THE EFFECT OF PERCEIVED TRUST, PERCEIVED SECURITY AND ATTITUDE ON ONLINE PURCHASE INTENTION IN MALAYSIAN PUBLIC UNIVERSITIES

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To Amin

for his patience, support, love, and for enduring the ups and downs during the
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ABSTRACT

The popularity of online shopping in electronic commerce (e-commerce) is significantly tempered with concerns over perceived trust and perceived security in online purchasing. Lack of trust and security issue cause the online users to avoid participating in online purchasing and instead they use the online environment more for non-shopping activities more. Despite the increased awareness of trust and security issues, their antecedents in online purchase intentions have not been adequately examined. This study proposes a conceptual model to evaluate the effects of perceived trust, perceived security, attitude and their antecedents on online purchase intention. A quantitative methodology is used, and questionnaires were sent to students in six public universities in the Klang Valley of Malaysia. A total of 438 Malaysian students participated in this online survey. Structural Equation Modeling was used to evaluate the proposed model. The findings show that attitude, perceived trust and perceived security have a significant direct effect on online purchase intention. Customers' attitude towards online purchasing is the most important factor in predicting online purchase intention. On the other hand, when the website is perceived as secure and trustworthy the intention to do online purchasing will increase. In addition, factors such as reputation, information quality, third party endorsement and familiarity are found to be the antecedents of perceived trust while factors such as controllability, reputation and familiarity are exhibited as antecedents of perceived security. Moreover, perceived ease of use and perceived security are two antecedents of attitude. Attitude mediates the effect of perceived security on online purchase intention partially. Hence, this study concludes that online vendors and online shop managers should give particular attention to online customers' attitude towards online purchasing, their perception of trust, security and their antecedents, for having more potential online customers and increasing intention to do online purchasing.

ABSTRAK

Populariti pembelian dalam talian melalui perdagangan elektronik (e-perdagangan) amat dipengaruhi oleh kepercayaan anggapan dan keselamatan anggapan dalam urusan pembelian dalam talian. Kurangnya kepercayaan dan isu keselamatan menyebabkan pembeli dalam talian tidak mahu membeli dalam talian. Sebaliknya, mereka lebih banyak menggunakan kaedah dalam talian bagi urusan selain dari aktiviti pembelian. Walaupun kepercayaan dan kesedaran terhadap isu keselamatan sudah meningkat, antesedennya dalam kemahuan membeli dalam talian belum diteliti secukupnya. Kajian ini mencadangkan sebuah model konseptual untuk menilai kesan kepercayaan anggapan, keselamatan anggapan, sikap, dan antesedennya terhadap kemahuan untuk membeli dalam talian. Metodologi kuantitatif digunakan, dan borang kaji selidik dihantar kepada siswazah di enam buah universiti awam di Lembah Kelang, Malaysia. 438 orang pelajar warganegara Malaysia terlibat dalam kaji selidik dalam talian ini. Pemodelan Persamaan Struktur digunakan untuk menilai model yang diusulkan. Dapatan menunjukkan bahawa sikap, kepercayaan anggapan, dan keselamatan anggapan mempunyai kesan langsung yang signifikan terhadap kemahuan untuk membeli dalam talian. Sikap pelanggan terhadap pembelian dalam talian ialah faktor terpenting yang meramalkan kemahuan untuk membeli dalam talian. Sebaliknya, apabila laman web berkenaan dianggap sebagai selamat dan boleh dipercayai, kemahuan untuk membeli dalam talian meningkat. Selain itu, faktor seperti reputasi, kualiti maklumat, sokongan pihak ketiga, dan biasanya didapati sebagai anteseden bagi kepercayaan anggapan. Faktor seperti kebolehkawalan, reputasi, dan kebiasaan didapati sebagai anteseden bagi keselamatan anggapan. Selanjutnya, kemudahgunaan anggapan dan keselamatan anggapan merupakan dua anteseden bagi sikap. Sikap menjadi pengantara kesan keselamatan anggapan terhadap kemahuan untuk membeli dalam talian. Oleh itu, kajian ini menyimpulkan bahawa penjual dalam talian dan pengurus jualan dalam talian seharusnya memberikan perhatian khusus kepada sikap pembeli dalam talian terhadap pembelian dalam talian, persepsi mereka terhadap kepercayaan, keselamatan, dan antesedennya bagi mendapatkan lebih banyak pelanggan dalam talian dan bagi meningkatkan kemahuan mereka untuk membeli dalam talian.

