^a	.042	-.082	.025	-.019	.072	.081	-.125	-.035	.073	.022	-.083	-.028	.057	.080	.001	.019	.050
	VAR0013	-.008	-.004	-.045	-.017	-.053	.107	.004	.014	.000	-.070	.013	.042	.916 ^a	-.321	.108	-.189	-.051	-.074	.082	-.048	-.131	-.179	.023	.120	.029	-.040	-.110	.040	-.004
	VAR0014	-.011	-.058	.085	.053	-.115	.070	.067	.121	-.118	-.084	.045	-.082	-.321	.902 ^a	-.304	-.119	-.034	.024	-.087	-.131	-.042	.018	-.028	-.018	.020	.114	-.131	.015	.102
	VAR0015	.004	-.084	-.015	-.080	.116	-.035	-.110	-.010	.054	.039	-.126	.025	-.106	-.304	.913 ^a	-.152	-.204	-.110	.050	.003	-.042	-.031	.080	-.015	.003	-.064	-.012	-.108	-.028
	VAR0016	.168	-.139	.008	.080	-.173	-.131	.009	-.019	.131	.075	-.009	-.019	-.169	-.119	-.152	.928 ^a	-.145	-.127	-.084	.033	-.038	-.024	-.009	-.040	-.009	-.040	-.132	.041	.043
	VAR0017	.013	-.052	.004	-.071	.019	-.081	.081	.067	.039	-.080	-.030	.072	-.031	-.034	-.204	-.145	.884 ^a	-.447	-.001	-.020	-.038	-.020	.182	-.127	.019	.066	.062	-.131	-.025
	VAR0018	-.101	.123	-.038	.013	.047	.008	-.008	-.148	-.038	.029	.054	.083	-.074	.024	-.110	-.127	-.447	.835 ^a	-.080	-.017	.024	-.012	-.120	.125	.072	.082	-.041	-.012	.085
	VAR0019	.059	-.056	.086	-.087	.115	.084	-.088	.016	.070	.085	.071	-.125	.082	-.087	.060	-.084	-.001	-.080	.888 ^a	-.220	-.147	-.014	.057	.059	-.308	-.028	-.108	-.141	-.007
	VAR0020	.000	.053	.151	.132	-.182	-.158	-.107	.089	.075	-.015	.012	-.035	-.048	-.131	.003	.033	-.020	-.017	-.220	.916 ^a	-.229	-.085	-.121	.048	-.238	-.041	-.145	.056	-.029
	VAR0021	-.030	.027	-.042	-.079	.018	.024	.086	-.047	-.082	.088	-.085	.073	-.131	-.042	-.042	-.038	-.038	.024	-.147	-.229	.948 ^a	-.087	-.067	-.217	.081	-.060	-.081	-.001	-.085
	VAR0022	-.055	.132	-.174	-.059	-.031	.045	.057	-.039	.089	.050	.007	.022	-.179	.018	-.031	-.024	-.020	-.012	-.014	-.085	-.087	.916 ^a	-.482	-.055	-.045	.079	-.048	-.040	-.115
	VAR0023	.182	-.172	.115	-.034	.064	-.148	.014	-.108	-.027	-.029	.015	-.083	.023	-.026	.080	-.009	.102	-.120	.057	-.121	-.067	-.402	.888 ^a	-.245	.039	-.189	-.050	-.059	.011
	VAR0024	.007	-.074	-.017	.101	-.063	.057	.047	-.025	.088	.016	.041	-.028	.120	-.019	-.015	-.040	-.127	.125	.059	.049	-.217	-.055	-.245	.916 ^a	-.175	-.082	-.220	.075	.084
	VAR0025	-.081	.035	-.010	-.081	.032	.056	-.008	-.182	-.081	.040	-.038	.057	.029	.020	.003	-.009	.019	.072	-.308	-.238	.081	-.045	.029	-.175	.888 ^a	-.222	-.037	-.184	.071
	VAR0026	.038	-.132	.022	.023	-.084	.087	-.087	.082	-.015	-.104	-.073	.000	-.040	.114	-.054	-.042	.056	.032	-.028	-.041	-.080	.078	-.189	-.082	-.222	.912 ^a	.085	.042	-.058
	VAR0027	-.160	.185	-.088	-.089	.287	.110	.023	-.048	-.046	-.012	-.085	.001	-.110	-.131	-.012	-.132	.052	-.041	-.189	-.145	-.081	-.048	-.050	-.220	-.037	.085	.916 ^a	.049	-.228
	VAR0028	.067	.016	-.016	.107	-.001	.029	-.131	.046	-.085	-.043	.086	.019	.040	.015	-.108	.041	-.131	-.012	-.141	.056	-.081	-.040	-.059	.075	-.184	.048	.785 ^a	-.076	-.076
	VAR0029	-.030	-.035	-.051	-.023	-.045	-.031	.119	.083	.051	.113	-.013	.050	-.004	.102	-.029	.043	-.025	.085	-.087	-.029	-.085	-.115	.011	.084	.071	-.256	-.228	-.276	.842 ^a

Appendix F.2:

Scree Plot Figure for Perceived self-efficacy variables
(general self-efficacy, e-commerce self-efficacy, outcome expectation)

Scree Plot



Appendix G.1:

Correlation Matrix for Technological Factors (Ease of Use, Personal Innovation in Information Technology, Experience)

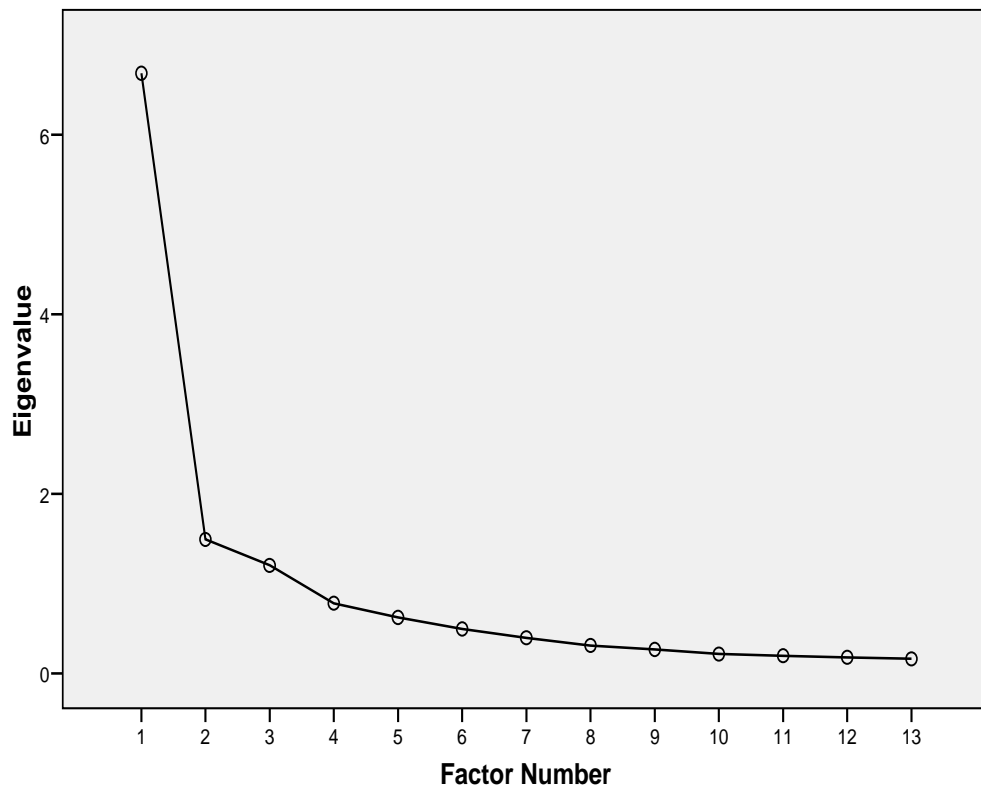
Correlation Matrix														
	VAR00001	VAR00002	VAR00003	VAR00004	VAR00005	VAR00006	VAR00007	VAR00008	VAR00009	VAR00010	VAR00011	VAR00012	VAR00013	
Correlation	VAR00001	1.000	.757	.510	.528	.705	.379	.357	.553	.491	.464	.472	.608	.471
	VAR00002	.757	1.000	.437	.363	.646	.325	.335	.464	.392	.397	.386	.521	.402
	VAR00003	.510	.437	1.000	.280	.338	.187	.180	.346	.268	.271	.264	.361	.238
	VAR00004	.528	.363	.280	1.000	.510	.282	.253	.310	.338	.255	.293	.357	.333
	VAR00005	.705	.646	.338	.510	1.000	.422	.351	.437	.522	.455	.404	.537	.453
	VAR00006	.379	.325	.187	.282	.422	1.000	.658	.556	.794	.399	.414	.461	.379
	VAR00007	.357	.335	.180	.253	.351	.658	1.000	.470	.649	.494	.527	.523	.496
	VAR00008	.553	.464	.346	.310	.437	.556	.470	1.000	.649	.444	.494	.557	.431
	VAR00009	.491	.392	.268	.338	.522	.794	.649	.649	1.000	.500	.502	.566	.478
	VAR00010	.464	.397	.271	.255	.455	.399	.494	.444	.500	1.000	.820	.758	.711
	VAR00011	.472	.386	.264	.293	.404	.414	.527	.494	.502	.820	1.000	.779	.716
	VAR00012	.608	.521	.361	.357	.537	.461	.523	.557	.566	.758	.779	1.000	.746
	VAR00013	.471	.402	.238	.333	.453	.379	.496	.431	.478	.711	.716	.746	1.000
Sig. (1-tailed)	VAR00001		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	VAR00002	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	VAR00003	.000	.000		.000	.000	.002	.003	.000	.000	.000	.000	.000	.000
	VAR00004	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	VAR00005	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	VAR00006	.000	.000	.002	.000	.000		.000	.000	.000	.000	.000	.000	.000
	VAR00007	.000	.000	.003	.000	.000	.000		.000	.000	.000	.000	.000	.000
	VAR00008	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	VAR00009	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	VAR00010	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	VAR00011	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	VAR00012	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	VAR00013	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

a. Determinant = .000

Appendix G.2:

Scree Plot Figure for Technological Factors (Ease of Use, Innovation in Information Technology, Experience)

Scree Plot



Appendix G.3:

Anti-image Matrices for Technological Factors

(Ease of Use, Personal Innovation in Information Technology, Experience)

Anti-image Matrices													
	VAR00001	VAR00002	VAR00003	VAR00004	VAR00005	VAR00006	VAR00007	VAR00008	VAR00009	VAR00010	VAR00011	VAR00012	VAR00013
Anti-image Covariance	VAR00001	.263	-.146	-.098	-.107	-.084	.016	.017	-.058	-.012	.007	-.008	-.033
	VAR00002	-.146	.380	-.052	.066	-.103	-.005	-.040	-.032	.036	.004	.011	-.018
	VAR00003	-.098	-.052	.715	-.033	.039	.020	.015	-.043	-.010	-.017	.012	-.031
	VAR00004	-.107	.066	-.033	.655	-.120	-.014	-.013	.010	.001	.048	-.023	.009
	VAR00005	-.084	-.103	.039	-.120	.390	-.018	.037	.041	-.057	-.042	.035	-.014
	VAR00006	.016	-.005	.020	-.014	-.018	.326	-.122	-.039	-.161	.008	.003	-.004
	VAR00007	.017	-.040	.015	-.013	.037	-.122	.456	.011	-.062	-.009	-.039	-.006
	VAR00008	-.058	-.032	-.043	.010	.041	-.039	.011	.471	-.100	.021	-.036	-.032
	VAR00009	-.012	.036	-.010	.001	-.057	-.161	-.062	-.100	.264	-.016	.007	-.012
	VAR00010	.007	.004	-.017	.048	-.042	.008	-.009	.021	-.016	.270	-.132	-.049
	VAR00011	-.008	.011	.012	-.023	.035	.003	-.039	-.036	.007	-.132	.249	-.070
	VAR00012	-.033	-.018	-.031	.009	-.014	-.004	-.006	-.032	-.012	-.049	-.070	.247
	VAR00013	.004	-.004	.032	-.048	-.017	.022	-.047	.010	-.008	-.059	-.047	-.093
Anti-image Correlation	VAR00001	.884 ^a	-.463	-.227	-.258	-.261	.056	.048	-.164	-.046	.026	-.033	-.131
	VAR00002	-.463	.884 ^a	-.100	.133	-.268	-.014	-.097	-.076	.112	.012	.036	-.059
	VAR00003	-.227	-.100	.932 ^a	-.048	.074	.041	.027	-.075	-.024	-.039	.029	-.073
	VAR00004	-.258	.133	-.048	.897 ^a	-.237	-.030	-.023	.018	.002	.114	-.057	.023
	VAR00005	-.261	-.268	.074	-.237	.910 ^a	-.049	.088	.096	-.178	-.131	.114	-.046
	VAR00006	.056	-.014	.041	-.030	-.049	.860 ^a	-.317	-.099	-.548	.026	.010	-.013
	VAR00007	.048	-.097	.027	-.023	.088	-.317	.934 ^a	.023	-.180	-.024	-.115	-.017
	VAR00008	-.164	-.076	-.075	.018	.096	-.089	.023	.945 ^a	-.284	.060	-.106	-.093
	VAR00009	-.046	.112	-.024	.002	-.178	-.548	-.180	-.284	.879 ^a	-.058	.026	-.046
	VAR00010	.026	.012	-.039	.114	-.131	.026	-.024	.060	-.058	.900 ^a	-.509	-.189
	VAR00011	-.033	.036	.029	-.057	.114	.010	-.115	-.106	.026	-.509	.894 ^a	-.282
	VAR00012	-.131	-.059	-.073	.023	-.046	-.013	-.017	-.093	-.046	-.189	-.282	.941 ^a
	VAR00013	.014	-.009	.063	-.097	-.046	.063	-.114	.024	-.026	-.188	-.155	-.309

a. Measures of Sampling Adequacy(MSA)

Appendix G.4:

Rotated Component for Technological Factors

(Ease of Use, Personal Innovation in Information Technology, Experience)

Rotated Component Matrix^a

	Component		
	1	2	3
VAR00001	.287	.838	.222
VAR00002	.234	.783	.167
VAR00003	.132	.658	.026
VAR00004	.100	.629	.189
VAR00005	.242	.728	.293
VAR00006	.157	.167	.895
VAR00007	.387	.088	.735
VAR00008	.275	.409	.595
VAR00009	.267	.280	.834
VAR00010	.861	.207	.234
VAR00011	.861	.194	.267
VAR00012	.770	.387	.298
VAR00013	.809	.242	.227

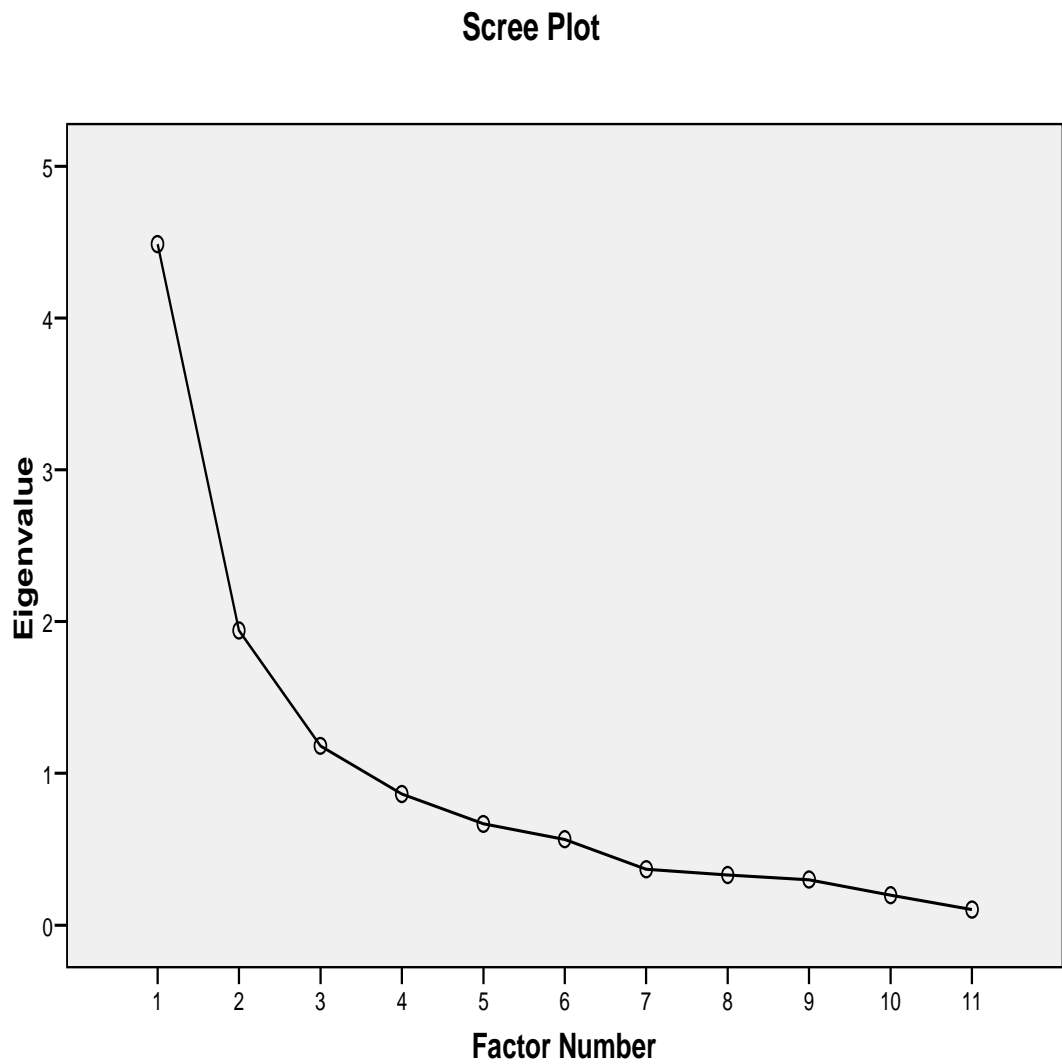
Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Appendix H.1:

