

**A STUDY OF FACTORS INFLUENCING THE
ADOPTION OF E-COMMERCE TECHNOLOGY IN
SMALL AND MEDIUM ENTERPRISES (SMEs) IN
THE KINGDOM OF THAILAND**

Vasin Chooprayoon

B.A. (Hons) Khon Kaen University, Thailand

M.A. Chulalongkorn University, Thailand

This Thesis is presented for the Degree of
Doctor of Philosophy of Murdoch University
Western Australia

Year of Submission: 2011

I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

.....
(Vasin Chooprayoon)

I dedicate this thesis to my Dad, Pradith Chooprayoon, 1923-2002, who was hoping to see my PhD graduation, but he never had a chance.

ABSTRACT

This thesis aims to investigate the influence of five factors (business environment, knowledge of ECT, organisation & capital, e-commerce technology, and customer behaviour (purchasing, information, e-commerce confidence, and e-commerce perceived) towards the adoption of Electronic Commerce Technology (ECT) by Thai small and medium enterprises (SMEs). The scope of the study was restricted to the retailing SMEs located in Bangkok and the surrounding areas. The study also included online customers who were studying at Rangsit University at the time of the survey was conducted. 400 SMEs and 400 online customers were involved in the survey conducted in 2007.

Two sets of questionnaires were developed for gathering data from the samples: one for the SMEs and another one for the customers. 52.25% of the SMEs and 71.25% of the customers have responded to the questionnaires. Twenty hypotheses were tested for predicting influence of the factors to the ECT adoption. Ten hypotheses were developed predicting influence of the behaviour to the adoption. The predictors in SMEs side were size, business years, gender of the SMEs' owners, ECT implementation, website ownership, domain name ownership, and planning to implement ECT. The predictors in the customer side were age, gender, e-commerce or Internet experience of the customers, and planning to do online shopping.

The research findings show that most SMEs' size was less than fifteen employees (53.77%), business years were over two years (54.27%), and gender of the SMEs' owners were male (59.51%); most of the e-

commerce customers were young female students (59.3%). The first four factors--business environment, knowledge of ECT, organisation & capital, and e-commerce technology influence the ECT adoption. The discriminant analysis produced 62 equations for proving the influence (\widehat{D}_1 - \widehat{D}_{62}). The fifth factor, customer behaviour, influences the ECT adoption by the SMEs. The discriminant analysis produced 33 equations for proving the influence (\widehat{D}_{63} - \widehat{D}_{95}).

More significant findings: a) from the perspectives of SMEs—findings such as the availability of capital, and the readiness of suppliers to SMEs to accept ECT, and b) from the customer side—findings such as the importance of prior online brand development of SMEs, the importance of web design with respect to virtual product presentation, and confidence in the security of online transaction. These strongly influence the ECT adoption.

TABLE OF CONTENTS

| | |
|--|-------|
| Abstract | iv |
| Acknowledgement | x |
| List of Publications | xiii |
| Contribution of the Thesis | xvi |
| Table of Figures | xviii |
| List of Table | xix |
| Acronyms | xxxi |
| Chapter 1 Introduction | 1 |
| 1.1 Thesis Background and Significance..... | 1 |
| 1.2 Aims of the Thesis | 11 |
| 1.3 Scopes of the Thesis and Research Model..... | 11 |
| 1.4 Overview of Thesis | 13 |
| Chapter 2 Thailand SMEs' Involvement with E-commerce | 15 |
| 2.1 Thailand's E-commerce Infrastructure Development | 15 |
| 2.2 Thailand's E-commerce Infrastructure Investment | 19 |
| 2.3 Internet Diffusion and Its Roles in the Growth of E-commerce in Thailand..... | 21 |
| 2.4 An Overview of SMEs in Thailand..... | 24 |
| 2.5 E-commerce Implementation by Thai SMEs | 29 |
| 2.5.1 Thai Search Engines' Engagement with E-commerce and Retailing SMEs | 30 |
| 2.5.1.1 Sanook.com | 31 |
| 2.5.1.2 Hunsa.com | 33 |

