

**UNDERSTANDING CONSUMER ONLINE SHOPPING BEHAVIOUR FROM
THE PERSPECTIVE OF TRANSACTION COSTS**

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DECLARATION

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STATEMENT OF ETHICAL CONDUCT

The research associated with this thesis abides by the international and Australian codes on human and animal experimentation, the guidelines by the Australian Government's Office of the Gene Technology Regulator and the rulings of the Safety, Ethics and Institutional Biosafety Committees of the University.

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ABSTRACT

Most prior empirical online shopping research studied consumer purchase behaviour and post-purchase behaviour from the perceived benefit/value perspective. However, few efforts have attempted to employ the cost concept to analyse consumers' online behaviour. Researchers in psychology, marketing, and organizational behaviour have applied the transaction cost (TC) construct to study how the TCs influence the managers' decision-making process at the organizational level. At the individual consumer level, TC consideration has become increasingly important in affecting the way consumers choose shopping channel and vendors in their daily lives. Nevertheless, little research attention has been devoted to understanding how the individual consumers' online purchase and post-purchase behaviours are affected by their perceived TCs. This study therefore represents a point of departure in that it brings in TCs to explain online behaviour at the individual online shopper level. By extending TCs from traditional shopping to online shopping, this study develops an integrative model of consumer TCs associated with shopping at an online store, based on which hypotheses regarding the salient antecedents and consequences of consumer TCs were developed.

The research was undertaken in China, in which the economy, particularly the online shopping industry, has been increasing rapidly. China has also a unique cultural and institutional setting when compared to other countries although existing research based on China is limited. This research is therefore expected to shed light on consumer TCs of online shopping within the Chinese context. Data for the study was collected using an on-street survey conducted on a face-to-face basis in one economically developed city and one economically less-developed city randomly

selected from the pool of coastal cities and inland cities of China, respectively. Hypotheses were tested using structural equation modelling (AMOS 20.0) and multiple group analysis.

Results of the study indicate that consumer TCs consisting of pre-, contemporaneous-, and post-TCs are derived from three major aspects, namely consumer-related characteristics, online store- and product-related characteristics, and online channel-related characteristics. The consumer-related characteristics, including Internet access availability, perceived Internet expertise, and online buying frequency, are found to negatively affect consumer TCs. The online store- and product- related characteristics, consisting of e-service quality and reputation of online store, can significantly lower consumer TCs. In the last category of online channel-related characteristics, the results confirm that privacy and security concerns increase consumer TCs whereas perceived convenience largely reduces consumer TCs. As for the consequences of consumer TCs, online purchase behaviour and customer loyalty are found to be directly affected by TCs.

Further, the results reveal that though TCs have direct and negative effects on customer loyalty, part of their effects is conditional on their ability to reduce customer satisfaction. That is, though lower TCs in online purchasing activities could help gain customer loyalty, such relationship is subject to the mediating effects of customer satisfaction in online shopping. Additionally, results of the study imply that as consumers' inherent attributes, consumer's risk-bearing propensity confounds the effects of TCs on customer loyalty, and perceived enjoyment of online shopping moderates the effect of TCs on online purchase behaviour. Finally, the results suggest

that the different product categories affect TCs itself as well as the effects of the antecedents on TCs. Product categories further influence the relationships between TCs and subsequent online behaviour.

This study advances the consumer behaviour literature by taking a new perspective of TC mechanisms in online consumers' decision-making. It offers deeper theoretical and empirical insights into online purchase and post-purchase behaviour by explicating the role of TCs at the individual consumer level and exploring a comprehensive set of antecedents of TCs. This study also has important practical implications. From the consumer's perspective, this research brings benefits to individual consumers by informing them about the advantages of online shopping which can reduce their time and cognitive effort expended on shopping and consequently lower their TCs of online shopping. In addition, the research findings provide online vendors with a deeper understanding on the allocation of resources and capabilities in achieving minimum consumer TCs and inducing favourable behavioural outcomes.

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PEER-REVIEWED PUBLICATIONS OF THE AUTHOR

Journal publications:

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CHAPTER1: INTRODUCTION

1.1 BACKGROUND

E-commerce is business transactions undertaken through the Internet for goods or services, including online shopping, online banking, online payment, online stocks, and online travel reservation (Reddy and Iyer 2002). It has grown rapidly since the mid-1990s (Reddy and Iyer 2002) and is an important means of conducting business (Tian and Stewart 2007). According to an estimation by Online Retail Forecast in 2012, online shoppers in the United States will spend \$327 billion in 2016, an growth of 45 per cent over 2012 and 62 per cent growth over 2011 (Mulpuru 2011). There are many reasons given for the growth of e-commerce over recent times, including for example, its size as a source of information, increasingly becoming much more user friendly and more accessible and less expensive (Bonn *et al.* 1999). Today, e-commerce has penetrated into the national economy, social services, all areas of people's lives, from the basic necessities of daily life to all industry.

Online shopping has increased rapidly over the past several decades not only in the world but also in China in particular (Clemes *et al.* 2013). In the past few years, the Internet has emerged as a vibrant marketplace for consumers and sellers of various goods and services in China (Gao and Bai 2014). According to a report published by China Electronic Commerce Research Centre (CECRC) (2014), the total online retail market (B2C and C2C) in China reached \$225 billion by June of 2014 and is expecting to reach \$368.2 billion at the end of 2014, almost doubling over 2013. Business-to-Customer (B2C) online retail sales were \$12.67 billion in 2010, \$29.46 billion in 2011, \$63.65 billion in 2012, and \$122.57 billion in

2013 (iResearch 2013). The data indicate that China's online shopping is growing and will continue to grow. Therefore, the research conducted in this area would have the potential to contribute to a better understanding of this rapidly increasing market and to online shopping in general.

Despite increased Internet usage and rapid growth of online shopping (China Internet Network Information Centre 2012), transactions via online channel still constitute a very small percentage of total China retail sales (Jin 2012). The CECRC (2014) reported that online retail sales represent only 6.8 per cent of total retail sales of commodities in 2013, which implies that even though online shopping continues to break new records every year, the popularity of offline shopping far overshadows that of online shopping (Kim *et al.* 2012a). The reasons underlying the relatively small percentage of online retail sales when compared with the offline retail sales created by the traditional shopping are not clearly understood (Kim *et al.* 2012a), thereby still requiring investigation by practitioners in the marketing field.

Furthermore, within all the e-commerce network applications, the increase rate of online shopping for physical goods usage ranks at the bottom in China (CECRC 2012). For example, in 2013, the annual growth rate of online payment ranks first, followed by travel reservation, and then followed by online stocks and online banking. The last one is online shopping. The low annual increase rate of online shopping may be caused by an insufficient grasp by online vendors of the complexity and dynamics of e-business, obstacles to web access and online banking, inadequate supply and delivery systems, and privacy and security concerns of online consumers, which have been already explored (Soopramanien and Robertson 2007, Hong and Thong 2013). Nevertheless, there might be other potential reasons from the different

perspectives that can offer a better explanation, which have not yet been fully investigated in China (Wu *et al.* 2014).

From the standpoint of online vendors, selling goods and services via the Internet that is capable of accommodating various kinds of products and services is argued to have enormous potential. However, the fact reported by online vendors is that people browse the Internet more for information than for buying online (Hoffman *et al.* 1999, Wu *et al.* 2014, Meskaran *et al.* 2013). Although online shopping is becoming an accepted way to purchase many kinds of products and services (Soopramanien and Robertson 2007), most online consumers are still “window shoppers” in that they use information gathered online to make purchases off-line (Forsythe and Shi 2003, Riquelme and Román 2014). Several authors (Ahuja *et al.* 2003, Tsai *et al.* 2011, Taddei and Contena 2013) have attributed consumers’ reluctance to purchase online to apparent barriers, i.e. credit card issues, privacy issues, service frustrations. Furnell *et al.* (2008) and Hong and Thong (2013) also highlighted that the reason more people have yet to shop online is due to a fundamental lack of faith in online privacy and security protection. It is therefore imperative for online vendors to change the current situation and improve consumers’ incentive for purchasing goods online.

In mature and highly competitive markets, the profitability of firms largely depends on customer loyalty (Chiu *et al.* 2009b). However, online vendors reveal that the Internet seems to make customer loyalty irrelevant and acknowledge that the Internet has had a detrimental impact on building and maintaining customer relationships (Chen 2007). Gupta and Kim (2007) point out that only 1 per cent of the online shoppers eventually return and make purchases from the online store where they have purchased before. Two reasons are often cited to explain why it is hard to build long term loyalty in online shopping. Firstly, online

shoppers could easily cover the globe in search of the best price. The Internet dramatically reduces consumers' search costs (Vatanasombut *et al.* 2004). Consumer choice is no longer bound by the constraints of place or access to information (Urban *et al.* 2000). Online shoppers are endowed with relative ease of access to information and lower searching costs compared to consumers in the brick-and-mortar, offline context, and as such they are more likely to switch to another service provider and show a lower level of loyalty toward a particular online vendor. Secondly, since the web is based on an open technology, websites can be easily imitated, duplicated, and even copied. Meanwhile, it is difficult for an online vendor to create differentiation in their products and pricing in the same segments because they can be quickly mimicked as well. Due to the low level of differentiation in website design, products and pricing, online vendors have been struggling to attract and retain customers.

Even though it is hard for online vendors to retain consumers, it is at the core of marketing strategies because customer loyalty can result in more purchases and higher profitability for the vendors (Reichheld *et al.* 2000, Ribbink *et al.* 2004). One estimate is that if a firm is able to increase its customer retention rate by 5 per cent, the company's overall profit can be lifted up to 95 per cent (Reichheld and Schefter 2000). Research conducted by Bain and Company (2000) simulated the long-term economics of websites in different industries and found that customer loyalty is the most important factor impacting profitability, even more so than for traditional offline companies. In fact, the business models adopted by the most successful e-companies are driven by customer retention. For example, Taobao and 360Buy, two e-commerce leaders in China, do not compromise their prices but focus instead on the delivery of a superior customer experience that will make customers come back as they know customer loyalty is the key to long-term profitability (iResearch 2013). For Taobao and

360Buy, the loyal online customers are the ones who make online retailing survive and proliferate. Online vendors are beginning to understand that this group of customers represents their profits and growth. They are motivated to find ways of retaining more customers by improving the loyalty from consumers.

To entice consumers' online purchase and make them stay loyal to the online store, most of the online vendors focus on improving consumers' transaction benefits. The transaction benefits have been defined as the customer-perceived gains during the online transaction process and are generally considered a relativistic concept (Forsythe *et al.* 2006). Researchers such as Forsythe *et al.* (2006) and Peterson *et al.*(1997) have discussed benefits of online transaction. These benefits provide the sorts of convenience that are not readily available in traditional shopping media. Consumers also derive transaction benefits from easy access, lower prices, greater merchandise variety, unique merchandise offerings, efficient and timely service delivery (Anderson and Srinivasan 2003, Chen and Teng 2013, Clemes *et al.* 2013). Although online vendors try to offer a lot of advantages to customers, most of the online vendors are losing money (China Electronic Commerce Research Centre 2014). The reason may be that superior product quality and reasonable prices alone may be not sufficient to attract and retain customers because imitators can easily come up with similar products. In this sense, these transaction benefits only partially explain the cause of purchase behaviour and customer loyalty, and others remain to be explored. Therefore, it is crucial to find out what factors eventually drive consumers' online purchase and loyalty.

Even though consumers perceive the online shopping as offering a number of benefits, the Internet tends to magnify some of the uncertainties involved with any purchase process. Consumers perceive a higher level of risk when purchasing online compared with traditional

retail formats (Lee and Tan 2003, Chiu *et al.* 2014). This is not surprising, since studies have consistently shown that consumers perceive higher risks and uncertainties in non-store shopping formats, such as mail order (Van den Poel and Leunis 1999), catalogue (Eastlick and Feinberg 1999), and direct sales (Peterson *et al.* 1989). In online shopping, Teo *et al.* (2004) argue that there is a need to look beyond the transaction benefits and to include cost-related factors incurred by consumers during the transaction process in understanding their online shopping behaviour.

Indeed, cost consideration is particularly important in online environment (Yen *et al.* 2013, Wu *et al.* 2014). In many instances, consumers may not have complete information on product, service or firm attributes to make an informed decision. In the absence of complete information, consumers would encounter the problem of information asymmetry which would constrain their decision processes. Consumer decision-making literature is rife with studies that support that consumers have limited cognitive and information processing capabilities under conditions of incomplete information, particularly in online environments. As such, their perceived uncertainties and risks of online shopping may increase, leading to an increase in their perceived costs of online shopping. Marketing research suggests that such high transaction costs (TCs) are likely to hinder purchase intention (Liang and Huang 1998, Teo and Yu 2005).

Therefore, a clear understanding of the TCs is an essential factor in driving the success of online business efforts. It is believed that the Teo *et al.*'s (2004) expanded focus on TCs can broaden the range of outcomes beyond those currently investigated and therefore provide greater implications for marketing programs. Responding to such advocacy, the current study focuses on TCs which are opposite to transaction benefits to investigate their influences on

consumers' online purchase behaviour and loyalty. The focus on cost-reduction activities would offer the online vendors a new perspective of attracting and/or retaining consumers.