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LIST OF ABBREVIATIONS

AGFI	-	Adjusted Goodness of Fit Index
AT	-	Attitude
AMOS	-	Analysis of MOment Structures
AVE	-	Average Variance Extracted
B2B	-	Business-to-Business
B2C	-	Business-to-Consumer
C2B	-	Consumer-to-Business
C2C	-	Consumer-to-Consumer
COA	-	Controllability
FAM	-	Familiarity
GFI	-	Goodness-of-Fit Index
GOF	-	Goodness-of-Fit
HTTPS	-	Hyper Text Transfer Protocol Secure
KN	-	Knowledge
MI	-	Modification Index
MM	-	Motivational Model (MM),
IT	-	Information Technology
IS	-	Information Systems
KMO	-	Kaiser-Meyer-Olkin
REP	-	Reputation
RMSEA	-	Root-Mean-Square Error of Approximation
SEA	-	South East Asia
SCT	-	Social Cognitive Theory
TPE	-	Third Party Endorsement
UTM	-	Universiti Teknologi Malaysia
UTAUT	-	Unified Theory of Acceptance and Use of Technology

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CHAPTER 1

INTRODUCTION

1.1   Overview

The rapid diffusion of Internet technology has facilitated the development and universal application of electronic commerce (e-commerce). It has transformed traditional business and customer practices and provided extensive opportunities in the promotion and sale of products. Internet first began to be used for commercial purposes in the 1990s. It was also the phenomenon of personal computers and access to the World Wide Web (WWW) began to grow. The rapid development of the WWW network, e-commerce software and peer business competition resulted in the emergence of large numbers of dot-com and Internet starts-ups. According to the 2014 report by Internet Service Consortium (ISC), there were over one milliard Internet domains by January 2014.

The use of the Internet as a purchasing tool is one of the issues in e-commerce which has demonstrated a high growth rate. Nielsen (2014), a leading global information and measurement company, reported that there were over 875 million customers involved in online shopping in 2008. South Korea's 99% online customer rate represented the highest percentage of online users followed by 97% for the UK, Germany, and Japan.

The countries of Southeast Asia (SEA) generally have young populations and can be considered as a conducive environment for the growth of e-commerce (Ericsson Mobility Report, 2014). As noted in the 2014 Internet World Statistics report, the large countries in SEA such as Indonesia, Singapore, Malaysia, Thailand,

Vietnam, and the Philippines have high potential to be an e-commerce market for online shopping. Table 1.1 depicts the population breakdown of the SEA countries, internet users, and penetration rates. The population of these countries is 545 million which is 8% of the world's total, and internet usage is growing rapidly in these countries.

Table 1.1: Internet Users and Penetration in SEA (Internt Worlds Stata (2014)

Country	Population (M)	Internet Users (M)	Penetration
Singapore	5	4	80%
Malaysia	30	20	67.0%
Thailand	68	20	29.7%
Vietnam	93	41	43.9%
Indonesia	250	71	28.1%
Philippines	108	44	41.1%
Total	554	200	-

Malaysia with 20 million online users is fourth after Indonesia, Vietnam and the Philippines in having the most online users in SEA countries. However, Malaysia's Internet growth rate is considered as the fastest among SEA countries after Singapore. According to a report by the World Bank (2012) Internet use and penetration in Singapore, Malaysia and Vietnam is growing faster than the world average.