| | |
|---|----|
| 2.5.2 Digital Content and Game Industry in E-commerce Context: An Example of Thai SMEs | 36 |
| 2.6 Significance of the Chapter to the Thesis | 42 |
| Chapter 3 Theoretical Backgrounds | 44 |
| 3.1 Rogers' Diffusion of Innovation Model | 44 |
| 3.2 Technology Acceptance Model (TAM) | 48 |
| 3.3 Theory of Reasoned Action (TRA)..... | 50 |
| 3.4 Dependency Theory and Customer Behaviour..... | 56 |
| Chapter 4 Research Methodologies..... | 70 |
| 4.1 Research Model Design | 70 |
| 4.1.1 Environmental Factors | 73 |
| 4.1.2 Knowledge Factors..... | 73 |
| 4.1.3 Organisational Factors..... | 75 |
| 4.1.4 Knowledge Factors..... | 76 |
| 4.1.5 Customer Behaviour | 76 |
| 4.1.5.1 Purchasing Behaviour..... | 77 |
| 4.1.5.2 Information Behaviour | 77 |
| 4.1.5.3 E-commerce Confident Behaviour | 78 |
| 4.1.5.4 E-commerce Perceived Behaviour | 78 |
| 4.2 Variable Definitions..... | 78 |
| 4.2.1 Independent Variable Definition | 78 |
| 4.2.2 Dependent Variable Definition | 81 |
| 4.3 Research Tools | 81 |
| 4.3.1 Questionnaire for Gathering Data from Customers in Thailand..... | 82 |
| 4.3.2 Questionnaire for Gathering Data from SMEs in Thailand..... | 83 |

| | |
|--|-----|
| 4.4 Hypotheses | 84 |
| 4.5 Research Population..... | 87 |
| 4.5.1 Overview of the population..... | 87 |
| 4.5.2 Sample Size..... | 88 |
| 4.6 data Compilation Methods..... | 89 |
| 4.7 Data Analysis | 90 |
| 4.8 Data Interpretation | 90 |
| 4.9 The Research Result Presentation | 91 |
| Chapter 5 Research Findings | 92 |
| 5.1 Factors Influencing Thai SMEs' Decision to Adoption or not to Adopt ECT | 92 |
| 5.1.1 Descriptive Statistical Findings | 93 |
| 5.1.2 Hypothesis Test Findings for the ECT Adoption of the SMEs..... | 101 |
| 5.1.3 Finding Summary..... | 167 |
| 5.2 The Experience of Thai University Students as ECT Customers: Implications for Thai SMEs | 170 |
| 5.2.1 Descriptive Statistical Findings | 170 |
| 5.2.2 Hypothesis Test Findings..... | 173 |
| 5.2.3 Finding Summary..... | 211 |
| Chapter 6 Conclusion and Discussion..... | 215 |
| 6.1 Conclusion | 215 |
| 6.2 Discussion..... | 218 |
| 6.2.1 Implication for Thai SMEs | 218 |
| 6.2.2 Implication from Online Customers' Perspective | 224 |
| 6.3 Future Research..... | 230 |

| | |
|------------------|-----|
| References | 231 |
| Appendix A | 244 |
| Appendix B | 252 |

ACKNOWLEDGEMENT

This thesis could not have come to pass without the knowledgeable contribution, encouragement, and continuous critique from Associate Professor Dr Lance Chun Che Fung whom I had many arguments over what should be included and how to interpret the results. He has provided useful revision in both English and scholarly proofs. I really appreciate his help, and have to emphasise that he is the person who has incubated and fulfilled my ambition for study towards a PhD degree in Information Technology.

I would like to express my personal appreciation to Dr Arthit Urairat, President of Rangsit University in the terms of human capital development. Without his support, my PhD study at Murdoch University would not have been possible.

This study was conducted during 2006 to 2008 and due to family and work commitment; I have to resume my work since 2009. It has been extremely difficult to balance between work, family and continuation of this thesis during the past years. I therefore like to extend my sincere gratitude to Assistant Professor Dr Chonnawat Srisa-arn, ex-Dean of the School of Information Technology, Rangsit University. He has provided me with much needed help and contribution towards my scholarship.

I would like to express my gratitude to Dr Suvimon Tanapoller, Library Director, Faculty of Education, Chulalongkorn University, Bangkok and Dr Janjira Payakpate, Faculty of Science, Naresuan

University, Phitsanulok, Thailand, who kindly signed their names in the contract between Rangsit University and I in order to guarantee my continuous working with the university. Without their great help, the scholarship might be passed to someone else.

My sincere gratitude goes to Professor Arnold Depickere, former Executive Dean of the Faculty of Creative Technologies and Media, Murdoch University who granted me a scholarship for presenting some papers at international conferences which were held in Hong Kong and Taiwan. I also would like to give special thanks to Associate Professor Dr. Kok Wai Wong for his friendship and much support.

The small and medium enterprises located in Bangkok and surrounding areas as well as the online customers who were studying in Rangsit University kindly responded and returned the questionnaires. Some of them called me for further opinions and suggestions during the data collection period. I am indebted by their thoughtfulness and intention to pass their attitudes through the questionnaires. My deep thanks go to them.