In organizational operation, TCs are consistently advocated as a key factor in deciding the vertical integration of firms, contract forms and buyer-seller collaboration (Rindfleisch and Heide 1997). A buyer, be it a firm or an individual, incurs not only a purchase cost, but also a host of other costs associated with the particular transaction. TCs are an inevitable part of consumer purchase and consumption experiences (Tyagi 2004). In online environments with incomplete information, consumers may be concerned about how secure the online site is, how their personal data will be used, and whether or not the website can be trusted (Ruiz-Mafé *et al.* 2009, Luo *et al.* 2010, Hong and Cha 2013). As an illustration, consider a consumer intending purchase of a new personal computer (PC) online. Although the consumer might be aware of certain product attributes such as PC configuration, features and peripherals that he or she would like to have, there might be considerable ambiguity regarding the product's performance, reliability, and the web site from which the purchase is contemplated, further, considerable uncertainty could also stem from the online medium that does not offer a direct experience of the product as in an offline environment. In such instance, the consumer might perceive high level of uncertainties and risks of online shopping, resulting in an increase in perceived overall TCs associated with online shopping.

The advantages of online shopping, such as convenience, better price, variety of products, would alleviate some of the concerns regarding online shopping (Kim and Kim 2004, Clemes *et al.* 2013), thereby reducing the costs associated with online shopping. These costs and their effects on consumers' psyche may influence consumers' choice of online store, their attitude, intention, final purchasing decision and future purchase behaviour toward an online

store. With low TCs, consumers would choose an online vendor for transactions; with low TCs, consumers would display their loyalty to an online vendor, spend more, generate large transactions, buy more products, pay a premium price, and refer more people and bring in more business. By lowering TCs perceived by consumers, online vendors could attract people to their sites, convert visitors into purchasers, create barriers to switching for customers, build long-term relationships with customers in ways that cannot easily be replicated by competitors, and ultimately, increase market share and earn real profits in the rough-and-tumble world of online marketing. Therefore, TC reduction can be positioned as a powerful marketing tool available to the online vendors (Chircu and Mahajan 2006). Chircu and Mahajan (2006) also state that lowering TCs perceived by online consumers is a strategic issue that should be of interest to strategy researchers and practitioners because of the positive economic consequences that it has for businesses.

1.2 RESEARCH GAPS

The extant TC studies have emphasized the significance of TCs in influencing organisational structures and strategies (Barney and Hesterly 2006, Steenkamp and Geyskens 2012, Verbeke and Kano 2013). This is because TCs play an important role in predicting organizational structure, achieving sustainable competitive advantages, and managing inter-organizational relationship (Rindfleisch and Heide 1997, Williamson and Ghani 2012). A closer look at the TC literature shows that most studies have focused on the firm level rather than individual consumer level (Pitt and Foreman 1999). Although there is a growing call for a paradigm shift in marketing from market focus to customer focus, TCs from the customer perspective has received far less attention. Generally, consumers not only look for value superiority in products and services, but also affordable and reasonable costs to obtain the value (Kleijnen

et al. 2007). Surprisingly, costs perceived by consumers during the transaction have largely been neglected by managers although the impact of consumer perceived TCs on business success is substantial. From an academic point of view, understanding how perceived TCs of online shopping affect consumers' online behaviour is an important research topic that needs further theoretical and empirical attention (Liang and Huang 1998).

Within the limited literature on consumer TCs, researchers (Shim *et al.* 2001, Lam *et al.* 2004) conceptualize the different types of TCs consumers incur, such as search cost, switching cost, learn cost, psychological cost, time cost, and information asymmetry cost, etc. The conceptualizations of TCs for consumers are not consistent across studies. Furthermore, as the online environment is complicated and e-commerce has notable differences compared to traditional marketplace, the TCs occurred in traditional markets may not be the same as those of online markets. However, prior studies in online shopping have provided few clues in relation to the TCs faced by online consumers. In fact, online consumer TC research is beset by conflicting conceptualizations of consumer TCs (Liang and Huang 1998, Teo and Yu 2005, Yen *et al.* 2013, Wu *et al.* 2014). As such, serious issues are raised with regard to what constitute consumer TCs in online shopping contexts. This makes it imperative to conduct an in-depth study on the components of TCs facing consumers in online environment.

Past research has different ways of investigating factors which impact online purchase behaviour, and there is no consensus on the theoretical models employed to describe and predict online purchase behaviour (Li and Zhang 2002). The consumer behaviour literature tends to focus largely on psychological factors. Although this approach has provided interesting insights, little attention has been directed at how economic factors, particularly, the costs faced by consumers in transactions explain consumer's actual online purchase

behaviour. In addition, much of the past literature centres on the impact of the benefits for consumers in transactions (Kim 2012). Surprisingly, prior studies have not applied the concept of TCs to examinations of actual online purchase behaviour; but TCs may provide a useful context in which to identify and explain criteria for consumer's online purchase. This area represents a key opportunity for explaining online actual purchase behaviour based on the analyses of TCs.

The importance of customer loyalty is well documented in the consumer behaviour literature and customer loyalty toward an online vendor is recognized as a significant factor in retaining current consumer (Reichheld *et al.* 2000, Urban *et al.* 2000). In an online context, consumers can easily switch to another service provider since they can access to information easily and have lower searching costs, etc. compared to consumers in the brick-and-mortar offline context. Thus, it is imperative for online vendors to take measures to improve customer loyalty and retain customers. Customer loyalty is conceptually different from the initial purchase (Harris and Goode 2004, Balabanis *et al.* 2006). For online vendors, initial purchase means customer acquisition and they can transform potential customers into actual customers, whereas customer loyalty means customer retention and they can transform existing customers into loyal customers. During the post-purchase phase, customers have more direct knowledge about online vendors and their products, based on which they decide whether to stay loyal or not toward the online vendors. Most e-commerce research has emphasized the initial purchase behaviour or initial purchase intention of online customers (Koufaris 2002, Chu and Lu 2007, Ranaweera *et al.* 2008). By contrast, research on online customer loyalty is insufficient and there is a lack of research investigating impacts of consumer TCs on loyalty. Much focus on customer loyalty has been devoted to understanding the direct effects of other factors, such as perceived value (Yang and Peterson 2004), trust (Harris and Goode 2004),

and store characteristics (Ganesh *et al.* 2010) on loyalty formation in the online channel. The extant literature demonstrates very little about how TCs perceived by consumers influence their decisions to be loyal to an online store after they have had some purchase experiences from the online store. Given the paucity of academic research on the effects of TCs on customer loyalty, more research in this area is needed.

To date the pioneering work on online consumer behaviour offers little guidance on what antecedent factors affect consumer TCs of online shopping. Indeed, the literature review reveals an absence from the TC theory literature of any focus on the examination of the simultaneous antecedents of consumer TCs. Some scholars (Sholtz 2001, Teo and Yu 2005, Yen *et al.* 2013) argue that there is a need to find out what factors are responsible for consumer TCs. From a managerial perspective, understanding factors affecting TCs perceived by the consumers becomes essential in achieving superior value for the vendors (Chircu and Mahajan 2006). This is because, when viewed through a managerial lens, understanding what causes the consumer TCs provides managers with guideline to reducing and managing TCs, and thus offering value to customers. As such, a comprehensive set of antecedent variables of TCs associated with online shopping need to be investigated from the consumer standpoint, to better understand consumers' perception of TCs and further help online vendors effectively allocate their resources to reduce the TCs perceptions of online shoppers.

Finally, while the phenomenal rise of e-commerce in developing countries is well documented, the academic literature investigating online consumer behaviour in these countries is relatively underdeveloped and dominated by western perspectives utilizing U.S.A based samples. Particularly, most prior studies of TCs are strictly confined to the context of

developed countries (Liang and Huang 1998, Teo and Yu 2005), such as the USA and Singapore; yielding findings that would otherwise not be generalizable in the context of a developing economy, such as China, in which the business environment for online shopping is constrained by different sets of cultural factors (Hofstede 1980). Since there is limited understanding on the consumer TCs of online shopping in China, more insightful investigation is imperative in explaining consumer TCs and their impacts on online behaviour.

1.3 PURPOSE OF THE STUDY

Given the importance of consumer TC reduction, especially in managing TCs as a strategic input into the performance superiority creation, it is surprising that little empirical study has been done to address the compositions, antecedents and consequences of consumer TCs in online shopping setting. This research aims to bridge the existing gaps in the literature. The ultimate purpose is to explain the important phenomenon of consumer TCs associated with online shopping; that is, to investigate their antecedents and examine online purchase behaviour and customer loyalty from the perspective of TCs. To this end this study adopts Transaction Cost Theory (TCT) (Williamson 1981a) as a research lens. This research aims to advance consumer behaviour and marketing literature by developing an integrative theoretical framework of the antecedents and outcomes of TCs during the online purchase and post-purchase phase. The proposed framework will be empirically tested using a large-scale sample randomly selected from real-world online shoppers in China. The study attempts to achieve the following two specific objectives:

1. To identify antecedent factors that affect consumer TCs in online shopping.

2. To investigate the impacts of TCs as perceived by consumers on their decisions in choosing an online vendor.

1.4 SIGNIFICANCE OF THE STUDY

This study is expected to contribute to the existing literature. Firstly, given the call for a paradigm shift from market focus to consumer focus, this study extends the current knowledge by attempting to apply TCT to explain individual consumer behaviour in online shopping environment. It develops the comprehensive component conceptualization of consumer TCs, and suggests a system of measurement of these components with regard to the time and effort that individual online consumers spend on different stages of e-commerce transaction process. This study would advance the measurement of TCs by explicating the concept of consumer TCs and positioning them within the online context. Despite the considerable literature on TCs for organisations, there exists a lack of a thorough theoretical understanding of consumer TCs. The research on consumer TCs would contribute to the existing knowledge by elaborating the TCs during the different phase of online transaction process.

Secondly, the study would also contribute to research on TCT by examining various antecedents that can determine consumers' perception of TCs in online shopping. The identification of such predicative factors that impact on the TCs would help clarify the mechanism, through which TCs for consumers are determined. This would help online vendors to choose appropriate strategies to alleviate TCs perceived by consumers. The significance of focusing on the antecedents of consumer TCs is important and meaningful on both theoretical and managerial grounds.

Thirdly, it offers new insight into marketing theory by highlighting TCs as an important factor that impact on the actual online purchase behaviour and loyalty of the customers. To the best of our knowledge, this research is the first to link consumer TCs to online purchase behaviour and customer loyalty toward an online vendor, thus providing the e-marketers with a useful guideline for fine-tuning their e-businesses' strategies.

Finally, previous research has traditionally involved western samples. By collecting data among Chinese online shoppers, this research addresses a significant gap in the literature by extending the existing research to a rapidly growing emerging market of China. As China has a culturally different business environment from traditional western market, this study is expected to identify potentially alternative factors that impact on the purchasing decisions of the Chinese consumers, enriching the existing research on online shopping. In addition, this study is also expected to provide practical recommendations for online vendors, be they Chinese or western businesses, to formulate appropriate marketing strategies in online environment.

1.5 STRUCTURE OF THE THESIS

This chapter has provided the background of e-commerce and online shopping development, identified the gaps present in the current consumer behaviour and TC literature, proposed the purpose of the study, which is to explain online purchase behaviour and customer loyalty from the perspective of TCT in the context of Chinese online shoppers, and finally provided the four areas of significance of the study. The remaining part of the thesis is arranged as follows. Chapter 2 is dedicated to reviewing the foundational literature and related-theories,

including a literature review of theoretical foundations for online consumer behaviour, empirical evidence of online shopping behaviour, and TCs in online environments. Chapter 3 builds on the foundations presented in chapter two and provides a synthesis of literature, identifying potential antecedents of TCs that are likely to be salient in online marketing setting. It also provides additional logical and theoretical support for the hypotheses that are to be tested. Chapter 4 describes the research methodology that was employed to test the proposed hypotheses, including research methods, sample, sample size, data collection, questionnaire development, operationalization of the variables, and data analysis technique. Chapter 5 presents the results of the statistical analyses. Chapter 6 provides a discussion of the results, and concludes with the implications of the study, the limitations associated with the study presented, and some potential avenues of future research.

CHAPTER 2: LITERATURE REVIEW

2.1 CHAPTER OVERVIEW

This chapter will review relevant extant literature on online consumer behaviour and online TCs as well as a number of supporting areas based on an extensive search in the academic literature, and is structured around three sections. In this first section, the fundamental theories pertaining to online consumer behaviour is reviewed. It provides the major rationale for applying TCT to explain online behaviour. In the second section, the major antecedents affecting consumers' online shopping behaviour are presented and discussed. Despite numerous studies of the antecedents of online behaviour, research has remained scant in the investigation of online consumer behaviour from the cost perspective. In the last section of this chapter, relevant studies concerning TCs associated with online shopping, including the conceptualization of consumer TCs, their antecedents and consequences, are reviewed in detail. Research gaps are identified, which serve as a basis for proposing the specific research questions that are addressed in this study.

2.2 THEORIES EXPLAINING ONLINE CONSUMER BEHAVIOUR

2.2.1 Introduction

The Internet has dramatically changed consumers' shopping behaviour. During the pre-Internet growth time period (1993 and the years prior) (Canzer 2006, Friedman 2006, Laudon and Traver 2008), consumers mainly focused on shopping through traditional marketplace, while with the great development of Internet, during the post- Internet growth time period

(1994 and the following years), consumers have changed some shopping habits by switching from conventional market channels to online channels.