Scree Plot Figure for Psychological Factors (trait anxiety, technology anxiety, self-esteem)



Appendix H.2:

Correlation Matrix for the psychological factor scales (trait anxiety, technology anxiety, and self-esteem)

Correlation Matrix														
		VAR00001	VAR00002	VAR00003	VAR00004	VAR00005	VAR00006	VAR00007	VAR00008	VAR00009	VAR00010	VAR00011	VAR00012	VAR00013
Correlation	VAR00001	1.000	.284	.360	.313	.031	.101	.129	.132	.120	-.122	-.237	-.313	-.162
	VAR00002	.284	1.000	-.049	-.062	-.096	-.109	-.097	-.070	-.073	.075	.074	.074	-.025
	VAR00003	.360	-.049	1.000	.411	.269	.281	.310	.338	.308	-.200	-.190	-.159	-.211
	VAR00004	.313	-.062	.411	1.000	.170	.234	.169	.200	.242	-.188	-.197	-.201	-.219
	VAR00005	.031	-.096	.269	.170	1.000	.666	.697	.716	.679	-.080	-.100	-.171	-.098
	VAR00006	.101	-.109	.281	.234	.666	1.000	.790	.739	.699	-.201	-.113	-.198	-.254
	VAR00007	.129	-.097	.310	.169	.697	.790	1.000	.785	.726	-.218	-.124	-.191	-.160
	VAR00008	.132	-.070	.338	.200	.716	.739	.785	1.000	.888	-.190	-.147	-.220	-.240
	VAR00009	.120	-.073	.308	.242	.679	.699	.726	.888	1.000	-.159	-.176	-.270	-.184
	VAR00010	-.122	.075	-.200	-.188	-.080	-.201	-.218	-.190	-.159	1.000	.322	.243	.323
	VAR00011	-.237	.074	-.190	-.197	-.100	-.113	-.124	-.147	-.176	.322	1.000	.678	.239
	VAR00012	-.313	.074	-.159	-.201	-.171	-.198	-.191	-.220	-.270	.243	.678	1.000	.168
	VAR00013	-.162	-.025	-.211	-.219	-.098	-.254	-.160	-.240	-.184	.323	.239	.168	1.000
Sig. (1-tailed)	VAR00001		.000	.000	.000	.322	.063	.025	.022	.034	.033	.000	.000	.007
	VAR00002			.229	.175	.073	.049	.071	.146	.135	.128	.131	.132	.353
	VAR00003				.000	.000	.000	.000	.000	.000	.001	.002	.008	.001
	VAR00004					.005	.000	.005	.001	.000	.002	.001	.001	.000
	VAR00005						.000	.000	.000	.000	.112	.065	.005	.069
	VAR00006							.000	.000	.000	.001	.043	.001	.000
	VAR00007								.000	.000	.000	.030	.002	.007
	VAR00008									.000	.002	.013	.000	.000
	VAR00009										.008	.004	.000	.002
	VAR00010											.000	.000	.000
	VAR00011												.000	.000
	VAR00012													.005
	VAR00013													

a. Determinant = .002

Appendix H.3:

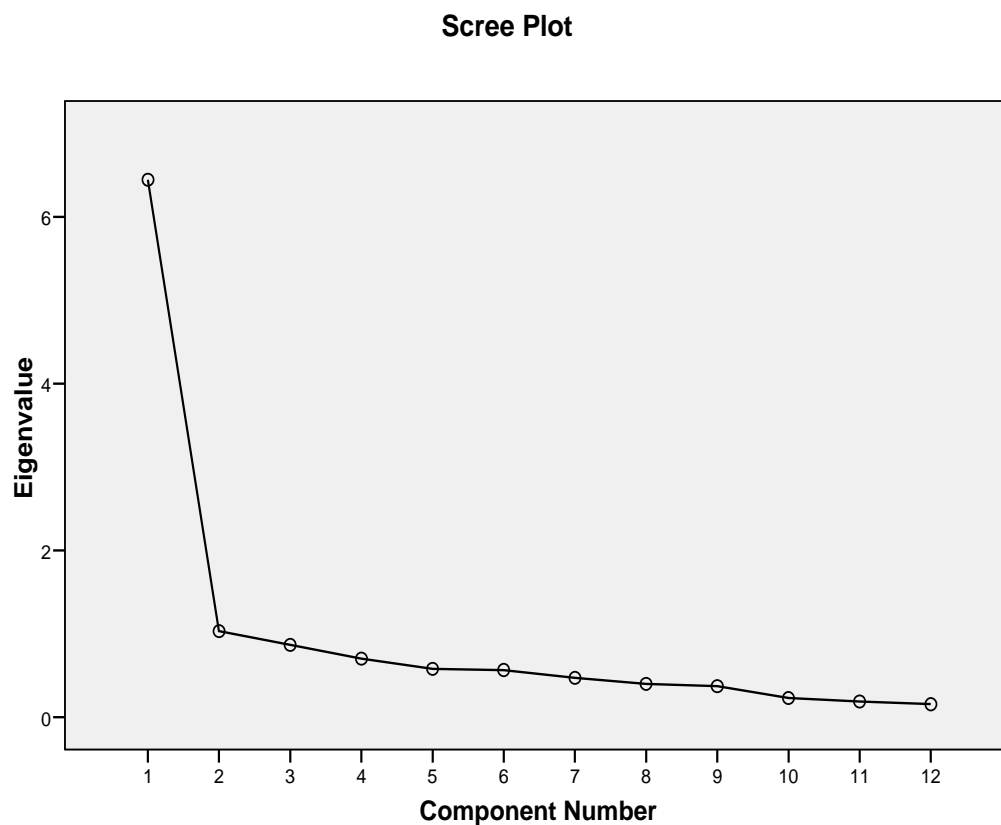
Anti-image Matrix for the psychological factor scales (trait anxiety, technology anxiety, and self-esteem)

Anti-image Matrices

		VAR00001	VAR00002	VAR00003	VAR00004	VAR00005	VAR00006	VAR00007	VAR00008	VAR00009	VAR00010	VAR00011	VAR00012	VAR00013
Anti-image Covariance	VAR00001	.659	-.270	-.184	-.138	.062	.011	-.037	-.014	.022	-.021	-.001	.134	.016
	VAR00002	-.270	.846	.078	.078	-.006	.023	.018	-.001	-.012	-.033	-.020	-.062	.052
	VAR00003	-.184	.078	.686	-.193	-.034	.020	-.022	-.028	.007	.043	.040	-.055	.039
	VAR00004	-.138	.078	-.193	.738	-.021	-.052	.043	.037	-.052	.048	.013	.003	.068
	VAR00005	.062	-.006	-.034	-.021	.406	-.058	-.066	-.047	-.019	-.063	.007	.014	-.052
	VAR00006	.011	.023	.020	-.052	-.058	.309	-.130	-.020	-.019	.007	-.030	.019	.087
	VAR00007	-.037	.018	-.022	.043	-.066	-.130	.263	-.050	-.007	.060	.003	-.012	-.056
	VAR00008	-.014	-.001	-.028	.037	-.047	-.020	-.050	.154	-.120	.011	-.005	-.013	.054
	VAR00009	.022	-.012	.007	-.052	-.019	-.019	-.007	-.120	.195	-.020	.004	.039	-.033
	VAR00010	-.021	-.033	.043	.048	-.063	.007	.060	.011	-.020	.788	-.111	-.014	-.171
	VAR00011	-.001	-.020	.040	.013	.007	-.030	.003	-.005	.004	-.111	.498	-.305	-.077
	VAR00012	.134	-.062	-.055	.003	.014	.019	-.012	-.013	.039	-.014	-.305	.484	.022
	VAR00013	.016	.052	.039	.068	-.052	.087	-.056	.054	-.033	-.171	-.077	.022	.785
Anti-image Correlation	VAR00001	.629 ^a	-.362	-.274	-.198	.120	.025	-.088	-.045	.062	-.029	-.003	.238	.022
	VAR00002	-.362	.457 ^a	.102	.099	-.010	.045	.039	-.003	-.030	-.040	-.031	-.097	.063
	VAR00003	-.274	.102	.822 ^a	-.271	-.064	.043	-.052	-.087	.018	.058	.068	-.095	.053
	VAR00004	-.198	.099	-.271	.773 ^a	-.039	-.109	.097	.109	-.137	.063	.022	.005	.090
	VAR00005	.120	-.010	-.064	-.039	.932 ^a	-.164	-.202	-.189	-.068	-.111	.016	.032	-.091
	VAR00006	.025	.045	.043	-.109	-.164	.888 ^a	-.457	-.091	-.078	.013	-.077	.048	.176
	VAR00007	-.088	.039	-.052	.097	-.202	-.457	.873 ^a	-.248	-.032	.132	.007	-.033	-.123
	VAR00008	-.045	-.003	-.087	.109	-.189	-.091	-.248	.815 ^a	-.692	.031	-.017	-.047	.155
	VAR00009	.062	-.030	.018	-.137	-.068	-.078	-.032	-.692	.828 ^a	-.050	.012	.126	-.085
	VAR00010	-.029	-.040	.058	.063	-.111	.013	.132	.031	-.050	.809 ^a	-.176	-.023	-.218
	VAR00011	-.003	-.031	.068	.022	.016	-.077	.007	-.017	.012	-.176	.656 ^a	-.620	-.123
	VAR00012	.238	-.097	-.095	.005	.032	.048	-.033	-.047	.126	-.023	-.620	.660 ^a	.035
	VAR00013	.022	.063	.053	.090	-.091	.176	-.123	.155	-.085	-.218	-.123	.035	.752 ^a

a. Measures of Sampling Adequacy(MSA)

Appendix I.1: **Scree Plot Figure for User Trust & User Risk Aversion**



Appendix I.2 **Total Variance Explained for User Trust & Risk Aversion**

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.446	53.713	53.713	6.446	53.713	53.713	3.782	31.519	31.519
2	1.031	8.594	62.307	1.031	8.594	62.307	3.695	30.788	62.307
3	.866	7.219	69.526						
4	.701	5.840	75.366						
5	.579	4.828	80.194						
6	.565	4.708	84.902						
7	.470	3.916	88.818						
8	.399	3.322	92.140						
9	.371	3.094	95.234						
10	.229	1.907	97.141						
11	.188	1.566	98.706						
12	.155	1.294	100.000						

Extraction Method: Principal Component Analysis.

Appendix I.3:

Communalities for User Trust & Risk Aversion

	Initial	Extraction
VAR00001	1.000	.677
VAR00002	1.000	.627
VAR00003	1.000	.545
VAR00004	1.000	.580
VAR00005	1.000	.523
VAR00006	1.000	.554
VAR00007	1.000	.676
VAR00008	1.000	.690
VAR00009	1.000	.521
VAR00010	1.000	.754
VAR00011	1.000	.669
VAR00012	1.000	.660

Appendix I.4:

Correlation Matrix for User Trust & User Risk Aversion

Correlation Matrix													
		VAR00001	VAR00002	VAR00003	VAR00004	VAR00005	VAR00006	VAR00007	VAR00008	VAR00009	VAR00010	VAR00011	VAR00012
Correlation	VAR00001	1.000	.795	.440	.444	.616	.558	-.602	-.639	-.500	-.572	-.514	-.373
	VAR00002	.795	1.000	.410	.395	.569	.581	-.546	-.576	-.444	-.539	-.584	-.395
	VAR00003	.440	.410	1.000	.502	.312	.357	-.391	-.403	-.292	-.374	-.379	-.189
	VAR00004	.444	.395	.502	1.000	.417	.435	-.522	-.495	-.334	-.529	-.410	-.206
	VAR00005	.616	.569	.312	.417	1.000	.583	-.507	-.498	-.418	-.531	-.466	-.340
	VAR00006	.558	.581	.357	.435	.583	1.000	-.507	-.503	-.418	-.473	-.487	-.237
	VAR00007	-.602	-.546	-.391	-.522	-.507	-.507	1.000	.815	.501	.735	.590	.355
	VAR00008	-.639	-.576	-.403	-.495	-.498	-.503	.815	1.000	.490	.708	.640	.366
	VAR00009	-.500	-.444	-.292	-.334	-.418	-.418	.501	.490	1.000	.569	.529	.394
	VAR00010	-.572	-.539	-.374	-.529	-.531	-.473	.735	.708	.569	1.000	.711	.525
	VAR00011	-.514	-.584	-.379	-.410	-.466	-.487	.590	.640	.529	.711	1.000	.481
	VAR00012	-.373	-.395	-.189	-.206	-.340	-.237	.355	.366	.394	.525	.481	1.000
Sig. (1-tailed)	VAR00001		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	VAR00002	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	VAR00003	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.002
	VAR00004	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.001
	VAR00005	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	VAR00006	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	VAR00007	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	VAR00008	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	VAR00009	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	VAR00010	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	VAR00011	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	VAR00012	.000	.000	.002	.001	.000	.000	.000	.000	.000	.000	.000	

a. Determinant = .001

Appendix I.5:

Anti-image Matrix for User Trust & User Risk Aversion

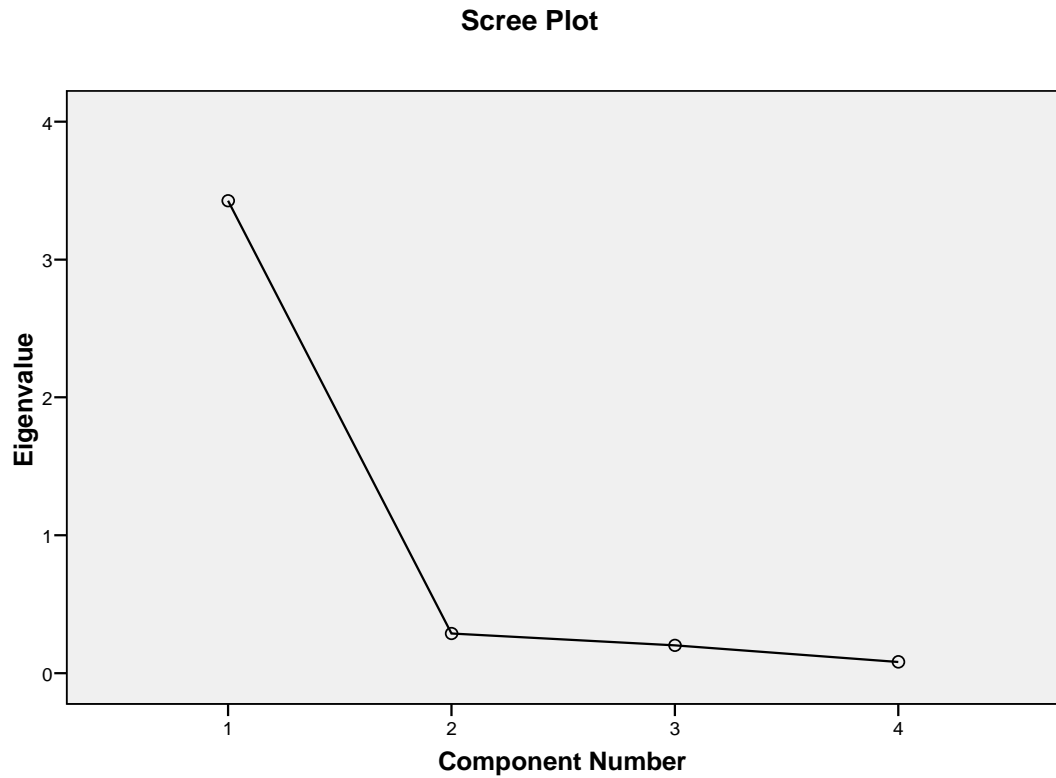
Anti-image Matrices

		VAR00001	VAR00002	VAR00003	VAR00004	VAR00005	VAR00006	VAR00007	VAR00008	VAR00009	VAR00010	VAR00011	VAR00012
Anti-image Covariance	VAR00001	.278	-.170	-.050	-.009	-.081	-.004	.007	.052	.062	.008	-.055	.009
	VAR00002	-.170	.307	-.023	.016	-.019	-.076	.004	-.005	-.027	-.016	.083	.043
	VAR00003	-.050	-.023	.673	-.206	.029	-.018	.003	.010	.009	-.019	.047	-.011
	VAR00004	-.009	.016	-.206	.570	-.041	-.062	.037	.010	-.016	.080	-.016	-.053
	VAR00005	-.081	-.019	.029	-.041	.506	-.148	.010	-.012	.009	.039	.000	.037
	VAR00006	-.004	-.076	-.018	-.062	-.148	.519	.025	.008	.051	-.017	.044	-.062
	VAR00007	.007	.004	.003	.037	.010	.025	.273	-.147	-.023	-.082	.019	.023
	VAR00008	.052	-.005	.010	.010	-.012	.008	-.147	.272	.008	-.028	-.066	.014
	VAR00009	.062	-.027	.009	-.016	.009	.051	-.023	.008	.596	-.063	-.069	-.064
	VAR00010	.008	-.016	-.019	.080	.039	-.017	-.082	-.028	-.063	.281	-.108	-.115
	VAR00011	-.055	.083	.047	-.016	.000	.044	.019	-.066	-.069	-.108	.388	-.072
	VAR00012	.009	.043	-.011	-.053	.037	-.062	.023	.014	-.064	-.115	-.072	.660
Anti-image Correlation	VAR00001	.877 ^a	-.581	-.115	-.021	-.217	-.011	.027	.191	.151	.028	-.167	.021
	VAR00002	-.581	.877 ^a	-.051	.039	-.047	-.190	.015	-.017	-.063	-.054	.242	.095
	VAR00003	-.115	-.051	.917 ^a	-.332	.050	-.031	.007	.023	.014	-.043	.093	-.017
	VAR00004	-.021	.039	-.332	.916 ^a	-.077	-.114	.094	.026	-.028	.201	-.034	-.087
	VAR00005	-.217	-.047	.050	-.077	.943 ^a	-.290	.028	-.032	.016	.104	-.001	.065
	VAR00006	-.011	-.190	-.031	-.114	-.290	.937 ^a	.066	.021	.092	-.044	.098	-.106
	VAR00007	.027	.015	.007	.094	.028	.066	.897 ^a	-.541	-.058	-.296	.060	.055
	VAR00008	.191	-.017	.023	.026	-.032	.021	-.541	.903 ^a	.019	-.100	-.204	.032
	VAR00009	.151	-.063	.014	-.028	.016	.092	-.058	.019	.960 ^a	-.153	-.144	-.102
	VAR00010	.028	-.054	-.043	.201	.104	-.044	-.296	-.100	-.153	.912 ^a	-.326	-.267
	VAR00011	-.167	.242	.093	-.034	-.001	.098	.060	-.204	-.144	-.326	.913 ^a	-.143
	VAR00012	.021	.095	-.017	-.087	.065	-.106	.055	.032	-.102	-.267	-.143	.914 ^a

a. Measures of Sampling Adequacy(MSA)

Appendix J.1:

Scree Plot Figure for Intention to use E-commerce



Appendix J.2:

Total Variance Explained for Intention to use E-commerce

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.426	85.660	85.660	3.426	85.660	85.660
2	.289	7.222	92.882			
3	.202	5.054	97.936			
4	.083	2.064	100.000			

Appendix J.3:

Communalities for Intention to use E-commerce

	Initial	Extraction
VAR00001	1.000	.894
VAR00002	1.000	.916
VAR00003	1.000	.839
VAR00004	1.000	.777

Appendix K: PLS .lst File

```

      P    L    S    G R A P H
      for
Partial Least Squares Analysis
      (2004 Feb 27)

YEAR-MONTH-DAY: 2007-11-22
      HOUR:MIN:SECS: 18:43:32.

      (HOWDY PARDNER!!  HOW Y'ALL  DOING, EH?)
0      600000 = Available Field Length.
      600000 = Requested Field Length.

0CPU-Time =      0 min   0.00 sec
      Total =      0 min   0.00 sec

0      Comments..
      COMM
      PLS Deck generated for Mr Glenn Bewsell
0JBL                                     1.8
      =====
0--      P      L      S      X      --
0--  LATENT VARIABLES PATH ANALYSIS  --
-  PARTIAL LEAST-SQUARES ESTIMATION  -
0

0=====
0Number of Blocks      NBLOCS =      12
  Number of Cases      NCASES =     231
  Number of Dimensions      NDIM =       1
0Output Quantity      OUT =    2256
  Inner Weighting Scheme  IWGHT =       1
  Number of Iterations    NITER =     100
  Estimation Accuracy     EPS =        5
  Analysed Data Metric    METRIC =       1
0=====
      Block    N-MV Deflate LV-Mode    Model
      -----
      Personal    4    yes    outward    Exogen
      Experien    4    yes    outward    Exogen
      Ease of      5    yes    outward    Exogen
      Self-est     3    yes    outward    Exogen
      Trait An     2    yes    outward    Exogen
      E-commer     5    yes    outward    Exogen
      General      8    yes    outward    Exogen
      E-Commer     6    yes    outward    Endogen
      Outcome      9    yes    outward    Endogen
      Risk Ave     6    yes    outward    Endogen
      Percepti     6    yes    outward    Endogen
      Intentio     4    yes    outward    Endogen
      -----
                        62                .
      =====

0Real words needed      23849 from 600000
0Char words needed      611 from 40000
```

```

0Dimension No. 1
0Partial Least-Squares Parameter Estimation
0Change of Stop Criteria during Iteration
0Cycle No.      CR1          CR2          CR3          CR4          CR5

    1  0.9044E+00  0.2385E+00  0.5220E+00  0.4796E+00  0.2729E+00
    2  0.2217E-01 -0.4847E-04  0.5370E-04  0.6007E-04 -0.1086E-03
    3  0.7043E-04 -0.1276E-05 -0.1079E-05 -0.1595E-05  0.1907E-05
    4  0.6505E-05  0.1432E-07 -0.8272E-08  0.1834E-07  0.1743E-07
0Convergence at Iteration Cycle No. 4

```

```

0B  .. Path coefficients
=====
              Personal  Experien  Ease of  Self-est  Trait An  E-commer  General
-----
Personal      0.000      0.000      0.000      0.000      0.000      0.000      0.000
Experien      0.000      0.000      0.000      0.000      0.000      0.000      0.000
Ease of       0.000      0.000      0.000      0.000      0.000      0.000      0.000
Self-est      0.000      0.000      0.000      0.000      0.000      0.000      0.000
Trait An      0.000      0.000      0.000      0.000      0.000      0.000      0.000
E-commer      0.000      0.000      0.000      0.000      0.000      0.000      0.000
General       0.000      0.000      0.000      0.000      0.000      0.000      0.000
E-Commer      0.007      0.224      0.268      0.052      0.107      -0.375      0.042
Outcome       0.000      0.163      0.339      0.000      0.000      0.000      0.000
Risk Ave      0.000      0.000      0.000      0.000      0.000      0.000      0.000
Percepti     0.000      0.000      0.000      0.000      0.000      0.000      0.000
Intentio      0.000      0.000      0.000      0.000      0.000      -0.109      0.000
=====

```

```

0B  .. Path coefficients
=====
              E-Commer  Outcome  Risk Ave  Percepti  Intentio
-----
Personal      0.000      0.000      0.000      0.000      0.000
Experien      0.000      0.000      0.000      0.000      0.000
Ease of       0.000      0.000      0.000      0.000      0.000
Self-est      0.000      0.000      0.000      0.000      0.000
Trait An      0.000      0.000      0.000      0.000      0.000
E-commer      0.000      0.000      0.000      0.000      0.000
General       0.000      0.000      0.000      0.000      0.000
E-Commer      0.000      0.000      0.000      0.000      0.000
Outcome       0.334      0.000      0.000      0.000      0.000
Risk Ave     -0.671      0.000      0.000      0.000      0.000
Percepti      0.703      0.000      0.000      0.000      0.000
Intentio      0.245      0.128     -0.279      0.255      0.000
=====

```

```

0R  .. Correlations of latent variables
=====
              Personal  Experien  Ease of  Self-est  Trait An  E-commer  General
-----
Personal      1.000
Experien      0.630      1.000

```

Ease of	0.560	0.589	1.000			
Self-est	0.096	0.228	0.307	1.000		
Trait An	-0.164	-0.245	-0.329	-0.289	1.000	
E-commer	-0.538	-0.664	-0.689	-0.258	0.345	1.000
General	0.222	0.243	0.447	0.433	-0.257	-0.401
E-Commer	0.497	0.631	0.662	0.270	-0.192	-0.706
Outcome	0.508	0.573	0.656	0.249	-0.147	-0.617
Risk Ave	-0.583	-0.651	-0.689	-0.176	0.275	0.702
Percepti	0.484	0.579	0.692	0.193	-0.246	-0.692
Intentio	0.561	0.705	0.725	0.239	-0.198	-0.732

OR .. Correlations of latent variables

	E-Commer	Outcome	Risk Ave	Percepti	Intentio
E-Commer	1.000				
Outcome	0.661	1.000			
Risk Ave	-0.671	-0.620	1.000		
Percepti	0.703	0.694	-0.755	1.000	
Intentio	0.772	0.707	-0.791	0.801	1.000

0Inner Model

Block	Mean	Location	Mult.RSq	AvResVar	AvCommun	AvRedund
Personal	0.0000	0.0000	0.0000	0.2782	0.7218	0.0000
Experien	0.0000	0.0000	0.0000	0.1827	0.8173	0.0000
Ease of	0.0000	0.0000	0.0000	0.3895	0.6105	0.0000
Self-est	0.0000	0.0000	0.0000	0.4117	0.5883	0.0000
Trait An	0.0000	0.0000	0.0000	0.2978	0.7022	0.0000
E-commer	0.0000	0.0000	0.0000	0.2087	0.7913	0.0000
General	0.0000	0.0000	0.0000	0.5564	0.4436	0.0000
E-Commer	0.0000	0.0000	0.5959	0.4350	0.5650	0.3367
Outcome	0.0000	0.0000	0.5367	0.4491	0.5509	0.2957
Risk Ave	0.0000	0.0000	0.4505	0.3595	0.6405	0.2885
Percepti	0.0000	0.0000	0.4943	0.4185	0.5815	0.2874
Intentio	0.0000	0.0000	0.7837	0.1435	0.8565	0.6713
Average			0.2384	0.3711	0.6289	0.1745

0Outer Model

Variable	Weight	Loading	Location	ResidVar	Communal	Redundan
Personal outward						
PIIS1	0.2713	0.8799	0.0000	0.2257	0.7743	0.0000
PIIS2	0.2887	0.8060	0.0000	0.3503	0.6497	0.0000
PIIS3	0.2966	0.7914	0.0000	0.3737	0.6263	0.0000
PIIS4	0.3212	0.9148	0.0000	0.1631	0.8369	0.0000
Experien outward						

EXP1	0.2687	0.9070	0.0000	0.1773	0.8227	0.0000
EXP2	0.2366	0.9092	0.0000	0.1734	0.8266	0.0000
EXP3	0.3195	0.9192	0.0000	0.1550	0.8450	0.0000
EXP4	0.2811	0.8802	0.0000	0.2252	0.7748	0.0000

Ease of	outward					
EU1	0.3106	0.9186	0.0000	0.1561	0.8439	0.0000
EU2	0.2984	0.8588	0.0000	0.2624	0.7376	0.0000
EU3	0.1289	0.5703	0.0000	0.6747	0.3253	0.0000
EU4	0.1828	0.6363	0.0000	0.5951	0.4049	0.0000
EU5	0.3120	0.8607	0.0000	0.2592	0.7408	0.0000

Self-est	outward					
SE1	0.5890	0.7805	0.0000	0.3908	0.6092	0.0000
SE2	0.2486	0.7496	0.0000	0.4380	0.5620	0.0000
SE3	0.4592	0.7706	0.0000	0.4062	0.5938	0.0000

Trait An	outward					
TA3	0.6753	0.8851	0.0000	0.2166	0.7834	0.0000
TA4	0.5105	0.7880	0.0000	0.3790	0.6210	0.0000

E-commer	outward					
EA1	0.2235	0.8450	0.0000	0.2859	0.7141	0.0000
EA2	0.2129	0.8736	0.0000	0.2368	0.7632	0.0000
EA3	0.2450	0.9038	0.0000	0.1832	0.8168	0.0000
EA4	0.2292	0.9280	0.0000	0.1387	0.8613	0.0000
EA5	0.2134	0.8952	0.0000	0.1987	0.8013	0.0000

General	outward					
GSE1	0.1844	0.6966	0.0000	0.5147	0.4853	0.0000
GSE2	0.2816	0.7786	0.0000	0.3938	0.6062	0.0000
GSE3	0.1820	0.7614	0.0000	0.4203	0.5797	0.0000
GSE5	0.2287	0.6439	0.0000	0.5854	0.4146	0.0000
GSE8	0.2046	0.6819	0.0000	0.5350	0.4650	0.0000
GSE10	0.1110	0.5759	0.0000	0.6684	0.3316	0.0000
GSE11	0.1720	0.5902	0.0000	0.6516	0.3484	0.0000
GSE12	0.1092	0.5640	0.0000	0.6819	0.3181	0.0000

E-Commer	outward					
ESE1	0.2194	0.7252	0.0000	0.4740	0.5260	0.3134
ESE2	0.2763	0.8123	0.0000	0.3402	0.6598	0.3932
ESE3	0.2212	0.7553	0.0000	0.4295	0.5705	0.3400
ESE4	0.2625	0.8189	0.0000	0.3295	0.6705	0.3996
ESE5	0.1871	0.7303	0.0000	0.4667	0.5333	0.3178
ESE6	0.1491	0.6555	0.0000	0.5703	0.4297	0.2561

Outcome	outward					
OUT1	0.1314	0.6974	0.0000	0.5136	0.4864	0.2610
OUT2	0.1794	0.8099	0.0000	0.3441	0.6559	0.3520
OUT3	0.1663	0.8006	0.0000	0.3590	0.6410	0.3440
OUT4	0.1454	0.6881	0.0000	0.5265	0.4735	0.2541
OUT5	0.1384	0.7523	0.0000	0.4341	0.5659	0.3037
OUT6	0.1475	0.7412	0.0000	0.4506	0.5494	0.2948
OUT7	0.1176	0.7145	0.0000	0.4894	0.5106	0.2740
OUT8	0.1139	0.6427	0.0000	0.5869	0.4131	0.2217
OUT9	0.1955	0.8141	0.0000	0.3373	0.6627	0.3557

Risk Ave	outward					
RA1	0.2225	0.8542	0.0000	0.2704	0.7296	0.3287
RA2	0.2322	0.8606	0.0000	0.2594	0.7406	0.3336
RA3	0.1709	0.7074	0.0000	0.4996	0.5004	0.2254
RA4	0.2316	0.8965	0.0000	0.1963	0.8037	0.3620
RA5	0.2269	0.8330	0.0000	0.3061	0.6939	0.3126
RA6	0.1513	0.6120	0.0000	0.6255	0.3745	0.1687

Percepti	outward					
PT1	0.2736	0.8775	0.0000	0.2299	0.7701	0.3807
PT2	0.2749	0.8603	0.0000	0.2599	0.7401	0.3659
PT3	0.1383	0.6001	0.0000	0.6399	0.3601	0.1780
PT4	0.1768	0.6530	0.0000	0.5737	0.4263	0.2108
PT5	0.2108	0.7735	0.0000	0.4017	0.5983	0.2958
PT6	0.2102	0.7706	0.0000	0.4061	0.5939	0.2936

Intentio	outward					
INI1	0.2837	0.9475	0.0000	0.1023	0.8977	0.7035
INI2	0.2882	0.9586	0.0000	0.0812	0.9188	0.7201
INI3	0.2513	0.9126	0.0000	0.1672	0.8328	0.6527
INI4	0.2560	0.8814	0.0000	0.2232	0.7768	0.6088
=====						