Assistant Professor Dr Nongluk Minaikit, my former supervisor during the time I studied for my Master Degree at Chulalongkorn University, who was the first one that guided and suggested to me the real academic approaches. Since I studied PhD at Murdoch University in 2006, we always had long enjoyable letters and occasional cards to each other. Her words always helped me in my PhD accomplishment. She had never told me she was in the final stage of cancer. My last letter went to her at the end of November 2007 without her reply; she passed away and

had her cremation ceremony in December of that year. I was too far away to attend the ceremony. Any values derived from my thesis, I dedicate to her.

I owe a debt of gratitude to my lovely friends, Sompak Cheamjumras and Joe Pavlinovich, who always organised activities for me at their house and shop; also occasionally drove me outside of the Perth region. Joe joined me reading in the proofs of my thesis and related papers sometimes. Their assistances came to me at any requesting.

I would like to thank Assistant Professor Kowit Rapeepisarn, and Ms Linda Lim for their friendship and contribution during my study at Perth. I would also like to thank my colleagues from the School of Information Technology, Rangsit University, who have kindly helped me during the time of data collection in Bangkok.

My utmost gratitude goes to my Mum for her love and inspiration, and also goes to my wife, Dr Darunee, for motivating me like nobody else is able to – I owe enormous thanks for her love and patience. Last but not the least; I thank my beloved teenage son, Boonraksit, for his mature behaviour during the time when I was away from home studying for my PhD degree in Australia.

LIST OF PUBLICATIONS

The following papers reported the development and findings related to this thesis. There are eleven papers published in proceedings of international conferences listed in descending order of the publication year.

1. Choorayoon, Vasin and Chun Che Fung. 2006. Factors and Customer Behaviour Influencing Adoption and Use of E-Commerce in Small and Medium Enterprises in Thailand: An Empirical Study. Paper read at the 6th Postgraduate Electrical Engineering and Computing Symposium (PEECS 2006), 7th November 2006, at Murdoch University, Perth Western Australia.

2. Chooprayoon, Vasin, and Chun Che Fung. 2007. An Empirical Study on the Influencing Factors on the Adoption and Use of E-Commerce by Thailand SMEs. Paper read at the 6th Wuhan International Conference on E-Business (WHICEB 2007)-E-business Track: Management Challenges in a Global World, 26th - 17th May 2007, at Wuhan, China. Available from <http://www.cs.swufe.edu.cn/xsjl/sixwuhan/Paper/EB171.pdf>.

3. Chooprayoon, Vasin, Chun Che Fung and. Arnold A. Depickere. 2007. TECTAM, a Modified Technology Acceptance Model to Assess E-Commerce Technologies Adoption by Thai SMEs. Paper read at IEEE- Intelligent Information Communication Technologies for Better

Human Life (TENCON 2007), 30th October - 2nd November 2007, at Taipei, Taiwan. Available from http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=4428977.

4. Chooprayoon, Vasin, Chun Che Fung and. Arnold A. Depickere. 2007. E-business in Thailand: A Case Study of Two Thai Search Engine Companies. Paper read at IEEE- International Conference on e-Business Engineering (ICEBE 2007), 24th - 26th October 2007, at Hong Kong, China. Available from <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=04402121>.

5. Chooprayoon, Vasin and Chun Che Fung. 2007. Thai Small and Medium Enterprises Engagement in the Emerging Digital Content and Game Industry. Paper read at DIMEA 2007: the 2nd International Conference on Digital Interactive Media in Entertainment and Arts, 19th - 21st September 2007, at Perth, Western Australia. Available from <http://portal.acm.org/citation.cfm?id=1306813.1306845&coll=GUIDE&dl=GUIDE&CFID=6496451&CFTOKEN=34392085>.

6. Chooprayoon, Vasin and Chun Che Fung. 2007. Growth of Thailand Electronic Commerce from Infrastructure Investment Perspectives. Paper read at the 8th Postgraduate Electrical Engineering and Computing Symposium (PEECS 2007), 7th November 2007, at Curtin University of Technology, Perth Western Australia.

7. Chooprayoon, Vasin and Chun Che Fung. 2008. Thailand Open ICT Ecosystems: a Scenario Analysis of Electronic Commerce Infrastructure Investment for Small and Medium Enterprises. Paper read at the 2nd IEEE International Conference on Digital Ecosystem and

Technologies (IEEE-DEST 2008), 26th - 29th February 2008, at Phitsanulok, Thailand.

8. Chooprayoon, Vasin and Chun Che Fung. 2008. An Assessment of Customer Behaviors' Influence on the Adoption of Electronic Commerce Technologies by Thai Small and Medium Enterprises. Paper read at the 7th Wuhan International Conference on E-Business 2008 (WHICEB 2008), 31st May - 1st June 2008, at Wuhan, China.