Research on consumer behaviour of online shopping is gaining in intensity (Croome *et al.* 2010). Consumer behaviour is the study of the processes involved when an individual selects, purchases, uses or disposes of products, services, ideas, or experiences to satisfy needs and desires (Solomon 1998). To a very large extent, online consumer behaviour can be studied using frameworks from 'offline' or traditional consumer behaviour. Synthesizing research in this area from 1994 to 2013, previous studies provided a critical and comprehensive review of the theories and empirical results of online consumer behaviour (Cheung *et al.* 2005). Common themes of past research have included the identification of factors that influence consumer's choice of the internet versus a conventional channel (Van Birgelen *et al.* 2006, Bigne-Alcaniz *et al.* 2008, Horppu *et al.* 2008) and online shopping attitudes, intention and purchase behaviour (Vijayasarathy and Jones 2000, Mathwick *et al.* 2001, Goldsmith 2002, Ahn *et al.* 2007, Wu *et al.* 2013), the role of integrated marketing communications such as product picture/information in evaluating product feature/quality (Weathers *et al.* 2007, Silva and Alwi 2008), the impact of web site design in enhancing consumers' interest in the site (Van Dolen *et al.* 2007), customer satisfaction in an online environment (Luo *et al.* 2012, Wu 2012), and consumer site commitment and e-loyalty (Ha 2006, Li *et al.* 2006, Massad *et al.* 2006, Kim *et al.* 2009, Teng *et al.* 2012).

Extant studies of online consumer behaviour indicate that researchers mostly draw theories from classical consumer behaviour research, such as behavioural learning (Skinner 1938), personality research (Folkes 1988), information processing (Bettman 1979), and attitude models (Fishbein 1967, Ajzen and Fishbein 2005). Cheung *et al.* (2005) revealed that a large

part of conventional consumer behaviour theories had been applied to the study of online consumer behaviour. However, Levin et al. (2005) stated that the application is not as straightforward as simply borrowing the components and applying them. Chu et al. (2010) noted that there are still significant differences between offline and online consumer behaviour that warrant a distinguishing conceptualization.

The research of online consumer behaviour has been widely conducted in both information systems and marketing fields. However, most of the studies have been published in information systems literature, implying that most e-commerce studies have been done in the information systems world. Koufaris (2002) gave an explanation of this, that it is, perhaps more accurate to view e-commerce as an information systems phenomenon where user of information systems interacts with a complex information system, rather than viewing e-commerce as a marketing issue influenced by information systems' usage. A similar argument has also been given by other scholars (Pavlou 2001, Van der Heijden *et al.* 2003, Porter and Donthu 2006).

Among the existing studies in the information systems literature, the research models of technology adoption have thus been extensively used in studies of online consumer behaviour. Cheung et al. (2005) found that most authors depended heavily on theories of reasoned action (TRA) family, including the technology acceptance model (TAM) and the theory of planned behaviour (TPB). In the following sub-sections, TAM and TPB models are reviewed and compared in regard to the explanation of online consumer behaviour.

2.2.2 The Technology Acceptance Model (TAM)

TAM, introduced by Davis (1989) is one of the most widely used and accepted models researchers use to explain information technology and information systems acceptance and usage. TAM, rooted in TRA (Fishbein and Ajzen 1975) suggests the belief–attitude–intention–behaviour causal relationship for explaining and predicting technology acceptance among potential users. Building on TRA, TAM proposes that two beliefs about a new technology, perceived usefulness (PU) and perceived ease of use (PEOU), determine a person's attitude toward using that technology, which in turn determine their intention to use it. PU is the degree to which one believes that using the technology will enhance his/her performance (Davis *et al.* 1989). PEOU is the degree to which one believes that using the technology will be free of effort. TAM further suggests that PEOU is instrumental in explaining the variance in PU (Davis *et al.* 1989).

Prior studies have validated TAM as a robust and parsimonious framework for understanding the user's adoption of technology in a variety of contexts including banking technology (Gounaris and Koritos 2008, Al-Ajam and Nor 2013), adoption of online shopping (Svendsen *et al.* 2013), online trading (Lee 2009b), online auctions (Stern *et al.* 2008), online games (Zhu *et al.* 2012a), m-commerce (Bruner and Kumar 2005), mobile Internet services (Jiang 2009), mobile financial services (Lee *et al.* 2012b), mobile advertising (Zhang and Mao 2008), 3G mobile value-added services (Kuo and Yen 2009), online community participation (Wang *et al.* 2012a), adoption of e-health (Dünnebeil *et al.* 2012), e-learning (Lee *et al.* 2013), instant messaging services (Wang *et al.* 2004), Wi-Fi technology (Mehta 2013), and so on.

In the study of online shopping adoption, TAM often plays a backbone in the research models (O'Cass and Fenech 2003, Ahn *et al.* 2004) and other theories are usually integrated with it.

For example, Chen et al. (2004) investigated online consumer behaviour by integrating the innovation diffusion theory (IDT) with TAM. Their findings confirmed that TAM was a reliable and valid research model in investigating online consumer behaviour. The findings also suggested that a more positive consumer attitude could be achieved by enhancing consumer's value, needs and lifestyle, PU, and PEOU. Koufaris (2002) integrated TAM and flow theory (Csikszentmihalyi 1990) into one theoretical framework of online consumer behaviour, aiming to examine how these factors from two theories together influence online consumer behaviour. The findings indicated that both enjoyment of the shopping experience and PU of the website strongly predicted consumers' intention to return to the e-commerce website, implying that online consumers were not only purely utilitarian (focusing on efficiency in shopping), but were also enjoying online shopping. The study also further confirmed that TAM could be successfully applied in online shopping behaviour research, even when the behaviour was not restricted to pure system usage, but instead included purchase decision behaviour, etc. Many other studies have reached the similar conclusion that TAM was a good model in the study of online consumer behaviour (Chiu *et al.* 2009b, Ha and Stoel 2009, Svendsen *et al.* 2013).

Although TAM has been tested over a wide range of system settings (Tong 2010), including online shopping adoption, empirical tests of the model have rendered mixed and inconclusive results, leading to questions about its validity (Meuter *et al.* 2005). For example, several studies (Taylor and Todd 1995a, Jackson *et al.* 1997) reported that a positive attitude toward a new technology was not an invariably significant predictor of consumers' intentions to use that technology. In addition, research has shown inconsistent findings regarding the effect of PEOU on attitude. Whereas some studies found positive and significant effects of PEOU on attitude (O'Cass and Fenech 2003, Chen and Tan 2004), others revealed insignificant

relationships (Chau and Hu 2001b, Townsend *et al.* 2001). Researchers suggested belief factors such as PU, enjoyment, trust, and performance may influence one's attitude toward using a technology more strongly than by PEOU (Van der Heijden and Verhagen 2004).

While some researchers favour TAM because it is a parsimonious model (Tong 2010) (Porter and Donthu 2006), others argue that this parsimony represents a major drawback (Venkatesh *et al.* 2012). According to social psychology theories, an individual's behaviour is not just driven by evaluative beliefs and attitudes, but also by subjective norms, perceived behavioural control, and habits (Burton-Jones and Hubona 2006). Thus, a significant body of studies suggest improving or extending TAM constructs (Wixom and Todd 2005, Porter and Donthu 2006, Srite and Karahanna 2006, Cyr *et al.* 2007, Aggelidis and Chatzoglou 2009, Chiu *et al.* 2009b, Kim and Garrison 2009, Li and Huang 2009, Chung *et al.* 2010, Pan and Jordan-Marsh 2010, Belanche *et al.* 2012a, Chyou *et al.* 2012, Lee *et al.* 2012a, Teh and Ahmed 2012, Cheema *et al.* 2013, Hiramatsu and Nose 2013, Park *et al.* 2014).

One of the extensions of TAM, TAM2, was proposed by Venkatesh and Davis (2000). In TAM2, social influence (subjective norm, voluntariness, and image), cognitive instrumental processes (job relevance, output quality, and result demonstrability) and experience were included and found to have a significant influence on PU. The new model was tested in both voluntary and mandatory settings. The results strongly supported TAM2 and explained 60 percent of user adoption using the update version of TAM (Venkatesh and Davis 2000). Hsu and Lu (2004) and Park (2009) provided similar empirical evidence that supported the effect of social influence on user's belief of a new technology.

In a web-based environment, many researchers found that there were a broader range of additional factors that were needed to investigate users' adoption behaviour. For example, Venkatesh (2000) suggested that TAM could be further enhanced by adding control, intrinsic motivation, and emotion as variables within the PEOU dimension. Cai and Xu (2007) extended the original TAM to encompass perceived enjoyment as an additional motivational determinant of acceptance. Gefen and Straub (2003), Kim (2012), Pavlou (2003) and Shih (2004) integrated previous work by incorporating trust into TAM and found positive effect of trust on behavioural intention. Ha and Stoel (2009) integrated enjoyment and trust into TAM to understand consumer acceptance of e-shopping.

In addition, social influence was incorporated into TAM and further showed a significant effect on consumer's intention toward technologies according to Hsu and Lu (2004). Chen et al. (2002) added compatibility to PU and PEOU in predicting an online consumer's attitude. The model showed that compatibility was positively related to a consumer's attitude about using technology along with PU and PEOU. Li and Huang (2009), Van der Heijden et al. (2003) and Pavlou (2003) augmented the TAM with the perceived risk in e-stores. Chen and Tan (2004) further expanded TAM by adding a link from perceived service quality to attitude toward using. Porter and Donthu (2006), in their work to study the attitude towards Internet usage used access barrier along with PU and PEOU as the additional construct based on the TAM.

In summary, a large number of empirical studies have applied TAM to examine online consumer behaviour. PU and PEOU together can routinely explain up to 40 per cent of usage intentions and 30 per cent of systems usage (Meister and Compeau 2002). However, the literature notes TAM's parsimony as a key limitation (Venkatesh 2000, Vijayasarathy 2004).

TAM has been criticized for only explaining consumer behaviour on the Internet based on a technological point of view. Since the online environment is quite complex and full of uncertainties, there are many potential factors, such as concerns about security and privacy, product quality, and e-service quality, site design, product return, consumers' Internet skills, etc. that can affect online consumer purchase and post-purchase decision. Only focusing on two dimensions (PU and PEOU) in the TAM seems too simple in such a complex online environment. Moreover, the variables in TAM are better suited to decisions involving few technology usage choices than to situations involving users' voluntary choices (e.g., online shopping) (Vijayasarathy 2004). Therefore, the original TAM variables may not adequately capture key beliefs influencing consumers' attitudes toward online shopping.

2.2.3 The Theory of Planned Behaviour (TPB)

The development of TPB originated from the TRA (Ajzen and Fishbein 1980, Ajzen 1991, Ajzen 2011) and is designed to predict and explain human behaviour across various information technologies (Wu and Chen 2005, Wang and Ritchie 2012). According to TPB, a person's actual behaviour in performing certain actions is directly influenced by his or her behavioural intention and, in turn, is jointly determined by his or her attitude, subjective norms (SN) and perceived behavioural controls (PBC) toward performing the behaviour. In essence, TPB differs from TRA in its addition of the component of PBC (Taylor and Todd 1995c, Bagozzi and Kimmel 2011). PBC refers to the individual's perception of ease or difficulty in performing the behaviour of interest (Ajzen 1991). It is believed that behaviour is strongly influenced by an individual's confidence in his/her ability to perform a behaviour (Ajzen 1991). The more an individual believes that the resources and opportunities exist to perform the behaviour, the greater their PBC over the behaviour should be. SN refers to "the

perceived social pressure to perform or not to perform the behaviour”. In other words, SN is related to the normative beliefs about expectation from other people (Wu and Chen 2005).

TPB has received good empirical support in a variety of application areas (Armitage and Conner 2001, Ajzen and Fishbein 2005, Sutton 2006). It has been applied to a variety of human behaviours, including adoption behaviour of internet banking (Lee 2009a, Yousafzai *et al.* 2010, Nasri and Charfeddine 2012), online tax (Wu and Chen 2005), e-service (Chen and Li 2010, Lee 2010), e-learning (Lee 2010), e-procurement (Aboelmaged 2010), users’ acceptance of instant messaging (Lu *et al.* 2009), health-related services (e.g., diet, drinking, drug usage, smoking, weight loss, etc.) (Godin and Kok 1996, Hoie *et al.* 2012), tourists’ behavioural intention and actual behaviour of visiting the destination (Quintal *et al.* 2010, Filho *et al.* 2012, Hsu and Huang 2012), environmental behaviour (Chao 2012), business start-up intentions and subsequent behavior (Kautonen *et al.* 2013), crisis planning intention (Wang and Ritchie 2012), intention to exercise (Spink *et al.* 2012), and so on.

Although current studies demonstrate that the TPB has great power in predicting and understanding consumers’ adoption behaviour across a variety of service contexts, it does not mean that TPB has no limitations. The main argument focuses on whether perceived behavioural control can be regarded as a good representative of actual behavioural control (Armitage and Conner 1999, Armitage and Conner 2001). In the literature, support for the PBC as an accurate proxy for actual control remains equivocal (Armitage and Conner 2001). In addition, the TPB is based on a specific behaviour, thus, each behaviour requires its own distinctive and specific belief set. Each behaviour in the TPB is explained by a salient belief set, so the application of TPB across a variety of situations may not be consistent (Hoie *et al.* 2012). Another limitation of TPB derives from the fact that this theory treats a set of beliefs

(those influencing attitude, SN, or PBC) as a one-dimensional construct (Hoie *et al.* 2012), which makes it difficult for understanding the specific beliefs that affect user behaviour in the different technology adoption contexts (Taylor and Todd 1995c, Riemenschneider *et al.* 2003, Lin 2008).