0Eta .. Latent variables

	Personal	Experien	Ease of	Self-est	Trait An	E-commer	General

c1	-0.173	0.686	0.441	-0.247	-0.162	-0.644	-0.301
c2	-0.421	-0.217	-0.167	-0.247	-0.791	-0.431	-1.780
c3	0.132	-0.760	-0.828	-1.959	1.362	-0.644	-1.216
c4	0.427	0.917	0.991	-0.247	-0.791	-0.848	-0.241
c5	0.208	-0.272	-0.665	0.578	-0.523	-1.231	0.403
c6	0.156	1.642	-0.068	0.067	-0.162	-0.047	-0.285
c7	0.179	0.248	0.254	-0.247	0.466	-0.644	-0.245
c8	-0.979	-0.270	0.365	-0.278	-0.162	0.968	-1.023
c9	-0.959	-1.456	-0.124	-1.989	1.362	1.363	1.878
c10	-0.359	0.016	0.189	-0.247	0.734	-0.239	-0.232
c11	1.294	0.248	-0.244	0.578	0.734	0.370	0.597
c12	0.427	-0.940	-1.151	-1.929	1.362	0.754	-0.341
c13	-1.555	-0.788	-1.759	-1.017	1.362	1.351	-0.286
c14	0.427	1.150	0.313	0.350	0.734	1.571	-0.399
c15	0.699	-0.217	0.468	-0.247	-0.791	-0.238	0.294
c16	0.132	0.223	-1.437	0.578	-0.791	-0.261	-1.023
c17	0.427	0.686	0.662	-1.103	0.466	0.765	0.264
c18	0.999	-0.270	-0.530	-0.247	-0.162	-0.644	-0.538
c19	-0.116	-0.270	0.398	-0.789	1.542	-1.039	0.843
c20	0.427	-0.788	0.067	-0.247	0.105	-0.644	-0.578
c21	-0.116	-1.226	0.475	-0.247	1.362	1.576	0.442
c22	-0.078	1.150	-0.167	-0.247	0.286	0.957	-0.450
c23	0.346	0.168	0.662	1.434	0.466	0.968	-0.415
c24	-0.416	-0.270	0.266	0.578	0.734	-0.239	0.004
c25	0.156	0.248	0.365	0.892	0.286	-0.062	0.550
c26	0.427	1.642	0.662	-0.247	0.105	-0.644	-1.454
c27	0.403	1.435	0.254	-0.247	-0.343	-0.249	-1.383
c28	-0.764	-0.195	0.060	-1.645	-0.791	-0.457	-0.306
c29	-0.936	0.892	-0.747	1.120	0.286	1.768	-0.664

c30	0.427	0.221	-0.402	0.578	-1.239	-0.836	0.630
c31	0.923	0.014	0.552	-0.247	0.105	-0.644	-2.562
c32	-1.022	-1.458	-1.953	-1.331	0.734	0.963	0.294
c33	1.542	1.642	1.685	0.892	-1.867	-1.648	1.410
c34	-1.555	0.686	0.967	1.434	-1.239	-0.831	0.910
c35	0.427	0.246	0.856	1.434	0.466	-0.644	1.200
c36	0.160	0.454	0.662	-0.247	-0.791	-0.644	0.294
c37	0.427	-0.270	0.662	-0.247	-0.791	-0.644	-0.952
c38	-1.803	-0.245	0.552	0.578	0.466	0.136	0.580
c39	0.179	0.221	0.288	1.120	1.094	-0.633	1.309
c40	-0.354	0.016	0.552	-0.247	0.105	-0.644	-0.540
c41	-0.988	-1.897	0.376	0.578	-0.791	0.552	0.034
c42	0.946	0.454	1.271	-1.331	-0.791	-0.431	0.889
c43	0.427	0.686	0.973	1.434	-1.867	-0.644	1.424
c44	-1.060	-1.949	-1.865	-4.152	1.990	2.366	-0.663
c45	-0.959	0.454	0.746	-0.561	0.914	0.529	0.141
c46	-0.169	0.454	0.662	-0.247	-0.791	-0.644	0.294
c47	-2.070	1.642	0.067	0.578	1.094	-0.644	1.279
c48	0.427	-1.228	-0.834	-1.103	-0.343	0.776	-0.371
c49	-1.803	-0.966	-0.131	0.892	-0.791	0.573	1.019
c50	-0.683	-0.009	0.067	1.120	-0.791	-0.217	0.339
c51	0.160	-0.502	0.662	1.434	-0.610	-0.441	1.023
c52	0.413	1.125	-1.437	0.892	2.438	1.127	0.303
c53	-0.116	-0.039	0.441	-0.247	0.734	-0.644	1.229
c54	-1.022	-1.721	-1.759	0.892	-1.419	1.358	0.370
c55	-0.936	0.454	0.702	1.120	0.286	-1.039	1.696
c56	0.427	0.454	-0.395	-1.899	1.362	0.166	-0.898
c57	-2.670	-1.744	-1.132	-0.247	0.466	0.989	-1.822
c58	-0.169	-0.502	0.177	-0.247	-0.791	-0.644	0.442
c59	0.179	0.248	0.067	-0.247	-0.791	-0.644	0.082
c60	0.675	0.972	0.662	-0.247	-0.162	-1.648	0.019
c61	-0.169	0.479	1.006	-0.247	-0.791	-0.644	-0.114
c62	0.946	1.642	1.381	1.434	0.734	-0.644	1.157
c63	0.946	1.642	1.381	1.434	0.734	-0.644	1.157
c64	1.518	1.642	1.873	0.350	-1.867	-1.648	1.410
c65	-0.364	-1.226	0.552	-1.073	-0.162	0.754	0.004
c66	1.294	-0.037	0.365	-0.247	1.810	-1.648	0.873
c67	-0.087	-1.664	-0.548	-0.247	0.105	0.359	0.113
c68	-0.959	-0.993	-1.759	-1.387	0.734	0.952	-0.347
c69	-1.555	-1.486	-0.116	0.608	-0.791	0.749	0.052
c70	0.675	0.974	0.610	-0.247	-0.162	-0.644	-0.153
c71	-1.284	0.248	0.662	0.295	-0.791	-0.644	0.594
c72	0.942	0.686	0.761	0.067	0.286	-0.858	1.666
c73	1.275	1.179	-0.032	-0.247	0.105	-0.649	-0.364
c74	1.275	1.179	-0.032	-0.247	0.105	-0.649	-0.364
c75	-1.555	-1.433	-0.542	1.120	-1.867	0.979	0.427
c76	0.156	-0.502	-0.530	-0.247	0.466	1.363	0.506
c77	0.179	-0.062	0.365	0.578	0.105	0.364	-0.177
c78	0.675	0.917	1.289	-0.247	0.553	-0.261	-2.256
c79	-1.555	-1.226	-1.759	-0.247	1.362	1.363	-1.642
c80	0.427	0.016	0.585	0.608	1.810	-0.655	-0.111
c81	1.518	1.642	0.797	1.120	0.286	-1.434	0.212
c82	-1.803	-1.664	-1.759	1.434	1.362	1.363	0.594
c83	1.518	-0.811	1.068	0.892	-1.239	2.179	-0.021
c84	1.542	0.919	1.271	0.578	0.553	-1.066	1.131
c85	0.675	0.686	0.552	-0.247	-0.343	-0.848	-0.021
c86	0.179	0.248	0.441	-0.247	-0.791	-0.644	-0.819

c87	-2.670	-2.182	-2.325	0.892	0.105	0.956	0.910
c88	0.370	-0.733	0.254	0.892	-1.867	-0.644	1.410
c89	-0.683	0.246	0.475	-0.247	-1.239	-0.644	0.929
c90	-1.803	-0.270	0.358	-0.247	-0.791	-0.644	0.082
c91	-1.288	-1.226	-1.326	-3.610	1.810	2.366	-2.469
c92	1.461	0.688	0.845	-0.217	1.362	0.162	0.108
c93	0.427	0.018	0.662	-0.247	-0.791	-0.644	-0.072
c94	-0.688	-0.270	-0.659	0.578	-1.867	1.363	0.235
c95	0.942	-0.215	0.247	-0.247	1.362	-0.644	-0.433
c96	1.790	1.642	1.431	0.806	-1.867	-1.648	0.294
c97	-1.288	-1.689	-0.641	0.578	-1.867	1.566	0.747
c98	-0.893	0.919	1.076	0.608	-1.867	-0.447	0.747
c99	0.675	0.479	0.662	0.892	0.286	-0.644	0.533
c100	-0.064	-1.381	1.194	1.434	0.466	1.143	1.031
c101	-0.169	0.246	0.254	-1.133	0.466	-0.244	0.698
c102	0.403	0.688	0.365	-0.247	0.734	-0.644	0.552
c103	0.098	-0.502	0.475	0.578	-1.419	-1.039	0.230
c104	0.156	-0.813	-0.244	0.892	0.553	0.573	0.230
c105	0.156	0.248	0.365	-0.247	1.362	-0.644	0.053
c106	0.408	-0.991	0.662	0.892	1.362	-0.249	1.410
c107	0.427	-0.683	-0.803	-0.789	1.362	1.193	1.062
c108	0.446	0.686	1.399	-1.331	-1.239	-0.644	0.063
c109	0.179	0.686	1.685	0.578	-0.791	-1.237	-0.994
c110	0.179	-0.888	0.254	-0.247	-0.162	-0.644	-0.986
c111	-0.169	-0.270	0.078	1.434	0.286	-0.249	0.959
c112	-1.260	-0.500	0.365	-2.526	0.105	1.363	0.557
c113	0.427	-0.500	0.171	1.120	-1.239	-0.644	1.878
c114	-0.068	-1.226	0.967	-0.247	0.466	1.363	-0.395
c115	0.675	-0.534	0.874	0.892	0.105	-0.431	1.023
c116	0.675	1.642	0.552	-0.247	-0.343	-0.644	0.103
c117	1.518	1.125	0.248	-0.247	1.362	-0.270	0.326
c118	-0.416	-0.270	-0.625	0.892	-1.867	0.748	1.194
c119	0.675	0.686	0.662	-0.247	-1.239	0.166	-0.311
c120	-0.688	-0.940	0.662	0.578	1.362	-0.644	0.530
c121	0.156	-0.555	0.441	-0.247	0.105	0.755	-0.093
c122	0.179	1.642	0.662	0.608	-1.419	-0.848	0.082
c123	1.523	1.642	0.773	1.434	-1.867	-1.253	1.410
c124	0.756	0.016	0.720	-0.247	-0.791	-0.847	0.376
c125	-1.284	0.016	0.662	1.434	-0.162	-0.644	0.475
c126	-0.173	-0.037	-0.431	-0.247	0.914	0.364	0.354
c127	0.179	-0.270	0.365	-1.929	0.286	-0.453	0.082
c128	0.427	-0.270	0.060	-1.989	0.286	-0.249	-0.012
c129	1.189	1.202	1.095	1.120	-0.791	-1.445	1.038
c130	1.271	1.410	0.779	-0.247	-0.791	-1.445	0.417
c131	-1.284	1.642	0.552	-0.247	-0.791	-0.644	0.551
c132	0.079	-0.009	0.170	1.120	-0.791	-0.441	-1.242
c133	0.946	0.223	0.948	-0.247	-0.162	-0.644	1.119
c134	-0.707	-0.708	-0.548	-1.899	0.105	-0.644	0.294
c135	1.518	0.894	0.675	-1.073	0.914	0.178	-0.233
c136	0.427	0.171	0.222	-0.247	0.466	-0.046	-0.248
c137	1.247	0.477	0.294	-1.133	-0.162	-1.434	0.687
c138	0.675	0.686	0.365	-0.247	0.466	-0.261	-0.034
c139	0.675	0.200	0.552	-0.875	0.734	-0.261	0.464
c140	0.427	-1.224	0.331	0.295	1.362	0.984	-0.846
c141	-0.111	0.168	0.985	0.578	-1.867	-0.644	1.198
c142	1.542	1.204	1.007	0.578	0.286	-0.457	1.052
c143	-1.803	-0.733	-2.232	0.578	1.362	0.979	-1.354

c144	-0.421	-1.226	-0.945	-0.561	0.734	1.363	-0.437
c145	0.427	0.686	0.773	1.434	1.094	-0.431	-1.052
c146	-2.070	-0.557	-1.565	-0.247	0.466	0.776	0.009
c147	0.427	-0.217	0.662	1.120	1.810	-0.655	-0.925
c148	0.780	1.642	1.873	1.434	-1.867	-1.648	1.431
c149	1.790	1.642	0.382	1.434	-1.239	-1.039	1.219
c150	0.156	0.223	0.482	1.434	-0.791	1.176	0.160
c151	1.213	0.248	-1.495	-0.247	2.438	1.554	-0.951
c152	0.675	-0.502	-1.437	0.578	0.018	1.182	0.523
c153	-0.364	-0.710	0.552	-0.247	0.914	-0.238	-0.215
c154	1.189	1.642	1.145	0.578	1.990	-1.648	1.097
c155	-0.068	0.919	0.389	-0.875	1.362	-0.261	0.403
c156	0.942	0.686	0.958	-0.247	-0.791	-0.831	-0.348
c157	-1.536	-0.940	0.376	0.295	-0.791	-0.644	0.959
c158	0.427	1.410	0.365	1.434	-0.791	-1.253	1.410
c159	1.194	1.642	1.025	-1.103	0.466	-1.648	-0.910
c160	0.942	1.642	0.908	0.578	0.105	-1.445	-0.873
c161	0.675	0.686	-0.505	-0.247	-0.343	-0.644	-0.280
c162	0.651	0.508	1.194	-0.247	-1.419	-0.644	1.282
c163	0.160	-0.270	0.254	-0.247	1.362	-0.431	0.294
c164	-1.022	-1.226	-1.225	-0.247	0.466	1.363	-1.161
c165	0.675	-1.226	-1.114	-0.247	-0.791	1.363	-0.130
c166	0.179	1.642	0.662	1.434	-1.239	-1.039	0.087
c167	0.132	-0.270	-0.284	-1.959	-0.791	-0.644	0.485
c168	0.156	-0.037	-0.852	-1.387	0.914	0.952	-1.089
c169	1.194	0.947	1.006	0.578	-1.867	-0.078	0.360
c170	0.699	1.357	-2.030	-1.361	-0.343	0.931	-0.467
c171	-0.897	0.016	0.441	-0.247	-0.791	0.166	-0.649
c172	1.542	0.686	0.662	-0.247	-0.791	-0.025	0.747
c173	0.427	0.762	0.475	-0.247	-1.239	-0.644	-0.830
c174	-1.555	-0.733	-2.045	0.608	-0.343	0.968	0.633
c175	-0.092	-1.226	-0.530	-1.103	-0.791	1.363	-1.463
c176	0.946	0.917	0.177	-0.789	0.286	-0.644	-0.062
c177	-0.188	0.479	0.254	1.434	-0.791	-0.238	0.230
c178	-1.555	-1.226	-1.385	-1.929	-0.791	1.363	-1.966
c179	0.427	-1.666	-2.367	-1.073	0.914	0.968	-1.175
c180	-0.068	-0.009	-1.286	0.608	-0.343	0.156	0.236
c181	0.184	-0.037	0.475	0.264	0.105	-1.050	-0.065
c182	0.675	-0.710	-0.262	-0.247	-0.343	-0.644	0.514
c183	-2.074	-1.226	-1.682	0.578	-0.343	1.171	-0.361
c184	0.756	-0.502	0.441	1.434	-0.610	1.160	-0.434
c185	0.179	-0.788	-1.547	-2.724	-0.610	-0.217	-1.270
c186	0.179	-1.458	-0.548	0.578	0.734	1.363	1.321
c187	0.179	0.454	0.441	0.578	0.466	-0.436	-0.290
c188	-0.936	0.709	-0.176	1.434	1.182	-1.242	0.574
c189	0.427	0.479	-0.238	0.578	0.286	-0.644	0.318
c190	-2.399	-1.744	-1.851	1.434	-0.791	2.366	0.892
c191	-1.555	-2.182	-1.759	0.067	0.466	1.363	0.744
c192	-0.149	0.454	1.498	1.434	0.466	-0.441	0.216
c193	-0.712	-0.270	-1.572	-0.247	0.914	1.363	-2.125
c194	-0.712	-0.270	-1.572	-0.247	0.914	1.363	-1.834
c195	-0.712	-0.270	-1.572	-0.247	0.914	1.363	-2.031
c196	-0.712	-0.270	-1.572	-0.247	0.914	1.363	-1.678
c197	-0.255	0.456	-0.361	-1.929	-0.162	0.359	-1.834
c198	-0.712	-0.270	-1.572	-0.247	0.914	1.363	-1.944
c199	-1.555	-1.226	-2.027	-0.247	0.466	0.605	-1.935
c200	-1.555	-1.226	-2.027	-0.247	0.466	0.605	-1.935