9. Chooprayoon, Vasin and Chun Che Fung. 2008. Measuring Thai Customers Gender and Behaviours influence on the adoption of E-commerce Technology by Small and Medium Enterprises. Paper read at IADIS International Conference E-Commerce 2008 Part of the IADIS Multi Conference on Computer Science and Information Systems 2008 (MCCSIS'08), 25th - 27th July 2008, at Amsterdam, The Netherlands.

10. Chooprayoon, Vasin and Chun Che Fung. 2008. An Empirical Study of Factors Influencing The Adoption of Electronic Commerce Technologies by Small and Medium Enterprises in the Kingdom of Thailand. Paper read at the 6th International Conference on E-Business 2008 (INCEB 2008), 6th-7th November 2008, at Bangkok, Thailand.

11. Chooprayoon, Vasin and Chun Che Fung. 2008. Factors Influencing the Adoption of E-Commerce Technology the Small and Medium Enterprises: their E-Commerce Experience. Paper read at the 9th Postgraduate Electrical Engineering and Computing Symposium (PEECS 2008), 4th November 2008, at University of Western Australia, Perth Western Australia.

CONTRIBUTIONS OF THE THESIS

This thesis has contributed to the area of study in the following perspectives:

The study contributed to the understanding of e-commerce practices for competitiveness in the SMEs sector in Thailand on e-commerce issues in the government, business and customer sectors. A study on how customer behaviour influence the adoption of electronic commerce technology by Thai SMEs in this thesis is based on proposed research models which were derived from previous researches and scenarios of e-commerce under the national policy, *Thailand Vision towards a Knowledge-Based Economy (IT2010)* and *ICT Master Plan*. The models could be extended for further research. The proposed concept has been published in conference papers 1, 2, and included in Chapter 1 and 6.

The results of this study have provided an understanding of e-commerce adoption in the SMEs sector in Thailand. The results could lead to e-commerce planning, managing, collaborating, and marketing of e-commerce activities among the private and government sectors. The study revealed that the factors and behaviour influence the adoption in different degrees of significance. The discovery could be used to organise or coordinate the relevant organisations and institutions, SMEs as well as online customers to the development of SME marketing strategies. This aspect of the study has been published in conference papers 7 to 11 as well as included in Chapter 2, 3 and 6.

Other SMEs clusters in Thailand such as manufacturing, services, wholesales, etc. can tap the potential of e-commerce adoption based on the results from this study. This study will provide transfer of knowledge to the other sectors and to assist them onto a pathway of success in e-commerce entrepreneurship. This point has been published in conference papers 4, 5 and 7 as well as included in Chapter 2, 3 and 6.

This research has investigated and categorised additional variables in the model of e-commerce adoption over previous models. By incorporating these additional variables, an enhanced embodiment of the procedures directed to e-commerce adoption could be established. This aspect has been published in conference papers as well as included in Chapter 4.

TABLE OF FIGURES

Figure

| | |
|--|----|
| 1.1 Research Model | 12 |
| 2.1 Internet International Bandwidth in Thailand | 18 |
| 2.2 Internet Domestic Bandwidth in Thailand | 18 |
| 2.3 Internet User Statistic in Thailand | 19 |
| 3.1 TRA Model | 52 |
| 3.2 TRA Model | 53 |
| 3.3 Degree of Dependence | 56 |
| 3.4 Customer Types, Roles, and Behaviour | 59 |
| 3.5 Variable Affect the Process of Customers Behaviour | 60 |
| 4.1 Research Model | 72 |

LIST OF TABLES

Table

| | |
|--|-----|
| 2.1 Definitions of Thai SMEs | 24 |
| 2.2 Game SMEs Listing | 41 |
| 4.1 Definitions of Factors Influence the Adoption of ECT by Thai SMEs | 79 |
| 4.2 Definitions of Customer Behaviour Influence the Adoption of ECT by Thai SMEs | 80 |
| 5.1 Size of the SMEs | 93 |
| 5.2 Number of the Business Years | 94 |
| 5.3 Gender of the SMEs' Owners | 94 |
| 5.4 ECT Usage/Implementation of the SMEs | 95 |
| 5.5 Website Ownership of the SMEs | 95 |
| 5.6 Domain Name Ownership of the SMEs | 95 |
| 5.7 ECT Implementation Plan | 96 |
| 5.8 Influence Level of Business Environmental Factors | 97 |
| 5.9 Influence Level of Knowledge of ECT Factors | 98 |
| 5.10 Influence Level of Organisational and Capital Factors | 99 |
| 5.11 Influence Level of Technological Factors | 100 |
| 5.12 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Gender of the SMEs' Owners) | 102 |
| 5.13 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Gender of the SMEs' Owners) | 102 |
| 5.14 Canonical Discriminant Function Coefficients (Gender of the SMEs' Owners) | 103 |
| 5.15 Classification Function Coefficient Table (Gender of the SMEs' Owners) | 104 |