In an attempt to address the potential limitations of TPB, scholars argue that extending TPB by incorporating the additional key constructs which are deemed important to the specific usage context can increase the variance of explanation of usage behaviour (Hsu and Huang 2012). The major constructs, such as the achievement of personal goals (Perugini and Bagozzi 2001), self-identity processes (Shaw *et al.* 2000, Booth *et al.* 2014), descriptive norms (Hoie *et al.* 2012, Leyland *et al.* 2014), moral norms (Hoie *et al.* 2012, Newton *et al.* 2013), anticipated emotions (Ajzen and Sheikh 2013, Kim *et al.* 2013e), perceived risk and benefit (Lee 2009a), uncertainty (Quintal *et al.* 2010), past behaviours (Lam and Hsu 2006), user' satisfaction (Baker and Crompton 2000, Liao *et al.* 2007), and technology readiness (Chen and Li 2010) were added to enhance the TPB's predictive power. The extended TPB provided a more complete understanding of behaviour and behavioural intention.

In particular in the e-commerce setting, extant studies have applied TPB to online consumer behaviour (Bhattacharjee 2002, Choi and Geistfeld 2004, Hsu and Lu 2004, Ramus and Nielsen 2005, Wu 2006, Hansen 2008, Lee 2009a, Su and Huang 2010, Burns and Roberts 2013). Researchers usually draw upon TPB to build a new research model by integrating other theories or constructs into it. For example, Hsu *et al.* (2006) extended TPB by incorporating constructs drawn from the expectation disconfirmation theory (EDT) and examined the antecedents of users' intention to continue using online shopping. The results indicated that disconfirmation from EDT and satisfaction with prior online shopping exerted

dominant influence on the continuance intention compared to the impacts of attitude, social norms, and PBC in the online shopping process. Limayem et al. (2000) introduced perceived innovativeness and perceived consequences, both as antecedents to attitude and intention into TPB. The results of their longitudinal study showed the positive effects of personal innovativeness and perceived consequences on attitude and intentions to online shopping. Behjati and Pandya (2012) extended TPB by including the effects of perceived reliability, trust and faithfulness on online purchasing intention. The findings showed that trust and faithfulness have significant relationships on online purchasing behaviour while perceived reliability has insignificantly relationship on online purchasing intention.

Generally speaking, the extended TPB has improved the understanding of online consumer behaviour. Despite the growing body of knowledge of TPB in online environments, several issues exist in the literature in relation to the application of TPB in explaining online purchasing behaviour and deserve attention from researchers. One obstacle in using TPB has been found in applying it to the research of continued online shopping behaviour. Recently, some researchers pointed out that a weakness of TPB is its lack of explanatory power of continued online shopping behaviour (Hsu *et al.* 2006). This is because TPB constructs do not fully reflect the context of user continuance decisions. Karahanna et al. (1999) also indicated that the beliefs users hold for continuance intention may not be the same set of beliefs which lead to initial adoption.

Additionally, among the existing studies, there is a relative paucity of knowledge about the roles that cost-related constructs reflected in time and effort expended have on the consumers' decision-making (Mukherjee *et al.* 2012, Kim *et al.* 2013b, Wu *et al.* 2014). Darley et al. (2010) and Kim et al. (2014) further assert that the research on online consumer behaviour

needs a more comprehensive model, describing not only the effect of personal motivation beliefs, but also the impacts of TCs incurred during the online transaction process. Indeed, there is growing recognition that cost reduction appears central to the business models pursued by firms (Williamson and Ghani 2012). However, little is still known about the specific costs associated with online shopping and how they determine consumers' online shopping behaviour (Wu *et al.* 2014). As such, understanding how the costs involved in online transaction-related activities together with the key constructs in TPB affect consumers' online decision making is an important research topic that needs further theoretical and empirical attention.

2.2.4 Comparison between TAM and TPB

A group of studies have compared TAM and TPB (Taylor and Todd 1995c, Chau and Hu 2001a, Riemenschneider *et al.* 2003, Lin 2008, Huh *et al.* 2009). For example, Mathieson (1991) compared TAM and TPB in terms of how well they predict an individual's intention to use an information system and stated the following: "*Both TAM and TPB predicted intention to use an IS quite well, with TAM having a slight empirical advantage; TAM is easier to apply, but only supplies very general information on users' opinions about a system; TPB provides more specific information that can better guide development*" (Mathieson, 1991, pp. 186). In line with Mathieson (1991), Hansen *et al.* (2004) tested both TRA and TPB in the context of online shopping, and found that TPB provided the better explanation to online consumer behaviour than TRA did. Similarly, Lin (2008) found that TAM explains 41 per cent of the variance in behavioural intention, while TPB explains 46 per cent.

The prior literature has revealed three main differences between TAM and TPB (Mathieson 1991, Hansen *et al.* 2004). Firstly, TAM assumes that beliefs about PU and PEOU are always

the primary determinants of use decisions, that is, these two beliefs are general regardless of the usage context (Lin 2008), while TPB asserts that beliefs are specific to each usage situation (Ajzen and Sheikh 2013). In some situations there may be other variables besides PU and PEOU that would well predict intention. In the e-commerce context, consumer behaviour is not only influenced by PU and PEOU, but also shaped by other important constructs such as trust, privacy concerns and hedonic values (Wu *et al.* 2012, Meskaran *et al.* 2013). On this point, TPB can provide a more accurate explanation to online consumer behaviour than TAM does.

The second difference is that TAM does not include social norm. In TPB, the social norm is an important construct to capture unique variance in intention (Ajzen 2011, Ajzen and Sheikh 2013). It plays an inevitable role in determining online consumer behaviour since consumers usually follow the recommendations from their relatives, friends and people who share the same social value when they make purchase decision on certain brands (Manning 2009, Behjati and Pandya 2012).

Thirdly, TPB introduces PBC to take into account the effect of behavioural control. PBC is assumed to reflect past experience as well as anticipated impediments and obstacles (Ajzen 2011). Pavlou and Fygenon (2006) pointed out that “most e-commerce studies follow TAM, implicitly assuming that behaviour is volitional. However, online shopping is indeed low in volitional control and online consumers face several new constraints, such as the impersonal nature of the online environment, the extensive use of IT, and the uncertainty of the open Internet infrastructure (Al-Swidi *et al.* 2012). These issues call for the inclusion of PBC in e-commerce adoption models, implying the superiority of TPB over the TAM.

2.2.5 Conclusion

It is acknowledged that TAM and TPB are widely applied to explain consumer behaviour. However, the inherent weaknesses of both theories should be noted, that is, neither TAM nor TPB have been found to provide consistently superior explanations or predictions of consumers' online shopping behaviour (Chen *et al.* 2007a). The extant research is also compounded by a lack of academic inquiry into a complete list of antecedents that influence consumers' online shopping intentions and purchase behaviour. Given that online shopping is a complicated decision process and the online environment is complex, simply focusing on TAM or TPB to identify the antecedents and predict the behaviour-related consequences may have some limitations.

Firstly, consumers make a shopping decision based on their family needs, budget limitations, and other constraints impinging on them (Bakshi and Gupta 2012). Accordingly, they are likely to maximize the shopping benefits and minimize the costs (i.e., time and effort expended during the shopping process) (Chiu *et al.* 2014). In forming value perceptions, consumers balance costs against benefits (Kleijnen *et al.* 2007). In relation to online shopping, many costs and benefits have been associated with online buying, such as, easy access, time convenience, privacy and security issues, product quality concerns, and so forth. Consumers feel particularly vulnerable to risks in the online environment because the allocation of responsibility for a failure or loss (i.e., who is to blame) may not always be clear in this technology-mediated environment (Bahli and Benslimane 2004). Consumers are very sensitive with regard to services that involve monetary transactions, in which case they worry about both money and information loss (Huang *et al.* 2014). Research reveals that the willingness to adopt online shopping depends primarily on consumers' risk perceptions as they increase the potential costs perceived by consumers (D'Alessandro *et al.* 2012). Thus, it

is of paramount importance to include the costs-related factors and examine their effects on online decision making.

Secondly, online shopping behaviour is a social influence process and is affected by social norms, mass media, word-of-mouth and third party organizations (Çelik 2011, Lee *et al.* 2011c). An extensive range of research in social psychology concerns the concept of social influence (e.g., peers, family members, superiors, colleagues) and it is considered as an independent predictor of behavioural intention (Hong *et al.* 2008). The consumer behaviour literature also recognizes the influence of mass media (e.g., newspapers, magazines, television) as an important factor that affects consumer purchasing decisions (Campbell and Keller 2003, Kim and Han 2009). However, prior TAM and TPB research with its primary focus on technology adoption among workers within a specific organization, does not examine such social and media influence on consumers' adoption decisions. Thus, only focusing on constructs in TAM and TPB may limit the understanding of individual consumer's online shopping behaviour.

Thirdly, online shopping can be viewed as an innovation and its adoption is impacted by consumer characteristics (e.g., involvement, innovativeness, risk-bearing propensity and Internet expertise) as well as technology characteristics (e.g., system quality and online store design) (Zhu *et al.* 2012b). Therefore, the use of the TAM and TPB, as it is originally conceived, is not comprehensive and convincing to fully explain online consumer behaviour. No single theory is capable of capturing the complexities of online shopping behaviour. An integrated theory is needed in order to provide a better explanation for online shopping behaviour.

2.3 EMPIRICAL EVIDENCE OF ONLINE CONSUMER BEHAVIOUR

2.3.1 Introduction

In the last decade, most studies of online consumer behaviour have attempted to identify major antecedent factors which play critical roles in determining online shopping behaviour. This section reviews the literature related to online shopping in an effort to arrive at a state-of-the-art understanding of what is known about the antecedents significant to online shopping behaviour.

During the literature search, various keywords and their synonyms such as online shopping, Internet purchasing, online retailing, online consumer behaviour, and e-commerce, were used to search for articles dating back as far as 1994. Each article was reviewed and carefully screened to ensure that they were related to online consumer behaviour. A total of 1045 articles were found relevant to online shopping behaviour. Among these articles, a large number of antecedent factors that affect online shopping intention and actual purchase behaviour were identified. Chang et al.'s (2005) scheme, which included online consumer characteristics, vendor and product characteristics, and perceived characteristics of the web as a sales channel, was used and adapted into the categorization of the identified antecedents in this study. The three major categories were (1) Consumer Characteristics, (2) Online vendor/store and product characteristics, (3) Perceived channel characteristics. The details of these categories are summarized in Appendix A, B, and C, respectively.

2.3.2 Consumer Characteristics

Consumers and vendors constitute two basic actors of a product exchange system. Consumers' online behaviour is expected to be influenced by their own personal

characteristics (Meskaran *et al.* 2013). Consumers with different characteristics may react to online shopping in different ways; for example, those unfamiliar with computers and the internet will not consider online shopping as an active alternative. Empirically, previous studies have found that online shopping intention and purchase behaviour are affected by a variety of personal characteristics, such as demographics, shopping orientations, computer/Internet experience, online shopping experiences, and psychological characteristics, as displayed in Appendix A. Among them, demographics were the focus of early studies, while psychological perception and online experience (e.g. emotion) have been examined in more recent studies. It is not surprising that some consumer characteristics were found to have consistent effects across different studies, while others were found to have mixed or even contradictory impacts.

2.3.2.1 Demographics

Consumers' socio-demographic characteristics influence their online shopping behaviour (Hansen and Jensen 2009) although the findings of previous studies on demographic variables were quite mixed (Hasan 2010). Gender, age, education, and income were found to have a positive relationship with online shopping in some studies, but not in all. For example, Li *et al.* (1999), Rodgers and Harris (2003), Seock and Bailey (2007), Stafford *et al.* (2004), and Zayer and Colema (2012) found that males are inclined to buy more online than females. Women were reported to have a higher level of web apprehensiveness (i.e., individual's resistance to or fear of the web as a channel for context-free online information seeking and communication) (Susskind 2004). Bhatnagar *et al.* (2000b) noted that men are more likely to purchase some products (such as hardware, software, and home electronics) online, but less likely to buy others (such as apparel and food) via internet. Young and Stoel (2004) believed that women were more likely to use the Internet for information search for apparel products than men.

The effect of age on consumers' intention to purchase online remains unclear. For example, some studies (Donthu and Garcia 1999, Stafford *et al.* 2004, Bhatnagar and Ghose 2004a) identified a significant positive relationship between consumers' age and their likelihood to purchase products online, whereas others reported a significant negative relationship (Joines *et al.* 2003) or no relationship (Li *et al.* 1999, Rohm and Swaminathan 2004, Hernandez *et al.* 2011). Such a discrepancy in research findings might be caused by different criteria for defining age groups in different studies. For example, the above studies used a 10-year span (Li *et al.* 1999, Stafford *et al.* 2004), 15-year span (Donthu and Garcia 1999), 20-year span (Rohm and Swaminathan 2004), respectively. Broader ranges may lessen the effect of age. Therefore, a standard age categorization scheme should be adopted in future studies to make cross-study comparisons feasible.

As a variable that may encourage or prevent the adoption of online shopping, income is another characteristic that has attracted considerable research attention in the field of technology acceptance (Allard *et al.* 2009, Shin 2009). Several studies have included it as an explanatory variable of shopping behaviour, yet the results concerning its significance are contradictory (Miyazaki and Fernandez 2001, Raijas and Tuunainen 2001, Lu *et al.* 2003, Al-Somali *et al.* 2009). Some studies showed that online shoppers tend to earn more money than traditional store shoppers (Donthu and Garcia 1999, Korgaonkar and Wolin 1999, Li *et al.* 1999, Bagchi and Mahmood 2004, Mahmood *et al.* 2004, Susskind 2004), given the fact that the most popular items purchased online, including books, CDs, holiday and leisure travel, PC hardware, and software, are all "normal goods"—those for which demand increases as income increases. Higher income causes internet users to perceive lower implicit risks in undertaking online purchases and thereby affects their demand for internet products and

services. In contrast, other studies did not find a significant effect of income level on online purchase intention (Raijas and Tuunainen 2001, Sin and Tse 2002, Hernandez *et al.* 2011).