c201	0.179	-0.580	-1.759	-0.247	-0.791	1.363	-2.577
c202	0.179	-0.039	0.773	0.578	-0.791	-0.644	0.061
c203	0.179	-0.580	-1.759	-0.247	-0.791	1.363	-2.577
c204	-0.416	-0.270	0.189	-0.247	-0.162	-0.453	0.294
c205	-2.074	-2.182	-1.725	-1.133	1.362	2.366	-3.276
c206	0.427	-0.940	0.441	-0.247	-0.791	-0.431	-0.567
c207	-0.688	-0.270	0.662	-0.247	-0.343	-0.261	0.097
c208	-2.074	-2.182	-1.725	-1.133	1.362	2.366	-3.276
c209	-2.074	-1.717	-1.348	0.295	1.990	1.971	1.440
c210	1.523	1.642	0.773	1.434	-1.867	-1.253	1.410
c211	0.675	1.642	0.552	-0.247	-0.343	-0.644	0.103
c212	0.179	-0.888	0.254	-0.247	-0.162	-0.644	-0.986
c213	-1.022	-1.226	-1.225	-0.247	0.466	1.363	-1.161
c214	0.780	1.642	1.873	1.434	-1.867	-1.648	1.431
c215	1.790	1.642	0.382	1.434	-1.239	-1.039	1.219
c216	-0.421	-1.226	-0.945	-0.561	0.734	1.363	-0.437
c217	1.542	1.204	1.007	0.578	0.286	-0.457	1.052
c218	1.247	0.477	0.294	-1.133	-0.162	-1.434	0.687
c219	0.156	-0.813	-0.244	0.892	0.553	0.573	0.230
c220	-0.064	-1.381	1.194	1.434	0.466	1.143	1.031
c221	1.790	1.642	1.431	0.806	-1.867	-1.648	0.294
c222	-1.288	-1.226	-1.326	-3.610	1.810	2.366	-2.469
c223	-2.670	-2.182	-2.325	0.892	0.105	0.956	0.910
c224	-1.803	-0.733	-2.232	0.578	1.362	0.979	-1.354
c225	1.189	1.202	1.095	1.120	-0.791	-1.445	1.038
c226	1.518	1.125	0.248	-0.247	1.362	-0.270	0.326
c227	-2.070	-0.557	-1.565	-0.247	0.466	0.776	0.009
c228	0.699	1.357	-2.030	-1.361	-0.343	0.931	-0.467
c229	0.651	0.508	1.194	-0.247	-1.419	-0.644	1.282
c230	0.675	0.686	-0.505	-0.247	-0.343	-0.644	-0.280
c231	-0.416	-0.270	0.189	-0.247	-0.162	-0.453	0.294

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0Eta .. Latent variables

	E-Commer	Outcome	Risk Ave	Percepti	Intentio
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c1	0.509	0.420	-0.873	0.441	0.482
c2	-0.221	-0.900	-1.267	-0.457	-0.015
c3	0.918	0.154	-0.552	0.717	0.482
c4	0.625	0.673	-0.519	-0.522	0.479
c5	-1.001	-0.430	-0.280	0.290	0.234
c6	0.625	0.414	-0.672	0.576	0.482
c7	0.374	0.017	0.950	1.001	0.209
c8	0.257	-0.983	-0.353	-0.608	-1.093
c9	-0.509	-0.998	2.005	-0.316	-1.088
c10	-0.203	-0.429	0.270	-0.618	-0.303
c11	-0.442	0.240	1.160	0.350	-0.279
c12	0.103	-0.287	-0.311	0.335	0.234
c13	-0.496	-0.473	0.635	0.568	-1.044
c14	0.700	0.955	-0.879	0.601	0.482
c15	-1.020	-0.530	0.075	-1.430	-1.590
c16	0.395	-0.580	0.405	0.490	-0.033
c17	-1.679	0.011	0.546	-0.887	0.482
c18	0.088	0.128	0.223	-0.241	0.234
c19	0.667	0.812	-0.314	0.570	0.500

c20	0.280	0.159	1.361	0.556	0.482
c21	-0.182	-0.279	1.388	-0.541	-1.093
c22	1.147	-0.249	-0.274	0.695	0.484
c23	0.103	-1.236	0.113	-0.927	0.234
c24	0.088	-0.050	-0.306	0.412	-0.033
c25	0.143	0.489	-0.480	0.715	1.019
c26	0.782	0.464	-0.086	0.309	0.482
c27	0.468	-0.199	-0.873	0.615	0.482
c28	-1.251	-0.416	-0.160	-0.239	-0.843
c29	0.591	0.272	1.754	-1.356	0.218
c30	-0.631	-0.586	-0.347	-0.324	-0.033
c31	0.280	0.955	0.950	-0.458	0.482
c32	-1.270	0.432	1.561	-1.430	-1.590
c33	1.013	0.436	-0.764	1.001	0.981
c34	0.406	0.551	-0.629	0.267	0.482
c35	1.032	0.701	-0.873	0.712	0.482
c36	0.605	0.656	-0.873	1.001	0.482
c37	0.025	0.407	-0.716	0.859	0.482
c38	-0.267	-0.272	-0.873	0.556	0.732
c39	1.155	1.645	-1.191	1.001	0.482
c40	0.782	1.510	-0.873	0.721	0.482
c41	0.109	-0.740	1.085	0.712	0.732
c42	-0.035	-0.348	-0.668	0.032	0.482
c43	0.865	-1.136	-0.243	0.432	0.482
c44	-2.296	-2.136	1.648	-2.071	-2.625
c45	0.155	1.621	-0.287	1.021	0.996
c46	0.605	0.656	-0.873	1.001	0.482
c47	0.509	1.071	-0.404	0.556	1.517
c48	-1.115	-1.060	0.319	-0.483	-0.279
c49	-0.347	-1.436	0.835	-0.529	-0.529
c50	0.782	0.172	-0.123	-0.198	0.482
c51	0.468	0.377	1.046	-0.019	0.218
c52	0.038	0.417	0.644	-0.495	0.732
c53	0.251	0.338	-0.449	-0.384	0.482
c54	-1.312	-1.329	1.361	-1.665	-1.590
c55	0.058	0.058	-0.712	-0.332	-0.303
c56	0.238	0.491	-0.463	-0.568	0.981
c57	-1.734	-0.984	0.837	-1.665	-1.590
c58	0.951	-0.271	-0.480	1.001	0.482
c59	0.782	0.656	-0.266	0.779	0.482
c60	1.032	0.859	-0.873	1.001	0.482
c61	2.039	-0.764	-0.712	1.001	0.482
c62	1.075	0.526	-1.066	1.001	1.517
c63	1.075	0.526	-1.066	1.001	1.517
c64	2.039	2.037	-1.833	2.190	-0.227
c65	0.007	-0.281	1.243	-0.163	-0.554
c66	-1.815	0.395	-0.716	0.270	-0.330
c67	-1.020	0.425	1.003	-0.899	-1.339
c68	-1.380	0.340	0.405	-1.195	-1.590
c69	-1.020	-0.503	1.361	-0.476	-1.590
c70	0.551	0.526	-0.672	0.033	-0.055
c71	0.449	-0.020	-0.712	0.190	0.482
c72	0.393	0.557	-1.239	0.458	0.482
c73	0.257	0.785	-1.034	0.857	1.269
c74	0.257	0.785	-1.034	0.857	1.269
c75	0.155	-0.176	1.034	0.490	-0.039
c76	-1.312	-0.188	0.999	-0.828	-1.339

c77	0.008	-0.149	1.042	-0.970	-0.281
c78	0.087	0.300	-0.237	0.477	0.746
c79	-0.769	0.656	1.361	-1.665	-1.590
c80	-0.192	1.250	0.753	0.721	0.746
c81	1.032	1.609	0.798	1.001	0.482
c82	-0.810	-1.431	1.553	-1.352	-1.590
c83	-1.352	1.777	-1.584	1.282	0.732
c84	1.789	1.277	-1.397	0.831	1.244
c85	0.393	0.115	-0.873	0.551	0.482
c86	1.095	1.870	-0.552	-0.133	0.482
c87	-0.998	-1.093	2.320	-2.090	-1.590
c88	0.627	0.776	-0.809	-0.233	-0.055
c89	0.468	0.407	-0.086	1.001	0.482
c90	0.019	-0.788	-0.474	1.001	0.218
c91	-0.904	-1.512	1.239	-1.809	-1.339
c92	0.177	0.430	-0.287	1.236	0.482
c93	0.468	0.128	-0.515	-0.332	-0.055
c94	-2.121	-1.196	0.635	-1.207	-1.590
c95	0.320	0.258	-0.150	0.634	0.482
c96	2.039	2.037	-0.716	1.226	1.517
c97	-1.734	-1.750	1.121	-1.809	-1.854
c98	0.836	-0.462	-1.279	0.693	0.482
c99	0.782	0.656	-0.873	1.001	0.482
c100	-1.659	-0.339	1.471	-1.809	-1.339
c101	0.895	0.600	-0.846	1.001	1.517
c102	0.141	0.062	0.244	1.001	0.482
c103	0.468	-0.379	-0.280	0.568	-1.066
c104	-1.252	-1.455	1.327	-1.665	-1.854
c105	0.700	-0.324	-0.516	0.857	0.732
c106	1.036	0.322	-0.558	1.001	0.482
c107	-0.750	0.017	1.151	-1.442	-0.802
c108	0.992	2.037	-0.632	1.739	1.269
c109	0.700	0.289	-0.873	0.532	0.482
c110	0.646	0.265	-0.873	1.001	0.218
c111	-1.463	0.167	0.044	-0.268	-0.306
c112	-0.829	-0.440	1.574	0.663	-1.341
c113	1.476	-0.529	-1.203	1.310	0.730
c114	0.427	0.055	-0.299	0.857	0.482
c115	-0.267	1.585	0.043	0.412	0.457
c116	0.877	0.034	-1.031	0.767	0.482
c117	0.509	-0.110	-0.873	1.001	0.755
c118	-1.502	-1.290	1.079	-0.476	-0.306
c119	0.216	0.133	-0.472	0.556	0.482
c120	2.039	-0.088	0.393	-0.251	0.482
c121	0.183	0.172	-0.322	0.498	0.482
c122	0.061	0.343	-0.640	0.354	0.482
c123	-0.213	1.128	-1.990	1.369	1.517
c124	-0.191	-0.772	-0.885	0.045	0.732
c125	0.531	0.164	-0.873	1.001	1.517
c126	0.782	-0.157	-0.473	-0.109	0.231
c127	0.005	0.407	-0.672	-0.332	0.482
c128	0.782	0.358	-0.716	-0.023	0.234
c129	0.870	1.788	-0.916	0.781	0.482
c130	1.903	0.734	-0.222	0.128	0.732
c131	0.332	-0.187	-0.637	1.001	0.482
c132	0.427	-0.232	-0.672	0.045	0.482
c133	0.782	0.971	-0.886	0.857	0.482

c134	0.427	-0.725	0.564	-0.057	-0.064
c135	-1.271	0.719	0.412	1.001	0.482
c136	0.280	0.167	0.967	-1.520	0.218
c137	1.726	1.461	-1.439	1.224	1.269
c138	0.237	0.389	-0.516	0.432	0.482
c139	0.101	0.140	-0.282	0.432	-0.538
c140	-0.143	0.284	-0.873	-0.584	0.482
c141	-0.069	0.240	-0.516	1.146	0.482
c142	1.032	1.617	-1.278	1.085	1.269
c143	-1.483	-2.107	1.636	-1.085	-1.590
c144	-1.136	-0.725	0.326	-0.621	-1.590
c145	0.782	0.571	-0.558	1.001	0.229
c146	-1.734	-0.211	2.115	-1.136	-1.339
c147	0.918	0.615	-1.031	1.001	0.482
c148	1.127	1.907	-1.990	1.681	1.517
c149	1.515	1.528	-1.596	0.715	1.517
c150	-0.142	0.395	1.396	0.245	-1.590
c151	0.910	0.847	-0.873	1.258	0.732
c152	0.359	-0.880	1.343	-1.340	-1.590
c153	0.918	-0.197	-0.873	0.142	0.482
c154	2.039	0.129	-0.914	-0.805	1.517
c155	-0.035	0.916	-0.247	0.142	0.732
c156	0.280	-0.141	-0.873	-0.773	0.482
c157	0.678	0.258	0.724	0.142	0.482
c158	1.032	0.408	-0.873	0.142	1.254
c159	0.215	1.919	-1.596	1.813	1.517
c160	1.243	0.753	-1.079	0.142	1.517
c161	0.332	0.960	-0.558	1.001	0.482
c162	0.646	0.656	-0.712	0.257	0.482
c163	0.121	0.258	0.676	-0.026	0.218
c164	-1.134	0.315	0.236	-1.381	-1.088
c165	-0.769	-0.473	0.635	-1.048	-1.590
c166	1.209	0.456	1.046	-0.042	1.019
c167	-0.878	0.085	-0.472	1.001	0.482
c168	-1.095	-0.937	0.649	-0.196	0.482
c169	-0.393	0.167	-0.693	0.698	1.269
c170	-0.569	-1.566	1.041	-2.455	-1.603
c171	0.046	0.432	-0.558	1.001	0.482
c172	0.550	0.229	-0.473	0.212	0.482
c173	0.359	-0.065	-0.257	0.272	0.730
c174	-0.829	-0.511	0.885	-0.332	-1.317
c175	-1.134	-1.127	1.082	-0.899	-1.326
c176	1.032	0.109	0.244	-0.332	0.482
c177	0.433	-0.002	0.112	0.113	0.482
c178	-1.734	-0.755	1.046	-0.476	-0.281
c179	-1.502	-3.488	1.200	-1.381	-1.339
c180	-0.592	-0.925	1.769	-0.454	-0.802
c181	1.088	0.878	-0.680	0.857	0.482
c182	0.782	0.526	-0.088	0.767	0.482
c183	-0.919	-0.736	1.841	-0.621	-1.317
c184	-0.088	-0.509	-0.672	-1.117	0.730
c185	-2.298	-1.632	1.446	-1.501	-1.590
c186	-2.447	-1.802	1.395	-1.665	-2.377
c187	0.782	0.544	-0.073	0.712	0.482
c188	0.565	1.907	-0.873	1.001	1.269
c189	0.742	0.351	-0.512	-0.017	0.482
c190	-1.001	-0.939	1.430	-1.210	-1.838

c191	-1.284	-2.107	1.723	-1.014	-1.590
c192	0.591	0.735	-0.262	0.637	0.482
c193	-1.502	-2.107	0.843	-1.523	-1.341
c194	-1.291	-2.107	0.843	-1.523	-1.341
c195	-1.020	-2.107	0.843	-1.523	-1.341
c196	-1.502	-2.107	0.843	-1.523	-1.341
c197	-0.938	-0.725	0.244	-0.332	-0.554
c198	-1.502	-2.107	0.843	-1.523	-1.341
c199	-1.734	-1.677	1.200	-1.376	-1.590
c200	-1.734	-1.677	1.200	-1.376	-1.590
c201	-1.462	-1.498	1.361	-1.665	-1.590
c202	0.782	0.395	0.314	0.061	0.482
c203	-1.462	-1.498	1.361	-1.665	-1.590
c204	0.006	-0.754	-0.873	1.001	0.482
c205	-2.217	-1.631	1.433	-1.809	-1.088
c206	-0.210	-1.215	-0.488	-0.213	0.218
c207	0.196	0.192	-0.086	0.356	0.482
c208	-2.217	-1.631	1.433	-1.809	-1.088
c209	-0.524	0.776	2.278	-1.760	-2.127
c210	-0.213	1.128	-1.990	1.369	1.517
c211	0.877	0.034	-1.031	0.767	0.482
c212	0.646	0.265	-0.873	1.001	0.218
c213	-1.134	0.315	0.236	-1.381	-1.088
c214	1.127	1.907	-1.990	1.681	1.517
c215	1.515	1.528	-1.596	0.715	1.517
c216	-1.136	-0.725	0.326	-0.621	-1.590
c217	1.032	1.617	-1.278	1.085	1.269
c218	1.726	1.461	-1.439	1.224	1.269
c219	-1.252	-1.455	1.327	-1.665	-1.854
c220	-1.659	-0.339	1.471	-1.809	-1.339
c221	2.039	2.037	-0.716	1.226	1.517
c222	-0.904	-1.512	1.239	-1.809	-1.339
c223	-0.998	-1.093	2.320	-2.090	-1.590
c224	-1.483	-2.107	1.636	-1.085	-1.590
c225	0.870	1.788	-0.916	0.781	0.482
c226	0.509	-0.110	-0.873	1.001	0.755
c227	-1.734	-0.211	2.115	-1.136	-1.339
c228	-0.569	-1.566	1.041	-2.455	-1.603
c229	0.646	0.656	-0.712	0.257	0.482
c230	0.332	0.960	-0.558	1.001	0.482
c231	0.006	-0.754	-0.873	1.001	0.482