| | |
|---|-----|
| 5.16 Classification Results for Predicted Group Membership (Gender of the SMEs' Owners) | 104 |
| 5.17 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (ECT Implementation of the SMEs) | 105 |
| 5.18 Wilks' Lambda for Indicating the Significance of the Discriminant Function (ECT Implementation of the SMEs) | 105 |
| 5.19 Canonical Discriminant Function Coefficients (ECT Implementation of the SMEs) | 106 |
| 5.20 Classification Function Coefficient Table (ECT Implementation of the SMEs)..... | 107 |
| 5.21 Classification Results for Predicted Group Membership (ECT Implementation of the SMEs) | 107 |
| 5.22 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Website Ownership of the SMEs) | 108 |
| 5.23 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Website Ownership of the SMEs) | 108 |
| 5.24 Canonical Discriminant Function Coefficients (Website Ownership of the SMEs) | 109 |
| 5.25 Classification Function Coefficient Table (Website Ownership of the SMEs)..... | 110 |
| 5.26 Classification Results for Predicted Group Membership (Website Ownership of the SMEs) | 111 |
| 5.27 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Planning to Implement ECT of the SMEs) | 111 |
| 5.28 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Planning to Implement ECT of the SMEs) | 112 |
| 5.29 Canonical Discriminant Function Coefficients (Planning to Implement ECT of the SMEs) | 112 |

| | |
|--|-----|
| 5.30 Classification Function Coefficient Table (Planning to Implement ECT of the SMEs) | 113 |
| 5.31 Classification Results for Predicted Group Membership (Planning to Implement ECT of the SMEs) | 114 |
| 5.32 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Gender of the SMEs' Owners) | 116 |
| 5.33 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Gender of the SMEs' Owners) | 116 |
| 5.34 Canonical Discriminant Function Coefficients (Gender of the SMEs' Owners) | 117 |
| 5.35 Classification Function Coefficient Table (Gender of the SMEs' Owners)..... | 117 |
| 5.36 Classification Results for Predicted Group Membership (Gender of the SMEs' Owners) | 118 |
| 5.37 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (ECT Implementation of the SMEs) | 119 |
| 5.38 Wilks' Lambda for Indicating the Significance of the Discriminant Function (ECT Implementation of the SMEs) | 119 |
| 5.39 Canonical Discriminant Function Coefficients (ECT Implementation of the SMEs) | 120 |
| 5.40 Classification Function Coefficient Table (ECT Implementation of the SMEs)..... | 121 |
| 5.41 Classification Results for Predicted Group Membership (ECT Implementation of the SMEs) | 122 |
| 5.42 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Website Ownership of the SMEs) | 122 |
| 5.43 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Website Ownership of the SMEs) | 123 |

| | |
|---|-----|
| 5.44 Canonical Discriminant Function Coefficients (Website Ownership of the SMEs) | 123 |
| 5.45 Classification Function Coefficient Table (Website Ownership of the SMEs)..... | 124 |
| 5.46 Classification Results for Predicted Group Membership (Website Ownership of the SMEs) | 124 |
| 5.47 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Domain Name Ownership of the SMEs) | 125 |
| 5.48 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Domain Name Ownership of the SMEs) | 125 |
| 5.49 Canonical Discriminant Function Coefficients (Domain Name Ownership of the SMEs) | 126 |
| 5.50 Classification Function Coefficient Table (Domain Name Ownership of the SMEs)..... | 127 |
| 5.51 Classification Results for Predicted Group Membership (Domain Name Ownership of the SMEs) ... | 127 |
| 5.52 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Planning to Implement ECT of the SMEs) | 128 |
| 5.53 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Planning to Implement ECT of the SMEs) | 128 |
| 5.54 Canonical Discriminant Function Coefficients (Planning to Implement ECT of the SMEs) | 129 |
| 5.55 Classification Function Coefficient Table (Planning to Implement ECT of the SMEs) | 130 |
| 5.56 Classification Results for Predicted Group Membership (Planning to Implement ECT of the SMEs) | 130 |
| 5.57 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Size of the SMEs) | 132 |
| 5.58 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Size of the SMEs) | 132 |