In 2004 the number of Internet subscribers in Malaysia stood at 2.9 million, increasing to 3.5 million in 2005 and reaching almost 5 million in 2006 (Statas, 2012). This is most apparent in retail businesses which have invested heavily on online websites to reach a wider market both locally and abroad. An excellent example is Groupon Malaysia, a major online retailer, which has grown remarkably since its launch in 2012. Despite such success stories, there are still many firms especially small companies which are hesitant about going online in Malaysia (Nielsen, 2014).

As e-commerce sales continue to increase, the need for consumer protection and security becomes more important (The European Consumer Centres' Network, 2013) as there will be greater risk of unscrupulous actors and scammers taking advantage of them. As noted in the Internet Security Threat Report (ISTR, 2014) the number of such security threats doubled from 15% to 30% in 2013 compared to 2012. According to annual report by CyberSecurity Malaysia (2011) the numbers of security threats are increasing from 2001 to 2011 significantly and it is expected that reaches to greater number in next years. Figure 1.1 illustrates the information of this report.
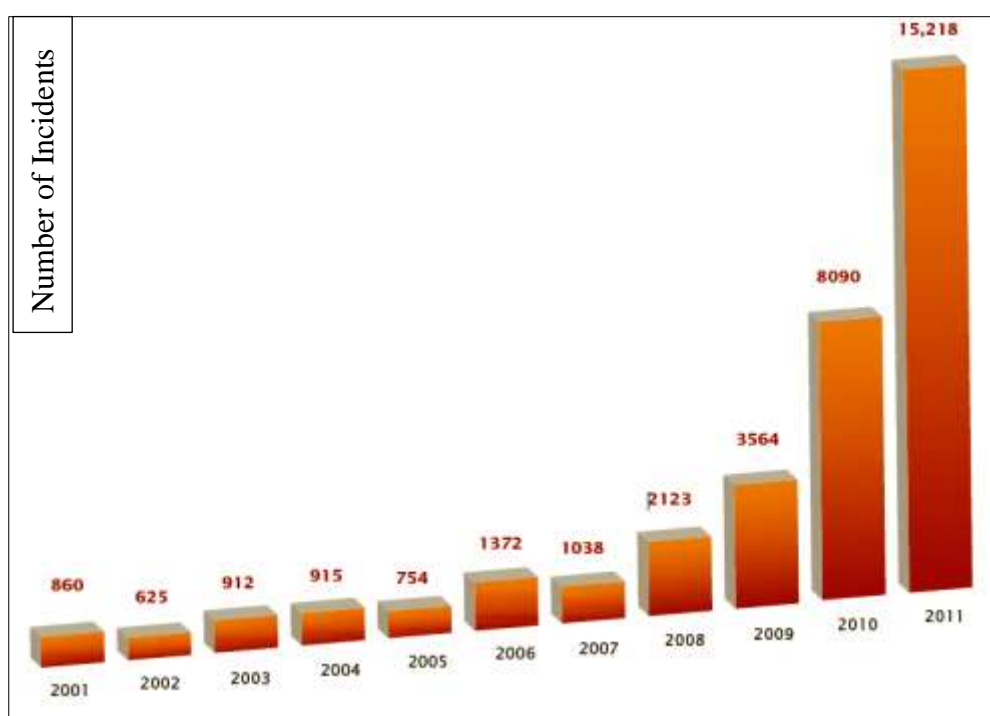
Figure 1.1 Cyber Security Incidents (CyberSecurity Malaysia, 2011)

Security concerns are among the major obstacles in online purchasing (Miyazaki and Fernandez, 2005). As noted in the report by Truste (2013) 92% of United States online customers are concern about security issue. Since online transaction systems are used to pay for online purchases, customers have to be alert to the level of security of online outlets to protect themselves (Comegys *et al.*, 2009). Nielsen (2014) reports that the security issue is a major concern of online customers in SEA, Filipinos are the most cautious with online payment (67%), followed by

Thais (62%), Indonesians (60%), Vietnamese (55%), Malaysians (52%) and Singaporeans (41%), compared to 49 percent of consumers globally. The effect of perceived security, or the lack of it, on online purchase intentions is supported by The Malaysian Insider (2011) report which notes that four (4) out of ten (10) Malaysian online shoppers believe that security measures on credit/debit card online transactions were inadequate, six (6) felt they were taking a risk each time they shopped using a card, and seven (7) would buy through online more if security was tightened. Tsai and Yeh (2010) noted that security on a website is strongly related to online purchase intention. As such, an online vendor who is perceived as secure is presumed to be more trusted and capable to attract larger numbers of online customers.