A large number of studies have been conducted to investigate the impact of education level on online shopping behaviour and suggested that online shoppers are not necessarily more educated. Whereas some studies identified a positive relationship between education and the time and money consumers spent online (Li *et al.* 1999, Liao and Cheung 2001, Burroughs and Sabherwal 2002, Sin and Tse 2002, Susskind 2004), others did not find any significant impact (Bellman *et al.* 1999, Donthu and Garcia 1999, Bagchi and Mahmood 2004, Mahmood *et al.* 2004). This may be explained by the fact that online shopping is a relatively easy task, which does not require a higher education level.

Scholars have paid attention to the impacts of differing cultures on online consumer behaviour. The literature suggests that the difference in the culture between western and eastern countries can lead to varied online shopping behaviour (O'Keefe *et al.* 2000, Liu and McClure 2001, Chau *et al.* 2002, Huang 2003, Park and Jun 2003, Park *et al.* 2004, Qureshi *et al.* 2009, San Martín *et al.* 2009, Constantinides *et al.* 2010, San Martín and Camarero 2012). In an individualistic culture, for example U.S.A and Australia, where the ties between individuals are loose, people tend to use the Internet mainly for personal purposes such as e-commerce and information searching (O'Keefe *et al.* 2000, Chau *et al.* 2002, Park and Jun 2003, Smith *et al.* 2013). In a collectivistic culture, for example China, Singapore, and Mexico, people are integrated into strong and cohesive groups (Minkov and Hofstede 2011). They use the Internet mainly for social communication and hobbies, such as sending/receiving e-mails, accessing/ downloading software, and conducting work-related research (Wee and Ramachandra 2000). In addition, a society with more masculinity, for

example Britain, tends to have a greater gender divide and predominantly male shoppers than a less masculine society, for example Taiwan (Shiu and Dawson 2002). Stafford et al. (2004) compared the online shopping behaviour of consumers in the U.S.A, Turkey, and Finland. The masculinity scores, according to Hofstede's (1980, 2010) index, were high for the U.S.A, low for Turkey, and Finland had the lowest of the three countries. The results showed that consumers from less masculine societies were less involved in online shopping than those from more masculine societies, which was consistent with the findings of gender pattern in online shopping (Zayer and Coleman 2012).

2.3.2.2 Shopping Orientations

Shopping orientations refer to a consumer's general predispositions toward shopping activities (Baker and Wakefield 2012). They are conceptualized as specific dimensions of lifestyle and operationalized based on activities, interests and opinions regarding shopping behaviour (Li *et al.* 1999). Researchers have identified a variety of shopping orientations, including the utilitarian, recreational, impulsive, convenience, quality, price conscious, brand conscious, brand-loyal, and store-loyal (Brashear *et al.* 2009, Cho and Workman 2013).

A large number of studies have explored the links between consumers' shopping orientations and their intention (or actual choice) to shop online (Jensen 2012). It has been documented that the convenience-oriented and impulsive consumers are more inclined to buy online (Donthu and Garcia 1999, Li *et al.* 1999, Swaminathan *et al.* 1999, Bhatnagar *et al.* 2000b, Childers *et al.* 2001, Girard *et al.* 2003). The findings on price-conscious were mixed. Price-conscious consumers were more likely to purchase online when online shopping sites offered a lower price or financial benefits (Sim and Koi 2002, Koyuncu and Bhattacharya 2004) while two studies (Donthu and Garcia 1999, Li *et al.* 1999) found that price-conscious

consumers do not have preference for shopping online. Fenech and O’Cass (2001) revealed that consumers who prefer experiencing products tend to avoid online shopping. The findings on the impact of the recreational-oriented shoppers who treat shopping as a fun activity on online shopping adoption were mixed. For instance, Swaminathan et al. (1999), Goldsmith and Goldsmith (2002), van der Heijden and Verhagen (2004), Park et al.(2011) and Khare and Rakesh (2011) suggest a positive impact, while other studies found the impact insignificant (Donthu and Garcia 1999, Li *et al.* 1999, Bridges and Florsheim 2008). Further, since online shopping increases search efficiency and transaction efficiency, time-conscious consumers were more likely to buy via the internet (Sim and Koi 2002, Sin and Tse 2002). Finally, two studies reported that brand-oriented consumers are more likely to purchase online as well-known brands help relieve consumers with respect to perceived risk (Van den Poel and Leunis 1999, Lunn and Suman 2002). However, the result was not supported by Donthu and Garcia (1999) who indicate that brand consciousness does not lead to the online purchase.

2.3.2.3 Consumer Computer/Internet Experience

Consumer computer/internet experience is related to the knowledge of the consumer on the computer and the internet, as well as the frequency and length of his/her usage. A multitude of evidences from previous studies have showed that the amount of computer training (Liao and Cheung 2001), computer experience (Van Slyke *et al.* 2002) and knowledge of online channel (Liao and Cheung 2001) are positively and directly associated with online adoption behaviour because a better understanding of computer, online shopping and its operating processes alleviates consumers’ concerns over the risks in online environments, which leads to the higher adoption of online shopping (Smith and Sivakumar 2004, Chang and Chen 2008). However, consumers’ general experience with computer/internet does not necessarily

result in their online shopping behaviour (Frambach *et al.* 2007). The findings in prior studies have been inconsistent and contradictory. For example, the level of internet usage was found to positively affect the intention to use and the actual usage of online shopping channel in six studies (Alka Varma *et al.* 2000, Bhatnagar *et al.* 2000b, Liao and Cheung 2001, Burroughs and Sabherwal 2002, Goldsmith and Goldsmith 2002, Blake *et al.* 2003), whereas the empirical study conducted by Sin and Tse (2002) showed that the relationship becomes insignificant.

Although a positive relationship between internet usage frequency and online shopping intention was detected in some studies (Jarvenpaa and Todd 1996, Jarvenpaa *et al.* 1999, Bhatnagar *et al.* 2000b, Citrin *et al.* 2000, Liao and Cheung 2001, Park 2002, Bhatnagar and Ghose 2004b), the relationship was not found to be significant in the later studies (Cho 2004, Nysveen and Pedersen 2004). In addition to the above-mentioned factors, many other factors related to computer/internet experience have been identified as the potential drivers of online adoption. For example, Li *et al.* (1999) stated that internet accessibility is a key determinant of online shopping intention. Mauldin and Arunachalam (2002) suggested that comfort level with the Internet has a positive relationship with online shopping tendency.

In general, consumers' non-internet in-home shopping (e.g. telephone, mail, catalogue, TV) experience was found to increase the likelihood of purchasing online (Lohse *et al.* 2000, Eastin 2002, Kaufman-Scarborough and Lindquist 2002, Lunn and Suman 2002, Cho 2004). Specifically, Eastin (2002) noted that prior usage of the telephone for product acquisition positively affects consumers' adoption of online shopping. In a similar way, a work of Lunn and Suman (2002) indicated that the link between previous purchases by mail and phone and online purchase intention is significant. Cho (2004) and Lohse *et al.* (2000) pointed out that

previous purchases from catalogues are significantly correlated with spending and adoption of online shopping (2000). In line with these studies, Kaufman-Scarborough and Lindquist (2002) reported that online shoppers tend to experience more non-store (catalogue and TV) shopping activities. However, Sin and Tse (2002) did not find such a positive relationship between consumers' non-internet in-home shopping experiences and their online purchase intention.

2.3.2.4 Online Shopping Experience

There is a large volume of published studies describing the role of online shopping experience in predicting purchase intention and actual purchase. According to Mathwick et al. (2001), online shopping experience is concerned with the user-friendliness and aesthetics of online shopping websites and the interactivity with the online vendors. Quite a few other shopping experience variables have been explored, including evaluated effort, compatibility and playfulness (Jarvenpaa and Todd 1997, Vijayasarathy and Jones 2000, Mathwick *et al.* 2001, Goldsmith 2002, Ahn *et al.* 2007, Hsu *et al.* 2011). Previous research findings with regard to the effects of these online shopping experience variables on behavioural outcomes were mixed. Three studies (Jarvenpaa and Todd 1997, Goldsmith 2002, Ahn *et al.* 2007) found these variables to have significant and positive effects on intention while the other two (Vijayasarathy and Jones 2000, Mathwick *et al.* 2001) did not show significant effects. Huang (2000) also included novelty in his study but only found indirect effect of novelties on desire to shop through desire to explore.

Some studies have concentrated on investigating the effect of internet purchase experience on online purchase intention (Shim *et al.* 2001, Foucault and Scheufele 2002, Goldsmith 2002, Goldsmith and Goldsmith 2002, Lunn and Suman 2002, Gefen 2002a, Cho 2004). Positive

internet shopping experience was found to have a direct and positive association with online purchase intention (Shim *et al.* 2001, Lunn and Suman 2002, Cho 2004). However, the finding was not supported by Khalifa and Liu (2007) who reported a moderating effect of online shopping experience on the relationship between satisfaction and repurchase intention.

Frequencies of online purchases and satisfaction levels about past online transactions have been widely investigated in past studies where positive correlations with consumers' likelihood to purchase online are found. The more experienced consumers are with online shopping and the more satisfied they were with past online transaction experiences, the higher their purchases amounts and the more likely they were to be repeated purchasers (Koivumäki 2001, Devaraj *et al.* 2002, Foucault and Scheufele 2002, Brown *et al.* 2003, Park and Jun 2003, Cho 2004, Moe and Fader 2004, Pires *et al.* 2004, Yang and Lester 2004, Lee and Lin 2005) and the lower likelihood of them aborting an intended online transaction (Cho 2004). These results are also confirmed by the extended TAM which suggests that increased user experience had positive effect on users' attitudes toward technology and the mastering of that technology (Venkatesh and Morris 2000).

Previous studies consider emotions as an important element in human response to environmental settings and as a guide to behaviour (Mazaheri *et al.* 2011). According to Mehrabian and Russell (1974), consumer emotions lead to various consumer response behaviours such as purchase intention (Ha and Lennon 2010) and approach behaviours (Menon and Kahn 2002, Eroglu *et al.* 2003b). In online settings, several attempts have been made to examine the influence of emotion on online consumer behaviour (Lynch and Beck 2001, Lynch *et al.* 2001, Wolfenbarger and Gilly 2001, Xia 2002, Huang 2003, Wu *et al.* 2008, Kim and Lennon 2010, Verhagen and van Dolen 2011, La and Choi 2012, Kim and Lennon 2013). For example, Kim and Lennon (2013) demonstrated that emotion has a

significant impact on online purchase intention. Wolfinbarger and Gilly (2001) and Xia (2002) maintained that emotions are related to consumers' interpretation of their feelings given different online purposes. Positive affect would lead to shorter browsing time and less detailed information processing when the purpose of online shopping is task-oriented rather than pure entertainment, whereas negative affect works in an opposite way (Lynch and Beck 2001, Xia 2002, Huang 2003). Lynch et al. (2001) investigated the effect of emotions on purchasing intention and loyalty of consumers from 12 countries in three regions (North America, Western Europe, and South America) and pointed out that the influence of emotion in online shopping could vary with product categories and consumer experiences. The results further showed that positive emotions have a positive influence on online shopping intention of consumers in Western Europe and South America, but not on consumers in North America. From a product perspective, low-touch, standardized goods may be less subject to the influence of the positive affect from the shopping experience than high-touch, experiential products (Lynch *et al.* 2001).

In recent years, a large and growing body of literature has investigated the role of flow in determining shopping intention and usage. Flow has been linked with different types of consumer activities where the individual becomes so engrossed with the activity as to create a pleasurable experience (Hsu *et al.* 2012, Wang and Hsiao 2012). As Csikszentmihalyi (1975) defined, flow is a cognitive state in which individuals are so intensely involved in an activity that "nothing else seems to matter". Hoffman and Novak (1996) suggested that flow could be used to model online consumer behaviour. A great number of studies have reported that flow experiences entice behavioural intentions such as an increase in the likelihood of purchasing from a website, longer visitation at a website (known as stickiness), revisiting the website in the future, positive word-of-mouth (WOM) recommendations to others (Novak *et al.* 2000,

Korzaan 2003, Mathwick and Rigdon 2004, Skadberg and Kimmel 2004, Richard and Chandra 2005, Skadberg *et al.* 2005, Wu and Chang 2005, Hausman and Siekpe 2009, Lee and Chen 2010, O'Cass and Carlson 2010, Hsu *et al.* 2011, Hsu *et al.* 2012, Gao and Bai 2014), and visits to the service provider in a physical (i.e. offline) service location (Skadberg and Kimmel 2004). In another study of flow in the context of online searching (Mathwick and Rigdon 2004), flow appeared to enhance consumers' attitude toward online retailers and the brands they offered.

2.3.2.5 Social and Psychological Characteristics

Prior studies have suggested that social and psychological variables play major roles in purchasing behaviour, evaluation, and decision making processes (San Martín and Herrero 2012, Lysonski and Durvasula 2013). These variables are mainly derived from psychological theories such as TPB and TAM (Davis 1989, Ajzen 1991). Many studies have revealed that favourable attitudes towards online shopping are positively associated with online shopping intention and actual purchase (Van der Heijden *et al.* 2003, Ahn *et al.* 2004, Sorce *et al.* 2005, Yang *et al.* 2006, Ahn *et al.* 2007, Crespo *et al.* 2009, Ha and Stoel 2009, Hausman and Siekpe 2009, Hernandez *et al.* 2009, Lee 2009a, Lee 2009b, Khare and Rakesh 2011, Mazaheri *et al.* 2011, Yuliharsi *et al.* 2011, Kim 2012, Andrews and Bianchi 2013).