| | |
|--|-----|
| 5.59 Canonical Discriminant Function Coefficients (Size of the SMEs) | 133 |
| 5.60 Classification Function Coefficient Table (Size of the SMEs) | 134 |
| 5.61 Classification Results for Predicted Group Membership (Size of the SMEs) | 134 |
| 5.62 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Gender of the SMEs' Owners) | 135 |
| 5.63 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Gender of the SMEs' Owners) | 135 |
| 5.64 Canonical Discriminant Function Coefficients (Gender of the SMEs' Owners) | 136 |
| 5.65 Classification Function Coefficient Table (Gender of the SMEs' Owners) | 137 |
| 5.66 Classification Results for Predicted Group Membership (Gender of the SMEs' Owners) | 137 |
| 5.67 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (ECT Implementation of the SMEs) | 138 |
| 5.68 Wilks' Lambda for Indicating the Significance of the Discriminant Function (ECT Implementation of the SMEs) | 138 |
| 5.69 Canonical Discriminant Function Coefficients (ECT Implementation of the SMEs) | 139 |
| 5.70 Classification Function Coefficient Table (ECT Implementation of the SMEs) | 140 |
| 5.71 Classification Results for Predicted Group Membership (ECT Implementation of the SMEs) | 140 |
| 5.72 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Website Ownership of the SMEs) | 141 |
| 5.73 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Website Ownership of the SMEs) | 141 |

| | |
|---|-----|
| 5.74 Canonical Discriminant Function Coefficients (Website Ownership of the SMEs) | 142 |
| 5.75 Classification Function Coefficient Table (Website Ownership of the SMEs)..... | 143 |
| 5.76 Classification Results for Predicted Group Membership (Website Ownership of the SMEs) | 144 |
| 5.77 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Domain Name Ownership of the SMEs) | 144 |
| 5.78 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Domain Name Ownership of the SMEs) | 145 |
| 5.79 Canonical Discriminant Function Coefficients (Domain Name Ownership of the SMEs) | 145 |
| 5.80 Classification Function Coefficient Table (Domain Name Ownership of the SMEs)..... | 146 |
| 5.81 Classification Results for Predicted Group Membership (Domain Name Ownership of the SMEs) ... | 146 |
| 5.82 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Planning to Implement ECT of the SMEs) | 147 |
| 5.83 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Planning to Implement ECT of the SMEs) | 147 |
| 5.84 Canonical Discriminant Function Coefficients (Planning to Implement ECT of the SMEs) | 148 |
| 5.85 Classification Function Coefficient Table (Planning to Implement ECT of the SMEs) | 149 |
| 5.86 Classification Results for Predicted Group Membership (Planning to Implement ECT of the SMEs) | 149 |
| 5.87 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Size of the SMEs) | 151 |
| 5.88 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Size of the SMEs) | 151 |

| | |
|--|-----|
| 5.89 Canonical Discriminant Function Coefficients (Size of the SMEs) | 152 |
| 5.90 Classification Function Coefficient Table (Size of the SMEs) | 152 |
| 5.91 Classification Results for Predicted Group Membership (Size of the SMEs) | 153 |
| 5.92 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Gender of the SMEs' Owners) | 154 |
| 5.93 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Gender of the SMEs' Owners) | 154 |
| 5.94 Canonical Discriminant Function Coefficients (Gender of the SMEs' Owners) | 155 |
| 5.95 Classification Function Coefficient Table (Gender of the SMEs' Owners) | 156 |
| 5.96 Classification Results for Predicted Group Membership (Gender of the SMEs' Owners) | 156 |
| 5.97 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (ECT Implementation of the SMEs) | 157 |
| 5.98 Wilks' Lambda for Indicating the Significance of the Discriminant Function (ECT Implementation of the SMEs) | 157 |
| 5.99 Canonical Discriminant Function Coefficients (ECT Implementation of the SMEs) | 158 |
| 5.100 Classification Function Coefficient Table (ECT Implementation of the SMEs) | 159 |
| 5.101 Classification Results for Predicted Group Membership (ECT Implementation of the SMEs) | 160 |
| 5.102 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Website Ownership of the SMEs) | 160 |

| | |
|--|-----|
| 5.103 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Website Ownership of the SMEs) | 161 |
| 5.104 Canonical Discriminant Function Coefficients (Website Ownership of the SMEs) | 161 |
| 5.105 Classification Function Coefficient Table (Website Ownership of the SMEs)..... | 162 |
| 5.106 Classification Results for Predicted Group Membership (Website Ownership of the SMEs) | 163 |
| 5.107 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Domain Name Ownership of the SMEs) | 164 |
| 5.108 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Domain Name Ownership of the SMEs) | 164 |
| 5.109 Canonical Discriminant Function Coefficients (Domain Name Ownership of the SMEs) | 165 |
| 5.110 Classification Function Coefficient Table (Domain Name Ownership of the SMEs)..... | 166 |
| 5.111 Classification Results for Predicted Group Membership (Domain Name Ownership of the SMEs) ... | 166 |
| 5.112 Factors Influence ECT Adoption of the SMEs | 167 |
| 5.113 Customers' Income | 171 |
| 5.114 Age Group | 171 |
| 5.115 Gender Group | 171 |
| 5.116 E-commerce/the Internet Experience of Customers..... | 172 |
| 5.117 Plan to Engage with Online Shopping of Customers | 172 |
| 5.118 Customers' Purchasing Behaviour Influencing the Adoption of ECT by Thai SMEs | 173 |
| 5.119 Customer Information Behaviour Influencing the Adoption of ECT by Thai SMEs | 174 |
| 5.120 Level of ECT Confidence of the Customers Influencing the Adoption of ECT by Thai SMEs | 175 |