On the other hand, Grabner-Krauter (2002) observed that lack of trust is the most significant long-term barrier for greater realization of e-commerce potential to consumers, and the success or failure of many online companies revolve around the issue of trust (Urban *et al.*, 2000). Numerous studies have illustrated its importance as a major factor in online purchasing or attitudes towards online purchasing (Jarvenpaa *et al.*, 2000; Heijden *et al.*, 2003; Chen and Barnes, 2007; Thompson and Liu, 2007; Kim *et al.*, 2008; Ha and Stoel, 2009; Kim, 2012). Nielsen (2014) reported that trust is among the main reasons why Malaysians avoid online shopping.

In spite of perceived security and trust being two crucial factors influencing online purchase intentions (Halaweh, 2012), there is still lack of empirical explanation that focus on them. Further research in this area is needed in recognizing the antecedents of trust and security from the online customers' perspective and in determining their decision to purchase (Appari and Johnson, 2010). It is expected that a better understanding of antecedents of perceived security and trust and their relationships can help formulate better business strategies for online vendors in regard to the designing and management of websites.

This chapter first provides an overview of this study. It proceeds with the background of the problem leading to the formulation of the problem statement. The research questions and objectives are presented in next section. Next, it describe the

research scope and highlights the significance of the study. The chapter ends with the organization of this thesis.

1.2   Background of Problem

Online shopping in Malaysia is progressively becoming more attractive with greater penetration of the Internet (International Data Corporation, 2014) and is accelerated with the growing use of smartphones and mobile Internet, the growth in ownership of connected devices coupled with government initiatives such as partial reimbursement of smartphone acquisition costs for young adults is laying the foundation for a significant expansion in online shopping in Malaysia. The Internet penetration growth rate has opened up opportunities and interests for Malaysian businesses to have an online presence as part of their marketing strategy (Ystats, 2014).

The Malaysian government plays a significant role in promoting Internet /penetration. In order to accelerate the uptake of e-commerce and enhance Malaysia's competitiveness, the government is taking steps to provide the basic infrastructure as well as a favorable environment by laying down the necessary regulatory, physical, technical and institutional systems to facilitate smoother electronic communications and transactions (Research and Market, 2014). Additionally, the government is also looking into plans to reduce the cost of adopting e-commerce for all parties including consumers, merchants, and banks. Malaysian's Vision 2020 is a national agenda that sets out specific goals and objectives for long term development. It hinges on growing a technology-savvy workforce to become a fully developed, mature and knowledge-rich society by 2020 (Kaliannan and Awang, 2008). Different researches have been conducted on the e-commerce and user acceptance in Malaysia such as Harn *et al.* (2006), Chua *et al.* (2006), Mohd Suki *et al.* (2008) and Shah Alam *et al.* (2011).

A report by the Department of Statistics Malaysia (2014) shows that about 60% of individuals in Malaysia use the Internet at least once a day. On the other

hand, the median age for both female and male Malaysians is around 25 to 26 years indicating that online purchasing can catch on more rapidly in the country. In addition, this report shows that Malaysian online users mostly use Internet for posting information or instant messages (69.1%). Although, 65.4% of online users get the information on goods and services, but online purchasing is not mentioned as the six first common activities among Malaysian online users.