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0Theta .. Outer residual covariance

	PIIS1	PIIS2	PIIS3	PIIS4	EXP1	EU1
PIIS1	0.226					
PIIS2	-0.062	0.350				
PIIS3	-0.136	-0.176	0.374			
PIIS4	-0.009	-0.100	-0.071	0.163		
EXP1	0.007	0.003	-0.019	0.009	0.177	
EXP2	-0.003	0.012	0.007	-0.015	-0.002	
EXP3	0.000	-0.034	0.029	0.003	-0.072	
EXP4	-0.004	0.027	-0.021	-0.001	-0.086	
EU1	-0.019	-0.016	0.039	-0.006	-0.007	

EU2	-0.009	0.023	0.020	-0.031	0.001	-0.001	0.007
EU3	-0.032	-0.012	0.054	-0.012	0.006	0.005	0.018
EU4	0.013	0.026	-0.038	0.001	-0.033	0.011	-0.020
EU5	0.033	-0.017	-0.057	0.040	0.023	-0.018	-0.012
SE1	0.014	0.017	-0.028	-0.002	0.039	0.007	-0.025
SE2	-0.017	0.010	0.021	-0.014	0.011	0.006	-0.020
SE3	-0.009	-0.027	0.024	0.010	-0.057	-0.012	0.043
TA3	0.002	-0.001	0.006	-0.006	0.005	-0.011	0.012
TA4	-0.002	0.001	-0.008	0.008	-0.006	0.014	-0.015
EA1	-0.016	0.036	-0.008	-0.012	0.004	0.008	0.000
EA2	-0.008	-0.005	-0.003	0.015	-0.018	0.031	-0.005
EA3	0.025	-0.005	-0.037	0.018	0.023	0.006	0.003
EA4	0.002	-0.010	0.019	-0.010	-0.014	-0.018	0.005
EA5	-0.006	-0.015	0.033	-0.011	0.002	-0.027	-0.004
GSE1	-0.035	0.024	0.005	0.003	-0.012	0.037	-0.045
GSE2	0.007	0.019	-0.019	-0.005	0.023	0.022	-0.020
GSE3	0.003	-0.013	0.006	0.004	-0.017	0.002	0.006
GSE5	-0.002	-0.008	0.011	-0.002	0.004	-0.031	0.039
GSE8	0.016	0.033	-0.051	0.004	-0.009	-0.015	-0.007
GSE10	-0.016	0.027	0.021	-0.030	0.038	0.028	-0.012
GSE11	0.018	-0.018	0.005	-0.004	-0.019	-0.039	0.023
GSE12	0.000	-0.111	0.074	0.032	-0.009	0.004	0.022
ESE1	-0.015	-0.034	0.063	-0.015	0.005	-0.006	0.008
ESE2	-0.052	-0.010	0.041	0.015	0.031	-0.025	-0.005
ESE3	0.037	0.040	-0.052	-0.020	-0.020	-0.012	-0.006
ESE4	-0.015	0.021	-0.030	0.021	0.011	0.006	0.001
ESE5	0.038	-0.008	-0.039	0.011	-0.010	0.031	-0.006
ESE6	0.041	-0.018	0.010	-0.028	-0.041	0.024	0.012
OUT1	-0.016	0.075	-0.063	0.004	-0.035	-0.023	-0.003
OUT2	0.020	0.089	-0.065	-0.036	0.013	0.002	-0.013
OUT3	-0.007	0.024	0.001	-0.016	-0.016	0.005	0.012
OUT4	0.030	-0.098	0.055	0.011	0.003	-0.024	0.020
OUT5	0.004	0.000	0.019	-0.021	0.045	0.012	-0.027
OUT6	0.028	-0.031	-0.025	0.028	0.041	-0.012	-0.009
OUT7	0.012	0.009	-0.061	0.038	-0.028	0.007	-0.006
OUT8	-0.021	-0.028	0.039	0.006	-0.008	0.009	0.006
OUT9	-0.042	-0.046	0.080	0.003	-0.017	0.017	0.016
RA1	-0.009	-0.013	0.016	0.004	0.009	0.013	0.007
RA2	0.053	-0.045	-0.012	0.007	0.019	-0.001	-0.008
RA3	-0.012	0.080	-0.034	-0.030	-0.007	0.001	-0.014
RA4	-0.028	-0.020	0.047	-0.002	0.000	0.001	0.013
RA5	0.001	0.000	-0.005	0.004	-0.013	0.033	0.002
RA6	-0.015	0.030	-0.031	0.015	-0.014	-0.069	-0.005
PT1	0.003	0.007	-0.003	-0.006	0.012	0.007	-0.013
PT2	0.027	-0.057	0.037	-0.005	0.009	0.010	0.010
PT3	-0.053	0.074	0.000	-0.021	-0.010	0.016	0.001
PT4	-0.033	0.074	-0.015	-0.024	-0.014	-0.005	0.012
PT5	0.008	-0.021	-0.013	0.024	0.013	-0.006	-0.009
PT6	0.016	-0.024	-0.019	0.026	-0.022	-0.023	0.001
INI1	0.012	0.004	-0.016	0.001	0.006	0.023	0.006
INI2	0.009	0.017	-0.027	0.002	-0.004	-0.016	0.005
INI3	0.009	-0.031	0.009	0.012	-0.002	-0.012	0.008
INI4	-0.033	0.007	0.039	-0.015	0.000	0.004	-0.020
Personal	0.000	0.000	0.000	0.000	-0.026	0.001	0.044
Experien	-0.088	0.042	0.042	-0.002	0.000	0.000	0.000
Ease of	-0.065	-0.074	0.108	0.021	-0.041	-0.052	0.088
Self-est	-0.073	-0.081	0.120	0.023	0.023	0.002	0.055

Trait An	0.069	0.020	-0.093	0.010	-0.033	-0.043	-0.035
E-commer	0.060	0.016	-0.060	-0.009	0.004	0.066	-0.089
General	-0.080	-0.044	0.102	0.013	-0.017	-0.042	0.040
E-Commer	-0.050	0.012	0.030	0.004	-0.036	-0.097	0.088
Outcome	-0.033	-0.025	0.038	0.016	-0.009	-0.076	0.048
Risk Ave	0.054	-0.036	-0.023	0.007	0.038	0.061	-0.070
Percepti	-0.082	0.019	0.035	0.020	-0.053	-0.068	0.076
Intentio	-0.084	0.001	0.056	0.019	-0.018	-0.083	0.072

0Theta .. Outer residual covariance

	EXP4	EU1	EU2	EU3	EU4	EU5	SE1
EXP4	0.225						
EU1	-0.013	0.156					
EU2	-0.007	-0.028	0.262				
EU3	-0.030	-0.019	-0.056	0.675			
EU4	0.045	-0.072	-0.195	-0.084	0.595		
EU5	0.007	-0.079	-0.086	-0.158	-0.056	0.259	
SE1	-0.015	0.007	0.018	0.047	-0.084	0.005	0.391
SE2	0.007	0.004	-0.027	0.027	0.062	-0.025	-0.263
SE3	0.015	-0.012	-0.008	-0.075	0.075	0.007	-0.359
TA3	-0.009	0.008	0.005	0.000	-0.009	-0.008	-0.010
TA4	0.012	-0.011	-0.006	0.000	0.012	0.010	0.013
EA1	-0.011	-0.028	0.020	0.057	-0.001	-0.014	0.029
EA2	-0.003	-0.015	-0.012	0.002	0.030	0.008	-0.024
EA3	-0.030	-0.017	0.016	-0.063	-0.019	0.039	-0.034
EA4	0.023	0.023	0.003	-0.020	0.000	-0.017	-0.004
EA5	0.025	0.039	-0.030	0.032	-0.006	-0.020	0.036
GSE1	0.032	-0.012	-0.003	0.035	-0.006	0.004	0.071
GSE2	-0.018	0.001	-0.006	-0.001	-0.019	0.017	0.093
GSE3	0.007	0.020	0.007	0.021	-0.021	-0.024	-0.019
GSE5	-0.022	0.012	-0.031	-0.030	-0.028	0.046	-0.053
GSE8	0.029	-0.001	0.002	-0.076	0.015	0.022	-0.038
GSE10	-0.047	-0.002	0.014	0.047	0.030	-0.049	-0.058
GSE11	0.026	-0.016	0.026	0.035	0.060	-0.059	-0.008
GSE12	-0.021	-0.011	0.014	0.009	-0.002	-0.005	-0.074
ESE1	-0.009	-0.009	0.047	-0.007	-0.016	-0.024	-0.042
ESE2	-0.003	-0.028	-0.025	-0.018	0.022	0.046	-0.016
ESE3	0.035	-0.016	-0.023	0.011	0.047	0.006	-0.022
ESE4	-0.015	-0.001	0.016	0.030	-0.031	-0.008	-0.010
ESE5	-0.009	0.025	-0.012	0.000	-0.033	0.006	0.085
ESE6	0.005	0.060	-0.003	-0.025	0.008	-0.051	0.034
OUT1	0.056	-0.002	-0.035	0.003	0.015	0.026	-0.010
OUT2	0.001	0.014	-0.026	-0.051	0.020	0.020	-0.027
OUT3	-0.002	0.003	-0.004	0.035	-0.013	-0.005	0.003
OUT4	-0.005	0.008	0.004	-0.017	-0.046	0.022	0.017
OUT5	-0.022	-0.008	0.042	-0.035	-0.055	0.014	-0.009
OUT6	-0.018	-0.016	-0.017	0.015	0.011	0.019	0.024
OUT7	0.027	0.013	-0.005	-0.025	0.033	-0.017	-0.016
OUT8	-0.007	-0.026	0.031	0.086	0.039	-0.062	-0.026
OUT9	-0.016	0.005	0.017	0.005	0.005	-0.026	0.029
RA1	-0.027	0.011	-0.008	-0.001	-0.029	0.014	0.056
RA2	-0.007	-0.010	0.023	0.010	-0.051	0.013	0.044
RA3	0.022	-0.015	0.032	-0.057	0.069	-0.033	-0.035

RA4	-0.015	0.001	-0.015	0.000	0.019	0.002	-0.011
RA5	-0.018	-0.002	-0.021	0.032	0.046	-0.018	-0.039
RA6	0.077	0.017	-0.006	0.003	-0.056	0.020	-0.036
PT1	-0.002	-0.008	0.012	0.012	-0.011	-0.002	-0.021
PT2	-0.029	0.007	-0.007	-0.082	0.013	0.026	0.021
PT3	-0.005	-0.020	0.029	-0.004	-0.016	0.003	-0.047
PT4	0.004	0.004	0.023	0.063	-0.043	-0.027	0.016
PT5	0.002	-0.006	-0.002	0.047	0.035	-0.032	0.010
PT6	0.038	0.018	-0.042	-0.007	0.008	0.021	0.008
INI1	-0.032	-0.012	-0.027	-0.002	0.032	0.019	0.023
INI2	0.012	-0.012	-0.008	-0.001	0.007	0.016	-0.019
INI3	0.003	0.013	0.035	-0.001	-0.055	-0.014	0.046
INI4	0.018	0.014	0.004	0.004	0.010	-0.026	-0.049
Personal	-0.026	0.015	-0.029	-0.029	-0.013	0.033	0.011
Experien	0.000	0.031	-0.020	-0.021	-0.040	0.020	0.001
Ease of	-0.017	0.000	0.000	0.000	0.000	0.000	-0.015
Self-est	-0.086	0.009	0.004	-0.016	0.011	-0.013	0.000
Trait An	0.107	-0.008	-0.035	-0.073	-0.005	0.075	-0.005
E-commer	0.042	0.019	-0.029	-0.028	0.081	-0.027	0.010
General	0.007	0.012	0.061	0.003	-0.068	-0.032	0.045
E-Commer	0.016	0.028	-0.003	-0.099	-0.044	0.041	0.046
Outcome	0.019	-0.009	0.052	-0.142	-0.071	0.060	0.015
Risk Ave	-0.008	0.021	0.013	0.044	-0.007	-0.047	-0.021
Percepti	0.022	-0.030	-0.041	-0.070	-0.023	0.111	-0.017
Intentio	0.005	-0.011	-0.011	-0.102	-0.046	0.091	0.008
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0Theta .. Outer residual covariance

	SE2	SE3	TA3	TA4	EA1	EA2	EA3

SE2	0.438						
SE3	0.100	0.406					
TA3	-0.001	0.013	0.217				
TA4	0.001	-0.017	-0.287	0.379			
EA1	-0.025	-0.024	0.003	-0.003	0.286		
EA2	0.026	0.017	-0.023	0.030	-0.073	0.237	
EA3	0.020	0.033	0.018	-0.023	-0.066	0.001	0.183
EA4	-0.002	0.006	0.014	-0.019	-0.068	-0.072	-0.054
EA5	-0.021	-0.036	-0.016	0.021	-0.077	-0.083	-0.083
GSE1	-0.047	-0.065	0.000	0.000	0.063	0.006	-0.031
GSE2	-0.072	-0.080	-0.015	0.019	-0.025	0.009	-0.001
GSE3	0.043	0.001	0.014	-0.019	-0.028	0.034	-0.002
GSE5	-0.002	0.069	-0.017	0.023	-0.041	0.013	-0.015
GSE8	0.038	0.027	0.016	-0.021	-0.055	0.015	0.034
GSE10	0.105	0.018	0.025	-0.033	0.066	-0.053	0.009
GSE11	0.003	0.009	-0.007	0.010	0.041	-0.042	-0.006
GSE12	0.014	0.087	0.007	-0.009	0.063	-0.022	0.023
ESE1	0.092	0.004	0.016	-0.021	-0.034	0.056	-0.039
ESE2	-0.009	0.025	0.028	-0.037	0.050	0.001	0.005
ESE3	-0.008	0.033	-0.042	0.056	0.026	-0.019	0.005
ESE4	-0.015	0.021	-0.018	0.024	-0.041	0.011	0.019
ESE5	-0.046	-0.084	-0.009	0.012	0.026	-0.049	-0.001
ESE6	-0.023	-0.032	0.030	-0.040	-0.041	-0.014	0.008
OUT1	-0.006	0.017	-0.031	0.042	0.005	0.055	0.016
OUT2	0.013	0.028	-0.026	0.035	0.013	0.014	0.013

OUT3	-0.011	0.002	0.032	-0.043	0.033	-0.040	-0.031
OUT4	-0.009	-0.018	0.017	-0.022	-0.042	-0.018	-0.009
OUT5	0.038	-0.009	0.006	-0.007	-0.018	-0.036	0.035
OUT6	-0.021	-0.019	0.022	-0.030	0.012	-0.036	-0.031
OUT7	-0.015	0.029	0.000	0.000	-0.052	0.027	0.076
OUT8	0.003	0.032	-0.042	0.055	-0.004	0.047	-0.030
OUT9	0.005	-0.040	0.009	-0.012	0.025	0.006	-0.020
RA1	-0.054	-0.043	0.023	-0.030	0.026	0.004	-0.020
RA2	-0.020	-0.045	0.022	-0.029	-0.007	-0.007	0.022
RA3	0.060	0.012	-0.024	0.031	0.013	-0.001	-0.013
RA4	0.022	0.002	-0.017	0.023	0.017	-0.013	-0.005
RA5	0.010	0.044	-0.012	0.015	-0.010	0.032	0.001
RA6	-0.006	0.050	0.003	-0.004	-0.051	-0.022	0.015
PT1	-0.006	0.030	0.009	-0.012	0.002	0.005	-0.007
PT2	-0.037	-0.007	-0.030	0.040	-0.008	0.029	0.019
PT3	0.062	0.027	0.026	-0.034	0.019	-0.028	-0.005
PT4	-0.002	-0.019	-0.001	0.001	0.050	-0.064	0.024
PT5	0.002	-0.013	0.022	-0.029	-0.013	0.029	-0.026
PT6	0.015	-0.019	-0.010	0.013	-0.034	0.000	-0.006
INI1	0.016	-0.038	-0.006	0.008	-0.003	-0.003	0.011
INI2	0.010	0.019	-0.006	0.008	-0.002	-0.003	0.003
INI3	-0.048	-0.033	0.002	-0.002	0.019	-0.011	-0.028
INI4	0.017	0.053	0.011	-0.015	-0.013	0.017	0.012
Personal	-0.007	-0.010	-0.044	0.058	-0.018	0.022	-0.021
Experien	-0.015	0.007	-0.010	0.014	-0.025	0.048	-0.054
Ease of	-0.052	0.048	0.005	-0.007	-0.035	0.042	-0.025
Self-est	0.000	0.000	0.018	-0.024	0.067	-0.012	-0.014
Trait An	-0.012	0.013	0.000	0.000	-0.023	0.008	-0.016
E-commer	0.045	-0.037	0.034	-0.045	0.000	0.000	0.000
General	0.006	-0.062	-0.001	0.001	-0.023	-0.005	0.002
E-Commer	-0.094	-0.008	-0.011	0.015	-0.023	0.004	-0.045
Outcome	-0.074	0.021	-0.012	0.016	-0.058	0.013	-0.015
Risk Ave	0.050	0.000	-0.012	0.016	-0.003	-0.045	0.058
Percepti	-0.045	0.047	-0.008	0.010	-0.023	0.027	-0.037
Intentio	-0.069	0.028	0.008	-0.011	-0.030	0.043	-0.045