In addition, favourable attitudes toward the internet (Grazioli and Jarvenpaa 2000, Sim and Koi 2002), catalogue retailing (Cho 2004), marketing and advertising (Donthu and Garcia 1999) and online services (Mazaheri *et al.* 2011) were also found to lead to a greater adoption of online shopping. Similarly, favourable behavioural intention to use is reported to have a positive impact on the actual usage of online shopping (Limayem *et al.* 2000, Shim *et al.* 2001, Chen *et al.* 2002, Young and Stoel 2004, Khare and Rakesh 2011). Commitment to the

website (Park and Kim 2003), site involvement (Yusniza 2007, Mazaheri *et al.* 2011) and satisfaction (Park and Kim 2003, Choi *et al.* 2004, Khalifa and Liu 2007, Bai *et al.* 2008, Park *et al.* 2012 , Yen *et al.* 2013) were also found to act as critical determinants of consumers' online purchase intention and purchase behaviour.

Another important social/psychological variable that has received extensive attention from scholars is perceived behavioural control, which refers to an individual's perception of her/his ability to perform a behaviour. Domina *et al.* (2012), Limayem *et al.* (2000), Shim *et al.* (2001), and Lee (2009a, 2009b) suggested that perceived behavioural control positively affects online shopping intention. Koufaris *et al.* (2001) pointed out that perceived control increases the intention of new Web customers to return, but seemingly does not influence repeat customers to return.

Choi and Geistfeld (2004), Clemes *et al.* (2013), Limayem *et al.* (2000), Yuliharsi (2011) and Lee (2009a) maintained that the subjective norm of an individual (that is, perceptions of the feasibility of a behaviour as evaluated by referent people) positively influences her/his intention to purchase online, which, in turn, has a positive effect on the actual choice of online shopping. Al-Maghrabi and Dennis (2011) indicated a positive effect of social pressure on online continuance intention. Similarly, Blake *et al.* (2003) showed strong evidence that the greater the prevalence of internet shopping among one's social network, the greater the frequency of online shopping. These findings were consistent with the TPB (Ajzen 1991) and the Triandis' Model (1980), which could be used as guiding psychosocial theories for research.

Innovativeness of consumers has received considerable attention in past research on consumer behaviour (Hirschman 1980, Roehrich 2004, Kim *et al.* 2012b, Truong 2013) in light of its relevance as a factor in the adoption of a new product (Im *et al.* 2003, Klink and Athaide 2010) or a purchase behaviour (Citrin *et al.* 2000). Innovativeness refers to the degree to which an individual is receptive to new ideas (Chang *et al.* 2005). Similar dimensions of innovativeness included novelty (Huang 2000), trying something new (Raijas 2002) and being first to use new technology (Bellman *et al.* 1999). However, the results for the impacts of general innovativeness on online consumer behaviour were mixed. For example, Donthu and Garcia (1999), Limayem *et al.* (2000) and Sin and Tse (2002) confirmed a positive relationship between general innovativeness and purchase intention, whilst Alka Varma *et al.* (2000), Citrin *et al.* (2000), Young and Stoel (2004) and Yusniza (2007) claimed that such relationship appears insignificant in their studies.

In an attempt to explain the divergent findings, some studies take the view that the individual's innovativeness should be domain-specific (regarding an area or a behaviour) and not a general characteristic of the individual's personality (Goldsmith 2002, Hoffmann and Soyez 2010, San Martín and Herrero 2012). Goldsmith and Hofacker (1991) affirmed that innovativeness should be considered specific to a domain. Although domain-specific innovativeness is related to a general predisposition towards innovation, it is more predictive of a particular behaviour than the general conception. Multiple researchers support this hypothesis, highlighting the relevance of domain-specific innovativeness as a determinant of the adoption of a new product or behaviour (Agarwal and Prasad 1998, Hoffmann and Soyez 2010). The literature on e-commerce shows a predominance of the concept of innovativeness as a domain-specific variable (Citrin *et al.* 2000, Goldsmith 2000, Goldsmith 2001, Goldsmith 2002). Many studies have concluded that domain-specific innovativeness has a

significant and positive association with intention and usage of online shopping (Alka Varma *et al.* 2000, Goldsmith 2001, Goldsmith 2002, Blake *et al.* 2003, Bigne-Alcaniz *et al.* 2008, San Martín and Herrero 2012).

In addition to innovativeness, other personality variables (e.g., risk aversion, disposition to trust, and confidence) are reported to exert influences on online shopping behaviour. For example, Donthu and Garcia (1999) demonstrated that consumers who tend to minimize risk (risk aversion) are less likely to buy online. In contrast, consumers who are willing to take risks are more likely to buy online (Sim and Koi 2002, D'Alessandro *et al.* 2012). Their study echo Belanche *et al.*'s (2012b) perspective that online shopping is riskier than traditional shopping. Gefen (2000) noticed that the disposition to trust (a general inclination to display faith in humanity and to adopt a trusting stance toward others) is positively correlated with the adoption of online shopping. Also, McKnight *et al.* (2002) asserted that the willingness to depend on a web vendor has a positive association with the intention to purchase online. Hahn and Kim (2009) addressed the influence of perceived confidence of shopping at an online store on consumers' behavioural intention toward the online store in a multi-channel setting. The results revealed a significant and positive direct effect. However, the finding contradicts the results of the study by Sin and Tse (2002) who claimed that confidence had no significant impact on online behavioural intention.

2.3.3 Online Vendor/Store and Product Characteristics

As Swaminathan *et al.* (1999) assert, vendors have the potential to influence consumers' online shopping behaviour. For example, a well-known vendor name may help relieve consumers with respect to perceived risk and establish trust in them, and hence motivate consumers to shop at an online store (Lee *et al.* 2011a, Aghekyan-Simonian *et al.* 2012). The

literature also notes that product characteristics affect consumers' choices among online stores, traditional stores and other shopping options (Chen *et al.* 2010, Lee *et al.* 2011a, Aghekyan-Simonian *et al.* 2012). In this section, online vendor/store and product characteristics are thoroughly reviewed with a summary of the findings in Appendix B.

2.3.3.1 Risk Reduction Measures

In the context of online shopping, several studies have been conducted in relation to the concept of risk reduction. Risk reduction measures, such as a money-back guarantee policy, can be seen as a process-based trust production mechanism (Akçay *et al.* 2013, Chang *et al.* 2013). Although some customers may not consider this to be a risk reliever, it is still perceived as an effective measure to act against the unreliable online transaction environments (Suwelack *et al.* 2011, Souza *et al.* 2012). Kim and Kim (2004) and Van den Poel and Leunis (1999) concluded that providing a money-back guarantee for consumers increases the likelihood of purchasing online. Consumers who are concerned about product return difficulties are more likely to abort an online transaction (Cho 2004, Foscht *et al.* 2013). In addition to a money-back guarantee, buying products from a well-known online store is another effective way to reduce product risk (Van den Poel and Leunis 1999, Jarvenpaa *et al.* 2000, McKnight *et al.* 2002, Mark and Harris 2007, Lee *et al.* 2011a). Other studies investigated whether the reduced price would increase the likelihood of purchase online (Van den Poel and Leunis 1999, Kim and Kim 2004), and the results showed that selling at a reduced price has a significant positive effect on consumers' online shopping intention with respect to the specific vendors. Moreover, a large volume of published studies (Grewal and Dharwadkar 2002, Kim and Kim 2004, Mark and Harris 2007, Lee *et al.* 2011a, Tsai *et al.* 2011, Ha and Stoel 2012) described the role of security and privacy measures on online shopping adoption. The findings revealed that security and privacy protections reduce

risks of online shopping and increase the purchase intention of online customers. For example, the presence of privacy policy improves consumers' trust in online vendor and further increases their intention to purchase online (Lee *et al.* 2011a) .

2.3.3.2 Online Store Features

In the online environment, customers interact with a retailer through its website, which is essentially an information system (i.e., online store). Therefore, the feature of this information system play an important role in shaping the customer's shopping experience (Luo *et al.* 2012). Previous studies examining the impacts of online store features on consumer decision-making mainly derive from three research steams, namely information content/quality, online store design and online store image (Mark and Harris 2007, Verhagen and van Dolen 2009, Pearson *et al.* 2012, Fan *et al.* 2013b).

More specifically, past studies showed that good information content/quality has a positive impact on purchase intention (Perdue 2002, Ranganathan and Ganapathy 2002, Ranganathan and Grandon 2002, Kim and Kim 2004, Bigne-Alcaniz *et al.* 2008, Ha and Stoel 2012, Pearson *et al.* 2012). Particularly, Perdue (2002) and Ranganathan and Grandon (2002) found that the quality of contents is one of the most important reasons why travellers make a booking on a particular travel site.

Researchers have sought to explain the influence of the overall online store design on consumers' intention to buy online or actual purchase behaviour (Quick 1999, States 1999, Totty 2001, Liang and Lai 2002, Ranganathan and Ganapathy 2002, Zimmerman 2002, Kim and Kim 2004, Mark and Harris 2007, Verhagen and van Dolen 2009). The outcomes demonstrated a significant and positive effect. Others studies focused on the specific dimensions of online store design. For example, Chau *et al.* (2000) and Childers *et al.* (2001)

studied the influence of navigation functionality of online store on consumers' online purchase behaviour. They pointed out that consumers who perceive a well-organized web by easily using navigation function are more likely to purchase from the online store. In addition, scholars (Yoon 2002, Verhagen and van Dolen 2009) examined the search function of online stores. The results showed a positive impact of effectiveness of search function on consumers' intention to purchase online. Others (Bell and Gemmell 1996, Hoffman *et al.* 1996, Bank 1997, Fram and Grandy 1997, Peterson *et al.* 1997, Iacobucci 1998, Weinberg 2000, Powell 2001, Udo and Marquis 2002, Cho *et al.* 2003) investigated the influence of downloading time on the effectiveness of a website. The results indicated that excessive download time hinders online purchase behaviour and frustrated users will leave the site, abandon their shopping carts and post negative opinions about that site. Eroglu *et al.* (2003a) highlighted the role of the accuracy of the product/s displayed in predicting online purchase. The findings showed that, as varying technology may make it difficult to represent the true colours or dimensions of a product, the distortion makes consumers uneasy about making an online purchase thereby discouraging online shopping adoption.

In addition, a growing body of literature has investigated the impact of online store image on online shopping behaviour. Aghekyan-Simonian *et al.* (2012) examined the role of the overall online store image in predicting online purchase intention. They reported that online store image impacts purchase intentions indirectly by decreasing risk perceptions. Previous research also tested the relationship between each dimension of online store image and online shopping intention and adoption (Van der Heijden and Verhagen 2004, Verhagen and van Dolen 2009, Fan *et al.* 2013b). For example, Verhagen and van Dolen (2009) proposed that online store image consists of online store merchandise, atmosphere, navigation and service and found that online store merchandise, atmosphere and navigation are positively related to

online purchase intention, while online store service does not have a significant effect on online purchase intentions. They further indicated that offline store image positively affects online store image. However, only offline store merchandise positively affected online purchase intention. Van der Heijden and Verhagen (2004) proposed a different conceptualization of online store image which is composed of online store usefulness, enjoyment, ease of use, store style, familiarity, trustworthiness, and settlement performance. In their study, the components were regressed on attitudes and intentions towards purchasing at the online store, revealing significant and direct influences from usefulness, enjoyment, trustworthiness and settlement performance. In an attempt to examine the role of store image in online shopping, Fan et al. (2013b) found that entertaining dimension of store image mediates the relationship between social presence and online purchase intention.

2.3.3.3 E-Service Quality

Parasuraman et al. (1985) defined service quality as a global judgment about the superiority or excellence of the service provided. A perception of service quality results from a comparison of expectations and performance based on expectation-confirmation theory (Park *et al.* 2012). The widely known scale for measuring service quality is SERVQUAL, developed by Parasuraman et al. (1988). It identifies five dimensions of service quality: tangibility, reliability, responsiveness, assurance, empathy. Tangibility refers to physical facilities, equipment and appearance of personnel. Reliability is defined as the ability to perform the promised service dependably and accurately. Responsiveness refers to the willingness to help customers and provide prompt service (Zeithaml *et al.* 2002). Assurance is associated with the knowledge and courtesy of employees and their ability to inspire trust and confidence (Zhu *et al.* 2002). The last dimension, empathy, is defined as individualized attention given to visitors (Lee *et al.* 2000, Zeithaml *et al.* 2002).

Within the service literature, e-service quality has been long recognized as an important driver of consumer attitudes and behavioural intentions. For example, Udo et al. (2010) showed that e-service quality positively affects satisfaction and behavioural intentions to use the e-service. Pearson et al. (2012) and Sousa and Voss (1999) advanced that e-service quality is positively related to e-service loyalty intention. According to Kassim and Abdullah (2010), Kim et al. (2011) and Ha and Stoel (2009), high e-service quality can improve the ease of use of an internet service, and hence help consumers complete their online shopping transactions with minimal intellectual input. The positive relationship between e-service quality and online purchase intention is also supported by Ahn et al. (2004), Chen and Tan (2004), Clemes et al. (2013), Lee and Lin (2005), Liao and Cheung (2001), Shih (2004), and Schneider and Bowen (1999). However, Verhagen and van Dolen (2009) did not find a significant effect of e-service quality on online purchase intention. In a similar work, Jarvenpaa and Todd (1997) reported that e-service quality has no significant relationship with attitude towards online shopping.