As reported by Nielsen (2014) travel services are the most common online purchases in Southeast Asia, along with tickets for movies, live performances, exhibitions and sports events. More than 6 in 10 (67%) of Malaysian consumers plan to purchase flight tickets online and 62% to make hotel and tour reservation while 58% would go online to purchase tickets for movies, performances and exhibitions. In seeking to purchase items online, Malaysians are more likely to go online to browse. Over 6 of 10 Malaysians say they often read online reviews prior to purchasing a product (68%) as well as viewing the products online before purchasing them in the stores (64%). Notably, 62% of Malaysian online customers view the Internet as a means for checking out products to inform their offline purchases.

As reported by Cyber99, the help center of CyberSecurity Malaysia (2014) online fraud is the most reported cyber security in Malaysia, and the number is also increasing every year. The total reported fraud incidents in 2014 were 3,190 (319 incidents per month). In 2013, this monthly reported incident was 312.15, whereas in 2012 234.8 incidents per month were reported. Security as the main concern for avoiding of online purchasing as cited by researchers such as Salisbury *et al.* (2001), Turner *et al.* (2001), Halaweh and Fidler (2008), Yulihasri *et al.* (2011) and Shah Alam *et al.* (2011). There are studies on the effects of perceived trust in online shopping. According to Kim *et al.* (2008), the lack of trust among online customers affects the use of the Internet in purchasing goods and services, and this finding is supported by Hsiao *et al.* (2010). The issue of perceived trust in online purchase intentions in Malaysia has been studied by Haque *et al.* (2006), Delafrooz (2010) and Chowdhury and Ahmad (2012) .

Despite the importance of trust and security in using the internet, studies investigating both the perceived trust and perceived security from customer's point of view are lacking. More specifically, the interrelationship between different antecedents of trust and security have not been fully examined and understood by researchers. Kim *et al.* (2008), Hsiao *et al.* (2010) and Hsu *et al.* (2013) had evaluated antecedents of perceived trust in isolation. However, previous studies have not addressed the antecedents of both perceived trust and perceived security on online purchase environment. Only several research had attempt to study the antecedent of perceived security in online purchasing context like studies from Huang *et al.* (2011) and Shah *et al.* (2014). Turner *et al.* (2001) and Halaweh (2012) studied antecedents of perceived security from qualitative method. Thus, evaluating antecedents of both perceived trust and perceived security using quantitative methods will further contribute to the online shopping context.

The majority of research related to e-commerce has been conducted in developed countries like United States. It shows that more studies related to online behavior issues in developing countries are necessary (Peikari, 2010). Despite the high potential for online usage in Malaysia, the adoption of online shopping is still in its early stages (Delafrooz *et al.*, 2011; Shah *et al.*, 2014). As stated by Alam and Yasin (2010), countries that are in the early stage of online shopping activities need to take into consideration of the cyber landscape that is the security aspects and the trustworthiness of the online shopping websites.

1.3   Problem Statement

Using online shopping can foster greater competition for online vendors and it is important for them to be aware of the key success factors for the intention to online purchase. Studies revealed that perceived trust on a website is an essential factor affecting online purchase intentions (Heijden *et al.* (2003); Hsiao *et al.* (2010); Renny *et al.* (2013). Other studies by Salisbury *et al.* (2001), Halaweh (2012) and Shah *et al.* (2014) focus on perceived security by online users is the main key success of online customers.

With the increasing growth of online shopping websites, online users' awareness on trust and security increases accordingly (Alam and Yasin, 2010). Thaw *et al.* (2009); Yulihasri *et al.* (2011); Shah *et al.* (2014) advocates that security is a concern, whereas Ling *et al.* (2010) and Zendehdel *et al.* (2011) concluded that lack of trust as the main reason for avoiding online purchasing among Malaysian online users. Therefore, perceived trust and perceived security maybe are determinants that effect on the future growth of online shopping in Malaysia (Harn *et al.*, 2006). In other word, people mostly avoid online purchasing because they cannot trust to online environment and they feel that security is not guaranteed during online purchasing.