| | |
|---|-----|
| 5.121 Level of Perceived Behaviour of the Customers Influencing the Adoption of ECT by Thai SMEs | 176 |
| 5.122 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Gender of the Customers) | 177 |
| 5.123 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Gender of the Customers) | 178 |
| 5.124 Canonical Discriminant Function Coefficients (Gender of the Customers) | 178 |
| 5.125 Classification Function Coefficient Table (Gender of the Customers) | 179 |
| 5.126 Classification Results for Predicted Group Membership (Gender of the Customers) | 180 |
| 5.127 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (E-commerce/ the Internet Experience of the Customers) | 180 |
| 5.128 Wilks' Lambda for Indicating the Significance of the Discriminant Function (E-commerce/the Internet Experience of the Customers) | 181 |
| 5.129 Canonical Discriminant Function Coefficients (E-commerce/the Internet Experience of the Customers) | 181 |
| 5.130 Classification Function Coefficient Table (E-commerce/the Internet Experience of the Customers)..... | 182 |
| 5.131 Classification Results for Predicted Group Membership (E-commerce/the Internet Experience of the Customers) | 183 |
| 5.132 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Planning to do Online Shopping of the Customers) | 183 |
| 5.133 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Planning to do Online Shopping of the Customers) | 184 |
| 5.134 Canonical Discriminant Function Coefficients (Planning to do Online Shopping of the Customers) | 185 |

| | |
|--|-----|
| 5.135 Classification Function Coefficient Table (Planning to do Online Shopping of the Customers) | 186 |
| 5.136 Classification Results for Predicted Group Membership (Planning to do Online Shopping of the Customers) | 187 |
| 5.37 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (E-commerce/ the Internet Experience of the Customers) | 188 |
| 5.138 Wilks' Lambda for Indicating the Significance of the Discriminant Function (E-commerce/the Internet Experience of the Customers) | 189 |
| 5.139 Canonical Discriminant Function Coefficients (E-commerce/the Internet Experience of the Customers) | 189 |
| 5.140 Classification Function Coefficient Table (E-commerce/the Internet Experience of the Customers)..... | 190 |
| 5.141 Classification Results for Predicted Group Membership (E-commerce/the Internet Experience of the Customers) | 191 |
| 5.142 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Age of the Customers) | 191 |
| 5.143 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Age of the Customers) | 192 |
| 5.144 Canonical Discriminant Function Coefficients (Age of the Customers) | 192 |
| 5.145 Classification Function Coefficient Table (Age of the Customers) | 193 |
| 5.146 Classification Results for Predicted Group Membership (Age of the Customers) | 194 |
| 5.147 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Planning to do Online Shopping of the Customers) | 194 |
| 5.148 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Planning to do Online Shopping of the Customers) | 195 |

| | |
|---|-----|
| 5.149 Canonical Discriminant Function Coefficients (Planning to do Online Shopping of the Customers) | 196 |
| 5.150 Classification Function Coefficient Table (Planning to do Online Shopping of the Customers) | 197 |
| 5.151 Classification Results for Predicted Group Membership (Planning to do Online Shopping of the Customers) | 197 |
| 5.152 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Age of the Customers) | 199 |
| 5.153 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Age of the Customers) | 199 |
| 5.154 Canonical Discriminant Function Coefficients (Age of the Customers) | 200 |
| 5.155 Classification Function Coefficient Table (Age of the Customers) | 200 |
| 5.156 Classification Results for Predicted Group Membership (Age of the Customers) | 201 |
| 5.157 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Gender of the Customers) | 202 |
| 5.158 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Gender of the Customers) | 202 |
| 5.159 Canonical Discriminant Function Coefficients (Gender of the Customers) | 203 |
| 5.160 Classification Function Coefficient Table (Gender of the Customers) | 204 |
| 5.161 Classification Results for Predicted Group Membership (Gender of the Customers) | 204 |
| 5.162 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (E-commerce/ the Internet Experience of the Customers) | 205 |