When seeking to understanding the effect of e-service quality on consumer behavioural outcomes, researchers have highlighted the importance of individual e-service quality dimensions. Recent studies suggest that the investigation of the effect of each e-service quality dimension is more insightful than that of the overall e-service quality (Kassim and Abdullah 2010) because the individual e-service quality dimensions may exhibit different effects on behavioural intentions. The findings on the impacts of specific dimensions of e-service quality, such as reliability, tangibility, and empathy were mixed. Reliable and timely delivery is one of the fundamental objectives for online shoppers. Past studies (Raijas 2002, Ahn *et al.* 2004, Kim and Kim 2004, Koyuncu and Bhattacharya 2004, Mark and Harris 2007,

Lee *et al.* 2011a) pointed out that reliable and timely delivery increases satisfaction and hence likelihood of adoption. Similarly, Cho (2004) concluded that consumers having concerns over delivery are more likely to abort an online transaction. This was consistent with the findings of other studies that investigated the role that post-purchase service (e.g. product delivery) quality has on online shopping behaviour (Schneider and Bowen 1999, Van den Poel and Leunis 1999, Cho 2004). Schneider and Bowen (1999) suggested that return issues may negate the perception of personal service and convenience of online shopping. Contrary to the significant effect, Vijayasathy and Jones (2000) reported that the influences of tangibility and empathy on consumer online behaviour are not significant. By delineating the nature of dimensions of e-service quality, the previous findings have provided an advanced understanding of the relative impact of each e-service quality dimension on purchase evaluations (Kassim and Abdullah 2010).

Several attempts have been made to examine the relationship between customer service quality and online adoption (Jarvenpaa and Todd 1997, Kunz 1997, Anthes 1999, Schneider and Bowen 1999, Chung 2001, Totty 2001, Burroughs and Sabherwal 2002, Wingfield 2002, Kim and Kim 2004, Ha and Stoel 2012). Walsh and Godfrey (2000) took the view that e-tailors have an advantage over brick and mortar counterparts in the area of customer service with their use of personalized web sites, product customization, and value-added work (Scott 2000). In line with this point of view, Anthes (1999), Burroughs and Sabherwal (2002) and Kunz (1997) asserted that individuals who seek personalized customer service are more likely to purchase at the online store. However, the study carried out by Mathwick *et al.* (2001) did not reveal a significantly positive relationship with the intention to shop online.

2.3.3.4 Product Characteristics

Marketing literature discusses product characteristics extensively. Some researchers claimed that product attitudes affect consumer attitude towards online shopping (Peterson *et al.* 1997, Bhatnagar *et al.* 2000b, Liao and Cheung 2001). For example, Phau and Poon (2000) explicated that products and services that have a low cost are frequently purchased from an online channel. However, Vijayasathy (2002) did not find such effect when examining the relationship between product costs and channel preference. The author (2002, 2003) further provided empirical evidence linking tangibility and behavioural intention. The findings demonstrated that a product's tangibility has a significant influence on consumers' intentions towards online shopping, which also empirically verify previous conceptual work conducted by Phau and Poon (2000) that products and services that have intangible value proposition and relatively high on differentiation are more likely to be purchased via the Internet.

Despite the contributions made by previous studies, it is worth mentioning that the vast majority of prior studies focused on a single product or a group of similar products. For instance, Liang and Lai (2002) focused on book-buying activities. Dahlen and Lange (2002) concentrated on grocery retailing. Shim *et al.* (2001) focused on search goods. Ruyter *et al.* (2001) carried out a number of investigations into travel services. This narrow focus (Lian and Lin 2008) limited the generalizability of their results to a few products at best. The effects of different product categories have been relatively neglected (Lian and Lin 2008).

Past online shopping studies underlined the important role of product value in online purchase decision-making (Lee *et al.* 2011a). The outcomes suggested that product value is positively related to online purchase intention and behaviour (Jarvenpaa and Todd 1997, Vijayasathy and Jones 2000, Mathwick *et al.* 2001, Guenzi *et al.* 2009, Chen *et al.* 2010, Lee *et al.* 2011a). Product value denotes perceived product and service quality of consumers.

Boyer and Hult (2006) argued that a match between the requested and the delivered product is a key element in online purchase decisions. Previous studies on the components of product value showed diverse results. For example, Anand (2007) and Brucks et al. (2000) emphasized that product value should comprise ease of use, functionality, high performance, durability, customer service and good reputation. Turban et al. (2006) considered reasonable price and high quality equally important to product value. Chen et al. (2010) synthesized prior literature and examined the following features of product value: product features (e.g. quality) matching customer expectation (Brucks *et al.* 2000, Boyer and Hult 2006), product ease of use (Brucks *et al.* 2000), and product pricing reasonably reflects product brand (Turban *et al.* 2006).

Researchers also examine whether merchandising and product brand image influence online behaviour. Schaupp and Belanger (2005) suggested that e-commerce provides a great breadth and depth of product offers to impress the consumer. Online retailing literature concluded the features of merchandising as extensive product assortment and variety (Szymanski and Hise 2000, Sin and Tse 2002, Cho 2004, Schaupp and Belanger 2005, Anand 2007, Martins *et al.* 2012), exclusive products (Schaupp and Belanger 2005, Anand 2007), and seasonal products and sales (Schaupp and Belanger 2005) offered by online vendors. It was demonstrated that merchandising is positively associated with consumers' online shopping intention and adoption (Szymanski and Hise 2000, Sin and Tse 2002, Cho 2004, Schaupp and Belanger 2005, Anand 2007). Moreover, Aghekyan-Simonian et al. (2012) developed and empirically examined a model that links product brand image to online purchase intention. They stated that product brand image influences online purchase intentions both directly and indirectly by reducing various risk perceptions.

A product's asset specificity is another product characteristic that has been studied. Asset specificity is the extent to which assets (such as physical, human, or location) are special to a given transaction and used only at lower value in any alternative application (Chiles and McMackin 1996). Liang and Huang (1998) maintained that a product's asset specificity, the lack of transferability of the assets from one retailer to another, is positively related to TCs, which, in turn, has a negative impact on online shopping intention.

2.3.4 Perceived Channel Characteristics

Online channel features (such as information quality, security, convenience, uncertainty) are found to influence consumers' online shopping intention and purchase behaviour (Ahn *et al.* 2004). Further, online stores, traditional stores, and other shopping channels compete with each other to survive. Consumers' adoptions of online shopping are highly dependent on the superiority of online shopping to other shopping channels and perceived drawbacks. The findings of existing research on the impacts of perceived channel characteristics are summarized and shown in Appendix C. The following discusses the identified channel characteristics in relation to online shopping.

2.3.4.1 Perceived Risk

Dunn *et al.* (1986) defined perceived risk as the expected negative utility that consumers can associate with the purchase of a particular brand or product. According to Pavlou (2003), perceived risk refers to the consumers' subjective belief of suffering a loss in pursuit of a desired outcome. Online marketing researchers have frequently adapted the concept of perceived risk in their examination of online shopping or purchasing in general (e.g., Choi and Lee, 2003), for particular types of products (Pires *et al.* 2004), and from a particular online store (Park *et al.* 2005).

Extant studies have measured the perception of risk either in a general way (Liu and Wei 2003, Cheng *et al.* 2012, D'Alessandro *et al.* 2012) or in a specific way (Lee 2009a, Hong and Cha 2013). The general risk was measured by asking respondents to assess whether buying goods online is risky, whereas specific risk was concerned with credit card fault (Bhatnagar *et al.* 2000b), product quality (Kolsaker *et al.* 2004), privacy infringement (Lunn and Suman 2002), system/web security (Burroughs and Sabherwal 2002), fraudulent merchant behaviour (Grazioli and Jarvenpaa 2000) and environmental uncertainty (Park *et al.* 2004). Not surprisingly, the studies proved quite controversial.

For generally perceived risk, many researchers noted that it has a significantly negative impact on intention and actual online adoption behaviour in different contexts, such as online shopping (Kolsaker *et al.* 2004, Park *et al.* 2004, Pires *et al.* 2004, Doolin *et al.* 2005, Park *et al.* 2005, Huang *et al.* 2006, Chang and Chen 2008, Kim *et al.* 2008, Crespo *et al.* 2009, Lee 2009b, Cheng *et al.* 2012, D'Alessandro *et al.* 2012, Clemes *et al.* 2013, Kim and Lennon 2013), mobile banking (Luo *et al.* 2010), mobile payment (Thakur and Srivastava 2014), online trading (Lee 2009b), and Internet banking (Yousafzai *et al.* 2009).

Particularly, in the online shopping context, perceived risk was found to negatively affect consumers' responses to online retailers: the lower the risk perceived by consumers, the higher their acceptance of the online shopping mode (Forsythe and Shi 2003) and the greater their purchase intention from the online store (Clemes *et al.* 2013). Perceived risk is higher in online versus in-store shopping conditions, and this difference is especially true for non-digital, physical goods such as apparel products that require high involvement (Biswas and Biswas 2004, Pires *et al.* 2004). The negative correlation was also found to influence both

experienced and novice consumers (Liang and Huang 1998), while others did not find such a relationship (Miyazaki and Fernandez 2001, Yusniza 2007). Moreover, several studies (Jarvenpaa and Todd 1997, Jarvenpaa *et al.* 1999, Jarvenpaa *et al.* 2000, Limayem *et al.* 2000, Vijayasathy and Jones 2000, Kimery and McCord 2002, Van der Heijden *et al.* 2003) revealed that risk perception has a significantly negative influence on the attitude towards online shopping. As attitude towards online shopping has been regarded as the precursor of shopping intention, risk perception was further confirmed to indirectly affect intention or usage through attitude (Lee 2009b).

For the perception of specific risk, studies by Bhatnagar *et al.* (2000b), Dabholkar and Sheng (2012), Hong and Cha (2013) and Lee (2009a) summarized that risks associated with credit card problems (i.e., financial risk) could negatively affect online shopping intention. Researchers (Liang and Huang 1998, Jarvenpaa *et al.* 1999, Bhatnagar *et al.* 2000b, Featherman and Pavlou 2003, Joines *et al.* 2003, Pavlou 2003, Kolsaker *et al.* 2004, Park *et al.* 2004) provided empirical evidence that supports the negative relationship between product quality risk and online shopping adoption, suggesting that online purchase intention is negatively related to product quality risk. In addition, a large number of studies showed the negative effects of privacy risk (Ranganathan and Ganapathy 2002, Van Slyke *et al.* 2006, Wirtz *et al.* 2007, Lian and Lin 2008, Lee 2009a) and security risk (Liao and Cheung 2001, Burroughs and Sabherwal 2002, Ranganathan and Ganapathy 2002, Sin and Tse 2002, Lian and Lin 2008, Lee 2009a, Hong and Cha 2013) on online purchase intention.

For example, Lian and Lin (2008) reported that personal privacy concerns and perceived web security concerns play a negative role in predicting consumer acceptance of online shopping, but their influence varies according to product types. Lee (2009a) tested such effect in the

online banking context and confirmed the negative relationship. In contrast to previous findings, the study conducted by Miyazaki and Fernandez (2001) demonstrated that privacy infringement, system security, and fraudulent behaviour of the merchants do not have significant influence on online purchase intention or actual purchase behaviour. The inconsistent results could be attributable to a narrow definition of the risk and, therefore, researchers (Jarvenpaa *et al.* 2000, Miyazaki and Fernandez 2001) called for specific measures of individual risk dimensions.

Given the fact that the distribution and impersonal nature of e-commerce leads to greater information asymmetry and higher uncertainties than the traditional shopping environment, previous studies have emphasized the important role of perceived uncertainty as a chief barrier to online adoption behaviour and examined the influence of uncertainty in different online environments. Pavlou *et al.* (2007) claimed that uncertainty has a greater impact on people's purchasing intention in online bookstores than in online pharmacies. Ruiz-Mafé *et al.* (2009) indicated that poor performance and loss of privacy are perceived as the predominant risk dimensions in purchasing airline tickets online. As perceived uncertainty is an expectation of an ambiguous potential loss, it was also shown to influence attitudes toward a behaviour (Quintal *et al.* 2010). As an example, the higher the perceived uncertainty about the potential for financial loss associated with a purchase, the more negative attitudes will be toward the purchase. Higher levels of ambiguity about the outcomes of a decision are likely to lead to less favourable attitudes toward the online purchase decision (Quintal *et al.* 2010). Obviously, if buyers are worried about the outcome of online transactions due to numerous uncertainties, risks or possible loss, they are less likely to participate in online exchange relationships (Yeh *et al.* 2012b, Kim and Lennon 2013).

2.3.4.2 Relative Advantages over Conventional Shopping

Various online shopping advantages have been identified by the previous cited studies that focused on this topic. Some stated these advantages in a general way, including variables such as perceived benefit/value (Verhoef and Langerak 2001, Park and Kim 2003, Kim *et al.* 2008, Lee 2009a, Lee 2009b, Chang and Tseng 2011, Wu *et al.* 2014) and perceived consequences (Limayem *et al.*, 2000). Other studies employed more specific measurements: utility as communication channel (Li *et al.* 1999), convenience (Donthu and Garcia 1999, Li *et al.* 1999, Swaminathan *et al.* 1999, Eastin 2002, Sin and Tse 2002, Lorek 2003, Chen *et al.* 2009, Saprikis *et al.* 2010, Clemes *et al.* 2013), time saving (Raijas and Tuunainen 2001, Goldsmith and Goldsmith 2002, Karayanni 2003, Lorek 2003, Kohli *et al.* 2004, Koyuncu and Bhattacharya 2004, Saprikis *et al.* 2010), easy to order (Raijas and Tuunainen 2001, Raijas 2002), trying new things (Raijas and Tuunainen 2001, Sin and Tse 2002), financial benefits (Van den Poel and Leunis 1999, Eastin 2002, Kim and Kim 2004), price reduction (Liao and Cheung 2001) and perceived enjoyment (Koufaris *et al.* 2001, Van der Heijden and Verhagen 2004, Parboteeah *et al.* 2009, Al-Maghrabi and Dennis 2011, Domina *et al.* 2012), etc.