An examination of past research shows that there is a lack of studies that explore both perceived trust and perceived security concurrently. To address this gap it is necessary to identify the antecedents that influence perceived trust and perceived security. Antecedents of trust have examined in studies by Jarvenpaa *et al.* (2000), Kim *et al.* (2008), and Hsu *et al.* (2013). In addition, there are limited studies in identifying antecedents of security such as Turner *et al.* (2001) and Shah *et al.* (2014). Nonetheless, it is still imperative to conduct research and examine antecedents of perceived trust and perceived security for online intention.

Thus, there is a need to evaluate the effects of perceived trust, perceived security and their antecedents on online purchase intentions. This study intends to identify antecedents of perceived trust and perceived security in Malaysia based on the perspectives of online users. Finally, a conceptual model for online purchase intentions in terms of perceived trust and perceived security is proposed and evaluated.

1.4   Research Questions

To investigate online purchase intention in terms of perceived trust and perceived security, this research seeks to answer the following research questions:

i.   What are the antecedents of perceived trust and perceived security effecting online purchase intention in e-commerce?

ii.   How to propose a conceptual model for online purchase intentions in terms of perceived trust and perceived security in e-commerce?

iii.   How to evaluate the mediation effects of the antecedents of online purchase intention?

iv.   How to evaluate the proposed model for online purchase intentions in terms of perceived trust and perceived security in e-commerce?

1.5   Research Objectives

The aim of this study is to propose a conceptual model for online purchase intention in terms of perceived trust and perceived security in e-commerce. To achieve this, the following objectives must be satisfied:

i.   To identify the antecedents of perceived trust and perceived security effecting online purchase intentions in e-commerce.

ii.   To propose a conceptual model for online purchase intentions in term of perceived trust and perceived security in e-commerce.

iii.   To evaluate the mediation effects of the antecedents of online purchase intention.

iv.   To evaluate the proposed conceptual model for online purchase intentions in term of perceived trust and perceived security in e-commerce.

1.6   Research Scope

The scope of this research is confined to perceived trust and perceived security for online purchase intentions in e-commerce. As students generally have access to the Internet and most are familiar with online purchasing (Sabri *et al.* (2010), Malaysian students are chosen as the unit of analysis of this study. According to the Ministry of Education Malaysia (2012), there are 20 public universities with about 550,000 students in the country. This study will not have sufficient resources at its disposal to cover such a high number of students and will select a sample of public university students in the Klang Valley.

1.7   Significance of the Study

This research can be justified in terms of theoretical, methodological, and practical significance. The main significance of this study is the evaluation of a proposed conceptual model based on factors that affect online purchase intentions by focusing on perceived trust and perceived security and their antecedents. A review of the literature shows that there is a lack of comprehensive research dealing directly with antecedents of perceived trust and perceived security in online purchase intentions in a single model. Although some studies have evaluated them in online purchasing such as Kim *et al.* (2008), testing antecedents of trust from Malaysian online customers is one of the contributions of this study. On the other hand, the existing literature shows that there is a paucity of studies related to evaluating antecedents of perceived security for online purchasing. Technology Acceptance Model (TAM) is the base theory used in the design of the proposed model for this study. TAM is used most frequently by researchers in online purchasing studies such as Salisbury *et al.* (2001), Heijden *et al.* (2003), Ha and Stoel (2009) and Renny et al. (2013). Ramayah and Ignatius (2005) used TAM to explain Internet shopping among

Malaysian public, they argued that TAM will yield different results for users of online banking and non-users. This study examines factors of TAM in a conceptual model for Malaysian online customers such as attitude, perceived ease of use and usefulness. The effects of TAM factors and perceived trust and perceived security on online purchase intention are tested in the proposed conceptual model while it evaluates antecedents of perceived trust and also perceived security.

From the methodological contribution aspect, this study focuses on quantitative analysis. However, there is lack of quantitative study on online purchase intention studies by considering perceived trust and perceived security and their antecedents. Previous quantitative researchers such as Harn *et al.* (2006) and Haque *et al.* (2006) only considered small sample sizes in considering perceived trust only. Using the quantitative method for evaluating antecedents of perceived security is lacking. Therefore, this study focuses on quantitative analysis to evaluate antecedents of perceived trust and perceived security in an online purchasing environment, and from customer point of view.

