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

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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 ($\vec{D}_1 - \vec{D}_{62}$). The fifth factor, customer behaviour, influences the ECT adoption by the SMEs. The discriminant analysis produced 33 equations for proving the influence ($\vec{D}_{63} - \vec{D}_{95}$).

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.
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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.

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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.

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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.

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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.


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.
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<tbody>
<tr>
<td>AB</td>
<td>Attitude towards Performing Behaviour</td>
</tr>
<tr>
<td>ADSL</td>
<td>Asymmetric Digital Subscriber Line</td>
</tr>
<tr>
<td>AFP</td>
<td>Agence France-Presse</td>
</tr>
<tr>
<td>Animex</td>
<td>Animation Exchange Network</td>
</tr>
<tr>
<td>AT</td>
<td>Attitude towards Using</td>
</tr>
<tr>
<td>BI</td>
<td>Behavioural Intention to Use</td>
</tr>
<tr>
<td>B2B</td>
<td>Business to Business</td>
</tr>
<tr>
<td>B2C</td>
<td>Business to Customer</td>
</tr>
<tr>
<td>B2G</td>
<td>Business to Government</td>
</tr>
<tr>
<td>BDCC</td>
<td>Bangkok Digital Content Centre</td>
</tr>
<tr>
<td>BHT</td>
<td>Baht</td>
</tr>
<tr>
<td>BOI</td>
<td>Board of Investment</td>
</tr>
<tr>
<td>CAT</td>
<td>Communication Authority of Thailand</td>
</tr>
<tr>
<td>CE</td>
<td>Customer Experience</td>
</tr>
<tr>
<td>CEC</td>
<td>Centre for Electronic Commerce</td>
</tr>
<tr>
<td>CF</td>
<td>Consultancy Fund Project</td>
</tr>
<tr>
<td>CIT</td>
<td>Communication and Information technology</td>
</tr>
<tr>
<td>COO</td>
<td>Country-of-Origin</td>
</tr>
<tr>
<td>CPM</td>
<td>Cost per Thousand Impression</td>
</tr>
<tr>
<td>CRM</td>
<td>Customer Relationship Management</td>
</tr>
<tr>
<td>Df</td>
<td>degree of freedom</td>
</tr>
<tr>
<td>EC</td>
<td>Electronic Commerce</td>
</tr>
<tr>
<td>ECRC</td>
<td>Electronic Commerce Research Centre</td>
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<tr>
<td>ECT</td>
<td>Electronic Commerce Technology</td>
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<tr>
<td>EOU</td>
<td>Ease of Use</td>
</tr>
<tr>
<td>FTA</td>
<td>Free Trade Agreement</td>
</tr>
<tr>
<td>Gbps</td>
<td>Gigabyte per second</td>
</tr>
<tr>
<td>GDP</td>
<td>Growth Domestic Products</td>
</tr>
<tr>
<td>H</td>
<td>Hypothesis</td>
</tr>
<tr>
<td>HTTP</td>
<td>Hypertext Transfer Protocol</td>
</tr>
<tr>
<td>IGDA</td>
<td>International Game Developer Association</td>
</tr>
<tr>
<td>IIG</td>
<td>International Internet gateway</td>
</tr>
<tr>
<td>IM</td>
<td>Instant Messaging</td>
</tr>
<tr>
<td>IMD</td>
<td>International Institute for Management Development</td>
</tr>
<tr>
<td>ISP</td>
<td>Internet Service Provider</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>IT2010</td>
<td>Thailand Vision towards a Knowledge-Based Economy</td>
</tr>
<tr>
<td>IVR</td>
<td>Interactive Voice Response</td>
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<tr>
<td>KBE</td>
<td>Knowledge-Based Economy</td>
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<tr>
<td>Mbps</td>
<td>Megabyte per second</td>
</tr>
<tr>
<td>MDICP</td>
<td>Manufacturing Development to Improve Competitiveness Programme</td>
</tr>
<tr>
<td>MMS</td>
<td>Multimedia Messaging Service</td>
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<tr>
<td>NEC</td>
<td>New Entrepreneurs Creation Project</td>
</tr>
<tr>
<td>NECTEC</td>
<td>National Electronics and Computer Technology Centre</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>NESDB</td>
<td>National Economic and Social Development Board</td>
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<tr>
<td>NITC</td>
<td>National Information Technology Committee</td>
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<td>NIX</td>
<td>National Internet Exchange</td>
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<tr>
<td>NRCT</td>
<td>National Research Council of Thailand</td>
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<tr>
<td>NRI</td>
<td>Network Readiness Index</td>
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<tr>
<td>NSO</td>
<td>National Statistical Organisation</td>
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<tr>
<td>NSTDA</td>
<td>National Science and Technology Development Agency</td>
</tr>
<tr>
<td>NTC</td>
<td>National Telecommunication Commission</td>
</tr>
<tr>
<td>OSMEP</td>
<td>Office of Small and Medium Enterprises Promotion</td>
</tr>
<tr>
<td>OTOP</td>
<td>One Tambol (District) One Product</td>
</tr>
<tr>
<td>PCA</td>
<td>Product and Company Attributes</td>
</tr>
<tr>
<td>PCBA</td>
<td>Printed Circuit Board Assembly</td>
</tr>
<tr>
<td>PEOU</td>
<td>Perceived Ease of Use</td>
</tr>
<tr>
<td>PR</td>
<td>Perceived Risk</td>
</tr>
<tr>
<td>PU</td>
<td>Perceived Usefulness</td>
</tr>
<tr>
<td>PWB</td>
<td>Printed Wiring Board</td>
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<tr>
<td>SD</td>
<td>Standard Deviation</td>
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<td>Sig.</td>
<td>Significance</td>
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<tr>
<td>SIPA</td>
<td>Software Industry Promotion Agency</td>
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<tr>
<td>SME</td>
<td>Small and Medium Enterprise</td>
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<td>SMEs</td>
<td>Small and Medium Enterprises</td>
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<tr>
<td>SMS</td>
<td>Short Message Service</td>
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<tr>
<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
</tr>
<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
</tr>
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<td>TAM</td>
<td>Thailand Animation and Multimedia Fair</td>
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<td>TF</td>
<td>Training Fund Project</td>
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<td>TGC</td>
<td>Thai Game Cluster</td>
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<td>ThaiGameDev.com</td>
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<tr>
<td>TRA</td>
<td>Theory of Reasoned Action</td>
</tr>
<tr>
<td>TPB</td>
<td>Theory of Planned Behaviour</td>
</tr>
<tr>
<td>UIP</td>
<td>Unique Internet Protocol</td>
</tr>
<tr>
<td>VC</td>
<td>Venture Capital Fund</td>
</tr>
<tr>
<td>VoIP</td>
<td>Voice-over Internet Protocol</td>
</tr>
<tr>
<td>VSAT</td>
<td>Small Aperture Terminal</td>
</tr>
<tr>
<td>WAP</td>
<td>Wireless Application protocol</td>
</tr>
</tbody>
</table>