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0Theta .. Outer residual covariance

	EA4	EA5	GSE1	GSE2	GSE3	GSE5	GSE8
EA4	0.139						
EA5	0.057	0.199					
GSE1	-0.029	-0.006	0.515				
GSE2	0.007	0.012	0.132	0.394			
GSE3	0.006	-0.009	-0.022	-0.042	0.420		
GSE5	0.018	0.028	-0.196	-0.175	-0.043	0.585	
GSE8	0.003	0.001	-0.136	-0.111	-0.073	0.021	0.535
GSE10	-0.011	-0.015	-0.118	-0.188	-0.111	-0.058	-0.106
GSE11	0.014	-0.011	-0.175	-0.158	-0.099	-0.162	-0.118
GSE12	-0.034	-0.034	-0.111	-0.154	-0.060	-0.097	-0.117
ESE1	0.008	0.015	-0.015	-0.040	0.018	0.055	-0.023
ESE2	-0.040	-0.016	0.000	-0.016	-0.043	0.014	-0.058
ESE3	0.008	-0.024	0.022	0.049	-0.003	-0.088	-0.016
ESE4	0.006	0.004	-0.054	0.000	0.007	0.043	0.043
ESE5	0.003	0.021	0.032	0.026	0.015	-0.027	-0.008

ESE6	0.037	0.009	0.044	-0.016	0.028	-0.020	0.101
OUT1	-0.006	-0.072	0.016	0.029	-0.034	-0.026	0.018
OUT2	-0.015	-0.026	-0.006	-0.031	-0.065	0.085	-0.011
OUT3	0.030	0.008	0.016	0.012	0.016	0.014	-0.022
OUT4	0.010	0.060	-0.013	-0.060	0.088	0.037	0.024
OUT5	-0.005	0.020	-0.074	0.004	-0.018	-0.013	0.048
OUT6	-0.009	0.068	0.001	0.035	0.017	-0.011	-0.003
OUT7	-0.019	-0.038	-0.002	-0.005	-0.024	-0.002	0.072
OUT8	0.000	-0.009	-0.037	0.025	-0.021	-0.003	-0.050
OUT9	0.007	-0.016	0.065	0.004	0.030	-0.079	-0.047
RA1	-0.016	0.009	0.045	0.012	0.012	-0.036	-0.039
RA2	-0.008	-0.002	0.063	0.031	-0.028	-0.047	-0.050
RA3	0.003	-0.001	-0.052	-0.015	0.036	-0.053	0.095
RA4	0.008	-0.007	0.017	0.016	-0.009	0.018	-0.036
RA5	-0.005	-0.018	-0.021	-0.016	-0.004	0.030	0.008
RA6	0.028	0.029	-0.098	-0.048	0.004	0.113	0.069
PT1	-0.003	0.005	0.012	0.001	0.003	-0.003	0.005
PT2	-0.021	-0.020	-0.031	0.007	-0.028	0.026	-0.011
PT3	0.007	0.007	0.022	-0.031	0.027	0.073	-0.002
PT4	-0.006	-0.009	-0.016	-0.045	0.038	-0.006	-0.031
PT5	-0.011	0.026	0.014	0.016	0.032	-0.063	0.026
PT6	0.042	-0.002	0.011	0.030	-0.049	-0.009	0.009
INI1	-0.004	-0.003	-0.023	0.020	-0.004	-0.023	0.007
INI2	0.007	-0.006	-0.007	-0.006	-0.019	0.030	0.007
INI3	0.003	0.019	0.026	0.013	0.028	-0.012	0.024
INI4	-0.007	-0.009	0.008	-0.027	-0.002	0.003	-0.040
Personal	-0.022	0.045	0.017	0.143	-0.014	-0.041	-0.030
Experien	0.001	0.039	-0.017	0.082	-0.066	0.001	-0.049
Base of	0.006	0.016	0.023	0.071	-0.068	0.050	-0.081
Self-est	-0.010	-0.031	-0.051	-0.048	-0.007	0.041	-0.094
Trait An	0.011	0.023	-0.060	-0.023	0.030	0.188	0.109
E-commer	0.000	0.000	0.031	-0.066	0.081	0.000	0.064
General	-0.031	0.060	0.000	0.000	0.000	0.000	0.000
E-Commer	0.033	0.036	-0.026	0.065	-0.052	0.048	0.005
Outcome	0.022	0.042	-0.044	0.053	-0.065	0.017	0.072
Risk Ave	-0.006	-0.013	-0.022	-0.103	0.088	-0.005	0.039
Percepti	0.008	0.032	-0.024	0.057	-0.069	0.031	-0.011
Intentio	0.001	0.040	0.006	0.109	-0.084	0.044	-0.017

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0Theta .. Outer residual covariance

	GSE10	GSE11	GSE12	ESE1	ESE2	ESE3	ESE4
GSE10	0.668						
GSE11	0.227	0.652					
GSE12	0.152	0.171	0.682				
ESE1	0.026	-0.014	0.023	0.474			
ESE2	0.057	0.017	0.107	0.023	0.340		
ESE3	-0.013	0.054	-0.017	-0.194	-0.071	0.429	
ESE4	-0.051	-0.014	-0.018	-0.066	-0.090	-0.088	0.329
ESE5	0.004	-0.004	-0.070	-0.166	-0.172	-0.009	-0.087
ESE6	-0.039	-0.062	-0.088	-0.130	-0.186	-0.054	-0.077
OUT1	-0.031	-0.023	0.045	-0.074	0.017	0.007	-0.010
OUT2	0.034	0.002	0.002	-0.004	0.048	-0.017	-0.029
OUT3	-0.039	0.002	-0.034	0.024	-0.001	-0.006	-0.017

OUT4	-0.019	-0.030	-0.024	0.069	-0.044	-0.035	0.001
OUT5	0.040	0.008	0.029	0.005	-0.010	-0.027	0.033
OUT6	-0.031	-0.030	-0.013	-0.040	-0.008	0.017	0.023
OUT7	-0.017	-0.022	-0.020	-0.042	-0.003	0.035	0.006
OUT8	0.062	0.045	-0.001	0.013	-0.031	0.045	0.037
OUT9	0.007	0.038	0.017	0.027	0.012	-0.001	-0.019
RA1	-0.007	-0.004	0.032	0.044	0.039	-0.025	-0.011
RA2	0.002	0.027	0.007	0.012	-0.006	0.010	0.014
RA3	0.042	-0.006	-0.033	-0.020	-0.029	0.038	-0.038
RA4	-0.006	-0.003	-0.015	-0.025	0.006	-0.014	0.024
RA5	0.034	-0.008	-0.015	0.003	0.002	-0.016	-0.006
RA6	-0.083	-0.013	0.022	-0.026	-0.028	0.023	0.009
PT1	0.030	-0.010	-0.047	0.013	0.019	-0.038	0.032
PT2	-0.006	0.045	-0.018	0.031	-0.017	-0.002	-0.001
PT3	0.021	-0.096	-0.021	0.031	0.044	-0.028	-0.022
PT4	0.048	0.025	0.063	-0.077	-0.010	0.082	-0.067
PT5	-0.025	-0.023	0.025	0.042	-0.006	-0.018	0.033
PT6	-0.061	0.019	0.021	-0.055	-0.017	0.019	-0.003
INI1	0.021	0.011	-0.009	-0.028	-0.007	0.015	-0.004
INI2	-0.012	-0.002	-0.001	-0.006	-0.004	-0.008	0.015
INI3	-0.070	-0.027	-0.030	0.015	0.008	0.011	-0.013
INI4	0.059	0.017	0.041	0.023	0.004	-0.018	0.000
Personal	-0.091	-0.020	-0.108	0.031	-0.019	-0.030	-0.001
Experien	0.003	0.055	-0.071	0.013	0.065	-0.029	0.043
Ease of	-0.066	-0.009	0.020	0.050	0.029	-0.041	0.044
Self-est	0.164	-0.009	0.158	0.023	0.097	-0.033	-0.059
Trait An	-0.144	-0.118	-0.157	0.002	-0.014	-0.013	0.002
E-commer	0.020	-0.091	-0.014	0.028	-0.068	-0.021	-0.021
General	0.000	0.000	0.000	0.041	0.013	0.019	0.059
E-Commer	-0.072	-0.002	-0.070	0.000	0.000	0.000	0.000
Outcome	-0.129	0.001	0.004	0.054	0.070	-0.039	0.050
Risk Ave	0.075	-0.013	0.037	-0.037	-0.109	0.005	0.013
Percepti	-0.087	0.006	0.044	-0.057	0.068	0.020	0.090
Intentio	-0.076	-0.051	-0.053	-0.015	0.084	-0.021	0.041

0Theta .. Outer residual covariance

	ESE5	ESE6	OUT1	OUT2	OUT3	OUT4	OUT5
ESE5	0.467						
ESE6	0.144	0.570					
OUT1	0.026	0.053	0.514				
OUT2	-0.008	0.002	0.051	0.344			
OUT3	0.014	-0.011	-0.038	-0.013	0.359		
OUT4	-0.001	0.030	-0.131	-0.109	-0.069	0.526	
OUT5	-0.028	0.030	-0.155	-0.089	-0.074	0.107	0.434
OUT6	0.039	-0.041	-0.154	-0.132	-0.024	-0.049	0.017
OUT7	0.009	-0.005	0.104	0.007	-0.124	-0.116	-0.111
OUT8	-0.030	-0.056	-0.080	-0.081	-0.075	-0.100	0.020
OUT9	-0.018	-0.005	-0.053	-0.052	-0.028	-0.056	-0.095
RA1	-0.057	-0.011	-0.043	-0.015	0.006	-0.009	0.052
RA2	-0.031	-0.008	-0.008	-0.041	-0.023	0.039	0.046
RA3	0.063	0.014	0.011	-0.014	-0.008	0.029	0.003
RA4	0.005	-0.002	-0.052	0.000	0.033	-0.041	-0.032
RA5	0.027	-0.006	0.032	0.056	0.003	-0.020	-0.025

RA6	0.013	0.024	0.095	0.016	-0.019	0.014	-0.063
PT1	-0.026	-0.023	-0.027	0.022	0.020	-0.006	0.013
PT2	-0.003	-0.004	-0.056	-0.026	-0.013	0.021	0.032
PT3	-0.015	-0.028	0.021	0.045	0.026	-0.031	-0.038
PT4	0.079	0.028	0.058	0.039	-0.034	0.000	0.001
PT5	-0.058	-0.010	-0.032	-0.051	0.002	0.050	0.001
PT6	0.040	0.040	0.078	-0.006	0.000	-0.049	-0.034
INI1	0.032	-0.002	-0.008	-0.021	0.004	-0.007	-0.001
INI2	-0.009	0.012	0.029	0.012	-0.017	0.016	0.002
INI3	-0.022	-0.003	-0.060	-0.005	0.015	0.002	-0.011
INI4	-0.005	-0.008	0.035	0.015	0.000	-0.012	0.009
Personal	0.014	0.020	-0.060	0.014	0.006	0.057	-0.017
Experien	-0.024	-0.143	-0.058	0.069	0.013	0.005	-0.051
Ease of	-0.067	-0.060	-0.072	-0.025	-0.007	0.049	-0.015
Self-est	-0.017	-0.040	-0.115	0.005	0.003	-0.027	0.002
Trait An	0.002	0.038	0.008	0.048	0.043	0.047	0.034
E-commer	0.024	0.121	0.008	-0.036	0.028	-0.010	0.040
General	-0.087	-0.106	-0.180	-0.072	-0.026	0.033	0.070
E-Commer	0.000	0.000	-0.006	0.054	0.061	0.027	-0.050
Outcome	-0.106	-0.106	0.000	0.000	0.000	0.000	0.000
Risk Ave	0.086	0.119	-0.031	-0.114	0.018	0.051	0.105
Percepti	-0.087	-0.121	0.025	0.039	0.006	-0.041	-0.061
Intentio	-0.060	-0.098	-0.028	0.071	-0.008	-0.003	-0.066

0Theta .. Outer residual covariance

	OUT6	OUT7	OUT8	OUT9	RA1	RA2	RA3
OUT6	0.451						
OUT7	-0.049	0.489					
OUT8	-0.034	0.041	0.587				
OUT9	-0.022	-0.087	-0.089	0.337			
RA1	-0.001	-0.046	0.030	0.019	0.270		
RA2	-0.007	-0.040	0.008	0.026	0.081	0.259	
RA3	0.066	-0.018	-0.114	0.015	-0.102	-0.117	0.500
RA4	0.039	0.005	0.018	0.018	-0.033	-0.066	-0.066
RA5	-0.060	0.042	0.006	-0.026	-0.124	-0.080	-0.062
RA6	-0.031	0.079	0.036	-0.073	-0.170	-0.164	-0.040
PT1	-0.032	-0.025	0.005	0.012	-0.003	-0.029	-0.025
PT2	0.016	-0.042	0.042	0.023	0.031	0.012	0.014
PT3	0.042	0.011	-0.097	-0.009	-0.004	-0.008	0.013
PT4	-0.027	0.041	-0.079	-0.005	-0.044	-0.008	0.045
PT5	-0.010	0.002	0.021	0.022	0.013	0.032	-0.007
PT6	0.025	0.043	0.046	-0.058	-0.011	0.002	-0.025
INI1	0.025	0.006	-0.007	0.008	0.005	-0.014	0.014
INI2	-0.009	0.019	-0.011	-0.027	-0.003	-0.012	0.007
INI3	0.044	-0.023	0.010	0.014	0.032	0.013	-0.029
INI4	-0.060	-0.006	0.010	0.008	-0.034	0.016	0.006
Personal	-0.011	-0.048	-0.027	0.045	-0.018	-0.003	0.038
Experien	0.008	-0.103	-0.114	0.120	-0.028	0.000	0.049
Ease of	-0.043	-0.094	0.056	0.108	0.015	0.027	-0.054
Self-est	0.033	-0.009	0.042	0.045	0.069	-0.021	-0.001
Trait An	-0.017	0.073	-0.051	-0.146	-0.014	-0.077	0.026
E-commer	0.015	0.052	0.050	-0.089	0.029	0.026	-0.098
General	0.057	-0.003	0.132	0.016	0.059	0.065	0.030

E-Commer	-0.046	-0.097	-0.104	0.070	-0.011	-0.033	0.066
Outcome	0.000	0.000	0.000	0.000	-0.012	0.007	0.056
Risk Ave	0.024	0.041	0.083	-0.093	0.000	0.000	0.000
Percepti	-0.005	-0.029	-0.045	0.063	-0.029	-0.037	0.000
Intentio	0.013	-0.089	-0.076	0.098	0.010	-0.013	0.015
=====							