This study provides an academic review to elicit factors that affect customers' perception of trust and security in an online purchasing process. As a practical contribution, this study provides useful information on perceived trust, perceived security for online customers to assist them in improving their online purchasing knowledge. On the other hand, online vendors and online businesses may consider the result of this study in order to offer a more trustworthiness and secure website and by considering customer's attitude toward online purchasing.

In addition, the findings of this study can be beneficial to the Malaysian government especially the Malaysian Communications and Multimedia Commission (MCMC) which implements and promotes national policy objectives for the communications and multimedia sector. The results of this study can also be applied in formulating and implementing laws relating to the communications and multimedia sector. Taking into account the criticality of perceived trust and perceived security in Malaysian society this study can be useful in encouraging and

promoting the development of online purchasing arrangements among consumers in the country.

1.8   Operational Definitions

This research will use the terms that are defined as follows:

Electronic commerce: is a process of selling and buying products, services and information via Internet (Turban et al., 2006). Laudon and Traver (2006) define e-commerce as any use of information and communications technology by a business that helps to improve its interactions with customers or suppliers in which it shares business information and relationships, conduct business transactions, and maintains its business by means of telecommunications networks.

Online purchase intention: refers to consumers' psychological state in terms of making purchases on the Internet. Hence, the online purchase intention considered as the strength of a consumer's intention to execute a purchasing behaviour via the Internet (Pavlou, 2003).

Perceived trust: is the willingness of consumers to accept the possibility of loss during an Internet shopping process, and is based on the expectation that online vendors will be able to deliver on their promises (Gefen and Straub, 2000). This definition shows trust as a kind of behavioural intention, Which is an important factor in buyer-seller interactions and online purchase objectives in electronic commerce (Jarvenpaa *et al.*, 2000).

Perceived Security: is the degree to which a person believes that the online vendor or website is secure, and is of considerable importance in matters such as transferring information like credit card details (Salisbury *et al.*, 2001). It can be defined as the users' perception of protection of security threats and control of the personal information in an online environment (Lallmahamood, 2007).

Attitude: is a person's evaluation of a specified behaviour involving an object or an outcome (Fishben and Ajzen, 1975). Davis (1989) mentions attitude toward a system as a major determinant factor for understanding whether the user will actually use or reject the system.

1.9   Organization of the Thesis

This thesis is organized in six chapters. The first chapter consists of an overview of the study by providing the background and describes the important issues motivating this research. It includes the problem statement, research questions, and objectives of this study, and concludes with the scope of the research, significance of study and operational definitions.

The second chapter presents the relevant literature review. It starts with the definition of e-commerce, relationship and defines what constitutes online purchase intention. The theories related to behavioural intention are then described. In addition, related online purchasing researches in Malaysia are explained. Moreover, factors that affect online purchase intentions and list of antecedents of perceived trust and perceived security based on associated studies are presented. All models relating to online purchase intentions which are considered relevant to perceived trust or security are reviewed. Finally, the existing gap of research is described.

Chapter three presents the model development where a conceptual model is proposed for online purchase intentions in terms of trust and security. Current models on online purchase intention which are used as a base for the model in this study are described. It followed by proposing a conceptual model in terms of perceived trust and perceived security and their antecedents. The chapter ends with the proposed model hypotheses.

Chapter four explains the research methodology utilized. It includes the research design and the population and sampling method. This is followed by the data collection procedure utilized, questionnaire design, and a check on the validity

of the instrument and pilot study. The method of data analysis is explained at the end of this chapter.

Chapter five presents the data analysis including a description of the results for all variables and demography section. Structural Equation Modeling is discussed in the next section. The chapter concludes with an explanation of the mediation analysis.

Chapter six concludes the study with a discussion of the summary of the research. It includes the contributions and implications of the study and outlines its limitations as well as provides recommendations for future study.

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