| | |
|--|-----|
| 5.163 Wilks' Lambda for Indicating the Significance of the Discriminant Function (E-commerce/ the Internet Experience of the Customers) | 205 |
| 5.164 Canonical Discriminant Function Coefficients (E-commerce/the Internet Experience of the Customers) | 206 |
| 5.165 Classification Function Coefficient Table (E-commerce/the Internet Experience of the Customers)..... | 207 |
| 5.166 Classification Results for Predicted Group Membership (E-commerce/the Internet Experience of the Customers) | 207 |
| 5.167 Box's M Test Results for Null Hypothesis of Equal Population Covariance Matrices (Planning to Do Online Shopping of the Customers) | 208 |
| 5.168 Wilks' Lambda for Indicating the Significance of the Discriminant Function (Planning to Do Online Shopping of the Customers) | 208 |
| 5.168 Canonical Discriminant Function Coefficients (Planning to Do Online Shopping of the Customers) | 209 |
| 5.169 Classification Function Coefficient Table (Planning to Do Online Shopping of the Customers) | 210 |
| 5.170 Classification Results for Predicted Group Membership (Planning to Do Online Shopping of the Customers) | 211 |
| 5.171 Functions of Customer Behaviour Influencing ECT Adoption of the SMEs | 212 |

ACRONYMS

| | |
|---------------|--|
| AB | Attitude towards Performing Behaviour |
| ADSL | Asymmetric Digital Subscriber Line |
| AFP | Agence France-Presse |
| Animex | Animation Exchange Network |
| AT | Attitude towards Using |
| BI | Behavioural Intention to Use |
| B2B | Business to Business |
| B2C | Business to Customer |
| B2G | Business to Government |
| BDCC | Bangkok Digital Content Centre |
| BHT | Baht |
| BOI | Board of Investment |
| CAT | Communication Authority of Thailand |
| CE | Customer Experience |
| CEC | Centre for Electronic Commerce |
| CF | Consultancy Fund Project |
| CIT | Communication and Information technology |
| COO | Country-of-Origin |
| CPM | Cost per Thousand Impression |
| CRM | Customer Relationship Management |
| Df | degree of freedom |
| EC | Electronic Commerce |
| ECRC | Electronic Commerce Research Centre |
| ECT | Electronic Commerce Technology |
| EOU | Ease of Use |
| FTA | Free Trade Agreement |
| Gbps | Gigabyte per second |
| GDP | Growth Domestic Products |
| H | Hypothesis |
| HTTP | Hypertext Transfer Protocol |
| IGDA | International Game Developer Association |
| IIG | International Internet gateway |
| IM | Instant Messaging |
| IMD | International Institute for Management Development |
| ISP | Internet Service Provider |
| IT | Information Technology |
| IT2010 | Thailand Vision towards a Knowledge-Based Economy |
| IVR | Interactive Voice Response |
| KBE | Knowledge-Based Economy |
| Mbps | Megabyte per second |
| MDICP | Manufacturing Development to Improve Competitiveness Programme |
| MMS | Multimedia Messaging Service |
| NEC | New Entrepreneurs Creation Project |
| NECTEC | National Electronics and Computer Technology Centre |

| | |
|--------------|--|
| NESDB | National Economic and Social Development Board |
| NITC | National Information Technology Committee |
| NIX | National Internet Exchange |
| NRCT | National Research Council of Thailand |
| NRI | Network Readiness Index |
| NSO | National Statistical Organisation |
| NSTDA | National Science and Technology Development Agency |
| NTC | National Telecommunication Commission |
| OSMEP | Office of Small and Medium Enterprises Promotion |
| OTOP | One Tambol (District) One Product |
| PCA | Product and Company Attributes |
| PCBA | Printed Circuit Board Assembly |
| PEOU | Perceived Ease of Use |
| PR | Perceived Risk |
| PU | Perceived Usefulness |
| PWB | Printed Wiring Board |
| SD | Standard Deviation |
| Sig. | Significance |
| SIPA | Software Industry Promotion Agency |
| SME | Small and Medium Enterprise |
| SMEs | Small and Medium Enterprises |
| SMS | Short Message Service |
| SPSS | Statistical Package for the Social Sciences |
| TAM | Technology Acceptance Model |
| TAM | Thailand Animation and Multimedia Fair |
| TF | Training Fund Project |
| TGC | Thai Game Cluster |
| TGDX | ThaiGameDev.com |
| TRA | Theory of Reasoned Action |
| TPB | Theory of Planned Behaviour |
| UIP | Unique Internet Protocol |
| VC | Venture Capital Fund |
| VoIP | Voice-over Internet Protocol |
| VSAT | Small Aperture Terminal |
| WAP | Wireless Application protocol |