0Theta .. Outer residual covariance

	RA4	RA5	RA6	PT1	PT2	PT3	PT4

RA4	0.196						
RA5	-0.036	0.306					
RA6	-0.023	-0.028	0.625				
PT1	0.018	0.045	-0.019	0.230			
PT2	0.028	-0.045	-0.056	0.041	0.260		
PT3	0.003	-0.022	0.033	-0.088	-0.107	0.640	
PT4	-0.062	0.031	0.074	-0.132	-0.170	0.110	0.574
PT5	-0.025	0.013	-0.040	-0.065	-0.098	-0.152	-0.088
PT6	0.015	-0.024	0.053	-0.117	-0.081	-0.107	-0.072
INI1	0.026	0.006	-0.052	0.003	0.032	-0.006	-0.045
INI2	0.007	-0.020	0.034	-0.011	-0.002	0.018	-0.010
INI3	-0.002	-0.004	-0.025	0.015	-0.008	-0.012	-0.005
INI4	-0.035	0.019	0.044	-0.006	-0.025	-0.002	0.066
Personal	-0.012	-0.029	0.049	0.037	0.047	-0.137	0.021
Experien	-0.001	0.000	-0.012	0.055	0.054	-0.089	0.046
Ease of	0.004	-0.028	0.034	0.045	0.048	-0.107	-0.033
Self-est	0.016	-0.040	-0.034	0.013	0.039	0.058	-0.004
Trait An	-0.005	0.028	0.074	-0.002	-0.083	0.087	0.009
E-commer	0.015	0.018	-0.022	-0.012	-0.070	0.071	-0.047
General	0.012	-0.070	-0.133	0.008	0.020	-0.070	-0.045
E-Commer	0.002	-0.035	0.042	0.039	0.072	-0.111	-0.041
Outcome	-0.047	-0.051	0.092	0.032	0.064	-0.146	-0.037
Risk Ave	0.000	0.000	0.000	-0.011	0.002	0.022	-0.040
Percepti	0.016	0.004	0.069	0.000	0.000	0.000	0.000
Intentio	0.009	-0.021	0.007	0.062	0.064	-0.076	-0.024
=====							

0Theta .. Outer residual covariance

	PT5	PT6	INI1	INI2	INI3	INI4	Personal

PT5	0.402						
PT6	-0.016	0.406					
INI1	0.001	-0.004	0.102				
INI2	-0.010	0.023	0.007	0.081			
INI3	-0.001	0.004	-0.048	-0.036	0.167		
INI4	0.012	-0.025	-0.075	-0.064	-0.070	0.223	
Personal	-0.017	-0.022	0.009	0.003	-0.025	0.011	1.000
Experien	-0.029	-0.095	0.024	0.001	-0.050	0.023	0.630
Ease of	-0.008	-0.015	-0.017	0.011	-0.038	0.044	0.560
Self-est	-0.074	-0.028	0.032	-0.010	-0.069	0.043	0.096
Trait An	0.004	0.042	-0.042	0.002	0.055	-0.010	-0.164
E-commer	0.056	0.043	-0.011	-0.014	0.061	-0.032	-0.538
General	0.049	-0.002	0.011	0.003	-0.011	-0.005	0.222

E-Commer	-0.042	0.004	0.029	0.014	-0.040	-0.009	0.497
Outcome	-0.008	0.010	-0.003	0.035	-0.005	-0.031	0.508
Risk Ave	0.005	0.025	-0.009	-0.008	0.034	-0.014	-0.583
Percepti	0.000	0.000	0.031	0.039	-0.058	-0.022	0.484
Intentio	-0.027	-0.066	0.000	0.000	0.000	0.000	0.561

0Theta .. Outer residual covariance

	Experien	Ease of	Self-est	Trait An	E-commer	General	E-Commer
Experien	1.000						
Ease of	0.589	1.000					
Self-est	0.228	0.307	1.000				
Trait An	-0.245	-0.329	-0.289	1.000			
E-commer	-0.664	-0.689	-0.258	0.345	1.000		
General	0.243	0.447	0.433	-0.257	-0.401	1.000	
E-Commer	0.631	0.662	0.270	-0.192	-0.706	0.363	1.000
Outcome	0.573	0.656	0.249	-0.147	-0.617	0.399	0.661
Risk Ave	-0.651	-0.689	-0.176	0.275	0.702	-0.281	-0.671
Percepti	0.579	0.692	0.193	-0.246	-0.692	0.364	0.703
Intentio	0.705	0.725	0.239	-0.198	-0.732	0.306	0.772

0Theta .. Outer residual covariance

	Outcome	Risk Ave	Percepti	Intentio
Outcome	1.000			
Risk Ave	-0.620	1.000		
Percepti	0.694	-0.755	1.000	
Intentio	0.707	-0.791	0.801	1.000

0 ==PLSW no prob, eh?
0CPU-Time = 0 min 0.08 sec
Total = 0 min 0.08 sec
0 No errors reported.

Appendix L: PLS Bootstrap File

Output results with Construct Level sign change preprocessing:

Bootstrap raw data generated for Mr Glenn Bewsell

Number of cases in full model: 231

Number of cases per sample: 231

Number of samples generated: 100

Number of good samples: 100

Outer Model Weights:

	Original sample estimate	Mean of subsamples	Standard error	T-Statistic
Personal:				
PIIS1	0.2713	0.2712	0.0199	13.6457
PIIS2	0.2887	0.2905	0.0310	9.3020
PIIS3	0.2966	0.2967	0.0286	10.3773
PIIS4	0.3212	0.3215	0.0190	16.9027
Experien:				
EXP1	0.2687	0.2698	0.0092	29.1841
EXP2	0.2366	0.2368	0.0098	24.1123
EXP3	0.3195	0.3178	0.0132	24.1595
EXP4	0.2811	0.2808	0.0134	20.9873
Ease of :				
EU1	0.3106	0.3106	0.0120	25.8840
EU2	0.2984	0.2978	0.0158	18.8340
EU3	0.1289	0.1312	0.0266	4.8523
EU4	0.1828	0.1767	0.0255	7.1559
EU5	0.3120	0.3144	0.0192	16.2719
Self-est:				
SE1	0.5890	0.6023	0.1539	3.8281
SE2	0.2486	0.2245	0.1483	1.6765
SE3	0.4592	0.4402	0.0893	5.1394

Trait An:				
TA3	0.6753	0.6669	0.2140	3.1563
TA4	0.5105	0.4826	0.2228	2.2914
E-commer:				
EA1	0.2235	0.2219	0.0115	19.3549
EA2	0.2129	0.2130	0.0079	26.9143
EA3	0.2450	0.2446	0.0095	25.8060
EA4	0.2292	0.2296	0.0070	32.6361
EA5	0.2134	0.2136	0.0083	25.5780
General :				
GSE1	0.1844	0.1875	0.0397	4.6467
GSE2	0.2816	0.2876	0.0424	6.6456
GSE3	0.1820	0.1778	0.0333	5.4727
GSE5	0.2287	0.2368	0.0485	4.7118
GSE8	0.2046	0.2087	0.0511	4.0047
GSE10	0.1110	0.1005	0.0477	2.3264
GSE11	0.1720	0.1592	0.0482	3.5671
GSE12	0.1092	0.0988	0.0511	2.1386
E-Commer:				
ESE1	0.2194	0.2172	0.0155	14.1970
ESE2	0.2763	0.2744	0.0173	15.9333
ESE3	0.2212	0.2220	0.0162	13.6707
ESE4	0.2625	0.2631	0.0133	19.7532
ESE5	0.1871	0.1891	0.0134	13.9657
ESE6	0.1491	0.1496	0.0180	8.2948
Outcome :				
OUT1	0.1314	0.1308	0.0131	10.0614
OUT2	0.1794	0.1793	0.0116	15.4005
OUT3	0.1663	0.1687	0.0124	13.3895
OUT4	0.1454	0.1455	0.0142	10.2264
OUT5	0.1384	0.1397	0.0107	12.9819
OUT6	0.1475	0.1483	0.0140	10.5072
OUT7	0.1176	0.1176	0.0128	9.2095
OUT8	0.1139	0.1103	0.0133	8.5715
OUT9	0.1955	0.1939	0.0139	14.0642
Risk Ave:				
RA1	0.2225	0.2222	0.0098	22.7107
RA2	0.2322	0.2333	0.0097	24.0432
RA3	0.1709	0.1705	0.0171	9.9887
RA4	0.2316	0.2311	0.0089	25.9432
RA5	0.2269	0.2269	0.0119	19.1171
RA6	0.1513	0.1516	0.0216	7.0049
Percepti:				
PT1	0.2736	0.2722	0.0170	16.0679

PT2	0.2749	0.2753	0.0174	15.7804
PT3	0.1383	0.1413	0.0226	6.1159
PT4	0.1768	0.1787	0.0159	11.1324
PT5	0.2108	0.2091	0.0183	11.5343
PT6	0.2102	0.2085	0.0143	14.6749
Intention:				
INI1	0.2837	0.2834	0.0089	31.7206
INI2	0.2882	0.2873	0.0101	28.5352
INI3	0.2513	0.2517	0.0070	35.9907
INI4	0.2560	0.2554	0.0088	29.1339
Outer Model Loadings:				
	Original sample estimate	Mean of subsamples	Standard error	T-Statistic
Personal:				
(Composite Reliability =	0.912	AVE =	0.722)
PIIS1	0.8799	0.8784	0.0200	43.9313
PIIS2	0.8060	0.8019	0.0250	32.2280
PIIS3	0.7914	0.7880	0.0408	19.4067
PIIS4	0.9148	0.9140	0.0121	75.5148
Experien:				
(Composite Reliability =	0.947	AVE =	0.817)
EXP1	0.9070	0.9087	0.0167	54.1615
EXP2	0.9092	0.9093	0.0161	56.6187
EXP3	0.9192	0.9194	0.0115	80.0329
EXP4	0.8802	0.8808	0.0178	49.4890
Ease of :				
(Composite Reliability =	0.884	AVE =	0.610)
EU1	0.9186	0.9185	0.0079	116.3091
EU2	0.8588	0.8581	0.0213	40.3799
EU3	0.5703	0.5761	0.0647	8.8207
EU4	0.6363	0.6243	0.0599	10.6252
EU5	0.8607	0.8603	0.0162	52.9745
Self-est:				
(Composite Reliability =	0.811	AVE =	0.588)
SE1	0.7805	0.7880	0.0961	8.1221
SE2	0.7496	0.7144	0.1366	5.4885
SE3	0.7706	0.7394	0.1224	6.2961
Trait An:				
(Composite Reliability =	0.825	AVE =	0.702)
TA3	0.8851	0.8644	0.1400	6.3226

TA4	0.7880	0.7527	0.1594	4.9432
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E-commer:

(Composite Reliability = 0.950 , AVE = 0.791)

EA1	0.8450	0.8428	0.0247	34.2244
EA2	0.8736	0.8774	0.0188	46.5785
EA3	0.9038	0.9047	0.0139	65.2448
EA4	0.9280	0.9283	0.0130	71.4142
EA5	0.8952	0.8962	0.0184	48.7139

General :

(Composite Reliability = 0.863 , AVE = 0.444)

GSE1	0.6966	0.6952	0.0475	14.6597
GSE2	0.7786	0.7804	0.0360	21.6026
GSE3	0.7614	0.7562	0.0384	19.8269
GSE5	0.6439	0.6459	0.0498	12.9177
GSE8	0.6819	0.6799	0.0505	13.4950
GSE10	0.5759	0.5540	0.0861	6.6918
GSE11	0.5902	0.5714	0.0848	6.9564
GSE12	0.5640	0.5407	0.0981	5.7520

E-Commer:

(Composite Reliability = 0.886 , AVE = 0.565)

ESE1	0.7252	0.7186	0.0368	19.6988
ESE2	0.8123	0.8115	0.0273	29.7648
ESE3	0.7553	0.7562	0.0353	21.4083
ESE4	0.8189	0.8212	0.0302	27.0859
ESE5	0.7303	0.7319	0.0369	19.7874
ESE6	0.6555	0.6500	0.0484	13.5562

Outcome :

(Composite Reliability = 0.917 , AVE = 0.551)

OUT1	0.6974	0.6937	0.0351	19.8756
OUT2	0.8099	0.8092	0.0267	30.2910
OUT3	0.8006	0.8010	0.0258	30.9912
OUT4	0.6881	0.6882	0.0472	14.5891
OUT5	0.7523	0.7504	0.0360	20.8823
OUT6	0.7412	0.7422	0.0399	18.5661
OUT7	0.7145	0.7144	0.0441	16.1981
OUT8	0.6427	0.6354	0.0530	12.1365
OUT9	0.8141	0.8157	0.0298	27.3557

Risk Ave:

(Composite Reliability = 0.913 , AVE = 0.640)

RA1	0.8542	0.8516	0.0225	37.9491
RA2	0.8606	0.8582	0.0182	47.3047
RA3	0.7074	0.7052	0.0523	13.5281
RA4	0.8965	0.8945	0.0145	61.8117
RA5	0.8330	0.8329	0.0246	33.8318
RA6	0.6120	0.6112	0.0629	9.7259

Percepti:

(Composite Reliability = 0.891 , AVE = 0.581)

PT1	0.8775	0.8725	0.0159	55.1582
PT2	0.8603	0.8602	0.0168	51.1312
PT3	0.6001	0.6048	0.0711	8.4385
PT4	0.6530	0.6535	0.0573	11.4035
PT5	0.7735	0.7706	0.0404	19.1265
PT6	0.7706	0.7660	0.0334	23.0913

Intentio:

(Composite Reliability = 0.960 , AVE = 0.857)

INI1	0.9475	0.9483	0.0111	85.0382
INI2	0.9586	0.9587	0.0068	140.3355
INI3	0.9126	0.9142	0.0154	59.1946
INI4	0.8814	0.8830	0.0243	36.2363

Path Coefficients Table (Original Sample Estimate):

	Personal	Experien	Ease of	Self-est	Trait An	E-commer	General	E-Commer	Outcome
Risk Ave	Percepti	Intentio							
Personal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Experien	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Ease of	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Self-est	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Trait An	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
E-commer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
General	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
E-Commer	0.0070	0.2240	0.2680	0.0520	0.1070	-0.3750	0.0420	0.0000	0.0000
0.0000	0.0000	0.0000							
Outcome	0.0000	0.1630	0.3390	0.0000	0.0000	0.0000	0.0000	0.3340	0.0000
0.0000	0.0000	0.0000							
Risk Ave	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.6710	0.0000
0.0000	0.0000	0.0000							
Percepti	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7030	0.0000
0.0000	0.0000	0.0000							
Intentio	0.0000	0.0000	0.0000	0.0000	0.0000	-0.1090	0.0000	0.2450	0.1280
0.2790	0.2550	0.0000							

Path Coefficients Table (Mean of Subsamples):

	Personal	Experien	Ease of	Self-est	Trait An	E-commer	General	E-Commer	Outcome
Risk Ave	Percepti	Intentio							
Personal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Experien	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Ease of	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Self-est	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Trait An	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
E-commer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
General	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
E-Commer	0.0104	0.2147	0.2568	0.0593	0.1059	-0.3868	0.0491	0.0000	0.0000
0.0000	0.0000	0.0000							
Outcome	0.0000	0.1572	0.3381	0.0000	0.0000	0.0000	0.0000	0.3480	0.0000
0.0000	0.0000	0.0000							
Risk Ave	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.6783	0.0000
0.0000	0.0000	0.0000							
Percepti	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7097	0.0000
0.0000	0.0000	0.0000							
Intentio	0.0000	0.0000	0.0000	0.0000	0.0000	-0.1160	0.0000	0.2443	0.1305
0.2667	0.2557	0.0000							-

Path Coefficients Table (Standard Error):

	Personal	Experien	Ease of	Self-est	Trait An	E-commer	General	E-Commer	Outcome
Risk Ave	Percepti	Intentio							
Personal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Experien	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Ease of	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Self-est	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Trait An	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
E-commer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
General	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							

E-Commer	0.0670	0.0803	0.0797	0.0499	0.0539	0.0939	0.0423	0.0000	0.0000
0.0000	0.0000	0.0000							
Outcome	0.0000	0.0645	0.0705	0.0000	0.0000	0.0000	0.0000	0.0739	0.0000
0.0000	0.0000	0.0000							
Risk Ave	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0356	0.0000
0.0000	0.0000	0.0000							
Percepti	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0341	0.0000
0.0000	0.0000	0.0000							
Intentio	0.0000	0.0000	0.0000	0.0000	0.0000	0.0430	0.0000	0.0565	0.0483
0.0572	0.0584	0.0000							

Path Coefficients Table (T-Statistic)

	Personal	Experien	Ease of	Self-est	Trait An	E-commer	General	E-Commer	Outcome
Risk Ave	Percepti	Intentio							
Personal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Experien	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Ease of	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Self-est	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
Trait An	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
E-commer	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
General	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000							
E-Commer	0.1045	2.7889	3.3643	1.0426	1.9852	3.9916	0.9935	0.0000	0.0000
0.0000	0.0000	0.0000							
Outcome	0.0000	2.5282	4.8055	0.0000	0.0000	0.0000	0.0000	4.5190	0.0000
0.0000	0.0000	0.0000							
Risk Ave	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	18.8623	0.0000
0.0000	0.0000	0.0000							
Percepti	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	20.6291	0.0000
0.0000	0.0000	0.0000							
Intentio	0.0000	0.0000	0.0000	0.0000	0.0000	2.5348	0.0000	4.3352	2.6484
4.8780	4.3648	0.0000							

Appendix M:

**Gift Voucher for the Research Participants
(to compensate them for the time spent in Free Simulation)**

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