Generally, most suggested advantages were found to have a positive impact on online shopping intention and actual behaviour (Limayem *et al.* 2000, Raijas 2002, Kim *et al.* 2008, Saprikis *et al.* 2010, Al-Maghrabi and Dennis 2011, Wu *et al.* 2014). Further, if relative advantages of online shopping fit consumers' shopping orientations or personalities, they are more likely to value such benefits and purchase online (Donthu and Garcia 1999, Limayem *et al.* 2000, Verhoef and Langerak 2001, Chen *et al.* 2002, Sin and Tse 2002, Blake *et al.* 2003)

In addition to the aforementioned advantages, there are other factors related to online shopping advantages that have attracted considerable attention from online retailing researchers and practitioners. PU and PEOU were extensively found to directly and positively influence consumers' online shopping intention and actual use (Pavlou and Fygenon 2006, Ahn *et al.* 2007, Khalifa and Liu 2007, Yusniza 2007, Bigne-Alcaniz *et al.* 2008, Chen *et al.* 2009, Ha and Stoel 2009, Lee 2009a, Lee 2009b, Luo *et al.* 2010, Al-Maghrabi and Dennis 2011, Lee *et al.* 2011a, Yuliharsi *et al.* 2011, Cheng *et al.* 2012, Chen and Teng 2013, Smith *et al.* 2013). These findings reinforce the fundamental assumptions of the TAM (Davis 1989) that usefulness and ease of use of a new technology perceived by potential users are the two major contributing factors for adopting the new technology.

However, slightly different from previous studies, O'Cass and Fenech (2003) reported the indirect effect, that is, PU and PEOU of web retail influence online behavioural adoption through attitude towards web retail. Yusniza (2007) investigated the consumers' adoption of internet shopping in the context of UK travel services. The results of this study yield evidence that PU serves as major motive for adopting internet shopping while PEOU is not a significant determinant.

2.3.4.3 Trust

Trust is a concept that has been extensively studied in the fields of sociology and marketing, management information systems, and organizational behaviour in the context of business and management over the past decade (Morgan and Hunt 1994, Milne and Boza 1999, Leonidou *et al.* 2013, Liang *et al.* 2013, Meskaran *et al.* 2013, Schilke and Cook 2013, Sekhon *et al.* 2013). Trust is essentially another way of conceptualising risks, specifically those related to individuals' uncertainty regarding the motives, intentions, and prospective

actions of others on whom they depend (Kramer 1999). If risks are present, consumers need trust on the vendors before conducting a transaction; and the higher the perceived risks, the more the need for trust (Hong and Cha 2013, Grazioli and Jarvenpaa 2000). As indicated by numerous studies, lack of trust in the online transactions and the online vendors is the most fundamental obstacle in the market penetration of e-shopping (Corbitt *et al.* 2003, Gefen *et al.* 2003a, Liu *et al.* 2004, Riedl *et al.* 2010, Kim *et al.* 2011).

Trust has been defined and conceptualised in a number of ways. According to Grabner-Kraeuter (2002), trust was defined from a functional point of view in that it reduces complexities and uncertainties. A number of studies conceptualized trust as an overall construct: the trustor is willing to be vulnerable to the action of the trustee (Gefen 2000, Lee and Turban 2001, Van der Heijden *et al.* 2003) or a general belief that the trustee can be trusted (Jarvenpaa *et al.* 1999, Grazioli and Jarvenpaa 2000, Chen and Dhillon 2003, Kim *et al.* 2008). Trust has also been seen as a set of specific beliefs, including ability (ability of the trustee to do what the trustor needs), integrity (trustee honesty and promise keeping), benevolence (trustee caring and motivation to act in the trustor's interests), and familiarity (trustor familiarity with the trustee) (Mayer *et al.* 1995, Ba and Pavlou 2002, Bhattacharjee 2002, Shankar *et al.* 2002, Gefen 2002b, Gefen *et al.* 2003a, Kim *et al.* 2013b).

Some researchers combined these two types of definitions to establish their own trust construct (McKnight *et al.* 2002, Kim *et al.* 2013b). For instance, Kim *et al.* (2013b) conceptualized trust as the willingness to believe partners in a business contract (Moorman *et al.* 1993), the credibility of and confidence in transaction targets and their honesty (Morgan and Hunt 1994), and the perceived reliability and favour of the targets (Kumar 1996). As

Shankar et al. (2002) contended, the majority of previous studies did not make a clear distinction between the underlying dimensions and the antecedents of trust.

Previous studies empirically tested the role of trust in an online environment and revealed a positive effect of trust on willingness to buy online from online vendors (Gefen *et al.* 2003b, Pavlou 2003, Pavlou and Fygenson 2006, Chen and Barnes 2007, Kuan and Bock 2007, Chang and Chen 2008, Kim *et al.* 2008, Roca *et al.* 2009, Yousafzai *et al.* 2009, Luo *et al.* 2010, Kim *et al.* 2011, Lee *et al.* 2011a, Bock *et al.* 2012, D'Alessandro *et al.* 2012, Hong and Kim 2012, Wang 2012, Hong and Cha 2013).

Contrary to the direct effect, Chen and Teng (2013) reported that trust does not directly affect website visitors' purchase intention toward online shopping, but indirectly through usefulness. In other word, usefulness mediates the relationship between trust and purchase intention. Ba and Pavlou (2002) and Riedl et al. (2010) investigated impact of trust on online purchasing behaviour and found a positive correlation. However, this finding was not confirmed by Yusniza (2007) in the study of adoption of travel e-shopping in the UK. The results showed an insignificant path from trust to adoption of Internet shopping. Others studies (Jarvenpaa *et al.* 1999, Jarvenpaa *et al.* 2000, Kimery and McCord 2002, Van der Heijden *et al.* 2003, Yusniza 2007) found trust to have an impact on risk perception reduction with a positive influence on attitude towards online shopping.

Aside from the overall trust, past studies (Chircu *et al.* 2000, Bhattacharjee 2002, Gefen 2002a, Gefen and Straub 2004, Van der Heijden and Verhagen 2004) also examined the effects of specific trust beliefs on intention to purchase online. Integrity and familiarity were found to increase purchase intention (Chircu *et al.* 2000, Bhattacharjee 2002, Gefen 2002a,

Chen and Barnes 2007, Kim *et al.* 2008), whereas belief in the ability and benevolence of the vendor did not show significant effect on intention to purchase online (Gefen 2002a).

2.3.5 Conclusion

As discussed in this section, various factors have impacts on the purchase intention and purchase behaviour of online shoppers. These factors can be categorised into three groups in related to consumer characteristics, online vendor/store and product characteristics, and perceived online channel characteristics as shown in Appendix A, B and C respectively. The literature shows that existing studies employ different ways of exploring and testing factors which exert influence on online shopping intention and actual purchase behaviour. There is no consensus on the determinants that can be used to explain and predict online shopping intention and actual purchase of online shoppers. The lack of a holistic approach that encompasses the common antecedents suggests the need to develop an integrative model to systematically investigate the antecedents of online consumer behaviour.

Despite the large amount of literature on online purchase intention or willingness to shop online, there exists a lack of a thorough theoretical understanding of actual online purchase behaviour. The majority of previous studies have utilised Fishbein's model (Hsu *et al.* 2014, Ketabi *et al.* 2014) in understanding the issue of antecedents of online behaviour. In the Fishbein model (Fishbein and Ajzen 1975), attitude has been viewed as a predictor of intention and finally actual behaviour. However, the idea that intentional behaviour will predict actual behaviour is rather questionable in online setting, due to a large number of people who only browsing and not purchasing (Yusniza 2007). That is to say, an individual who has high intention to purchase online does not necessarily take such action. As most previous work on online shopping has focused on the intentional behaviour rather than the

actual behaviour of online shoppers, this indicates that empirical evidence of the antecedents of consumer purchase behaviour remains inconclusive (Jarvenpaa and Todd, 1997). Actual purchase behaviour is of high interest to online vendors because of its contribution to online sales and profitability (Li and Huang 2009). Thus, there is a need for research to explore the factors that determine actual online purchase behaviour in order to develop a more complete understanding of the behaviour of online customers.

It can be noted that the vast majority of prior studies on exploring antecedents of online behaviour have been geographically concentrated in western countries where they share the similar cultural values. Far less attention has been devoted to examining the factors that influence Chinese consumers' online shopping behaviour. Consumers may exhibit different behaviour towards online shopping in various countries due to cultural and technological differences. The findings in western countries do not guarantee the same findings in mainland China. Besides, simply granting the results found in other countries in Asia where the culture is related to Confucianism (similar to mainland China) can hardly be persuasive and the results may offer little guidance on understanding Chinese consumers' online behaviour. As such, studies aiming to explain online Chinese consumer behaviour are needed.

While many researchers have sought to explain online shopping behaviour from the standpoint of benefits such as online shopping convenience, product variety, better price, and perceived enjoyment, few researchers have scrutinized this behaviour from a cost perspective. Only three references cited above including those of Liang and Huang (1998), Teo et al. (2004), and Teo and Yu (2005) have considered costs as the major antecedents to online purchase intention. Simply explaining online consumer behaviour from the perspective of benefits would limit our understanding of the complexity of online decision-making process.

Indeed, the cost consideration plays an important role in consumers' decision making (Wang *et al.* 2013). When shopping online, consumers are often deterred by cost-related factors such as time and cognitive effort and obstacles such as concerns about product quality, and exposure of credit card numbers and personal identities. Demangeot and Broderick (2007) indicate that as a cost factor, cognitive effort involved in understanding the online shopping process may be perceived as a barrier to online purchasing. Many online vendors attempt to attract more customers and retain existing ones through providing more benefits to customers, but a lack of understanding of customers' perceived costs has the potential to weaken the ability to create superior value over rivals and may dampen the occurrence of online purchase. Thus, consumers' perceived costs are an important variable that needs to be taken in account as a determinant of online shopping behaviour.

Given the importance of the roles of costs in determining online consumer behaviour, the next section will review the existing literature on TCs in the area of online shopping to identify research opportunities for this study.

2.4 APPLICATION OF TCS IN ONLINE CONSUMER BEHAVIOUR

2.4.1 Introduction

Studies of TCs have attracted growing interest from scholars in economics (Verbeke and Kano 2013), sociology (Granovetter 2005), political science (Moe 1991), organization theory (Barney and Hesterly 2006, Steenkamp and Geyskens 2012), contract law (Palay 1984) and marketing (Anderson 1996, 2008, Williamson and Ghani 2012) in their attempts to explain a broad range of exchange-related issue, such as strategic impact of information systems

(Hennart 2006, Lacity *et al.* 2011), resource allocation (Masten 1984, Levy 1985, Lieberman 1991, Masten *et al.* 1991, Balakrishnan and Wernerfelt 2006, Yang *et al.* 2012, Castano and Mills 2013), sourcing decisions (Walker and Weber 1987, Masten *et al.* 1989, Schneider *et al.* 2013) and location decisions (Mcivov 2013). However, it has only received limited attention in the research regarding transactions of individual consumers in an online environment (Yen *et al.* 2013). The majority of past studies on online TCs focused on using TCs to explain the rise of e-commerce and cost savings (Malone *et al.* 1987, Morton 2006). Only a limited number of studies empirically examined impacts of TCs on online shopping behaviour (Wu *et al.* 2014).

TCs appear to be a critical and relevant issue for consumer behaviour theory and practice because TC reduction has been found to lead to purchase/repeat purchase intention and revisit the website to re-experience the service performance (Liang and Huang 1998, Teo and Yu 2005, Yen *et al.* 2013). Moreover, an understanding of TCs is also crucial for online vendors if they are to counteract the negative impacts these costs might have on consumers' shopping choices. It will help online vendors effectively allocate their resources to reduce consumer's TCs perceptions. In this sense, understanding TCs associated with the online transactions of individual consumers should be an important research domain for online shopping researchers as it is crucial to both online vendors and consumers.

In terms of the level of analyses, TCT has been applied to explain issues at the firm level, such as development of web strategy (Steinfeld and Whitten 1999), strategic alliance structuring (Parkhe 1993), industry value chain (Benjamin and Wigand 1995), product adaption (Long *et al.* 2014) and alignment of electronic governance form (Hannas *et al.*

2010). In contrast, there have been little studies which apply TCT at the individual consumer level (Liang and Huang 1998, Teo and Yu 2005, Morton 2006).

In an online setting, Jones and Leonard (2007) indicated that the amount of information provided to eliminate uncertainty, the additional avenues provided for buying and selling, and the time saved in accomplishing an online purchase predict buyer satisfaction. Liang and Huang (1998) and Teo and Yu (2005) stated that the online market with lower TCs could be accepted as a preferred channel by the consumer. Lee and colleagues (2000) argued that the fewer the competing online vendors, the greater the possibility of opportunistic behaviour on the part of existing vendors so as to maximize profits. This would increase TCs for the consumer, leading to a decrease in the intention to revisit a specific online store. The extant studies on TCs and TCT have acknowledged that e-commerce has become an increasingly popular alternative to traditional forms of commerce for consumers due to its relatively lower TCs as compared with the offline shopping channel.

2.4.2 Major Research on TCs of Online Shopping

Compared to the field of economics, relatively few IS studies have investigated the roles of TCs on individual consumer decision-making in the e-commerce context. Only limited studies applied TCT in online shopping, for example Liang and Huang (1998), Teo et al. (2004), Teo and Yu (2005), Kim and Li (2009b), Kim et al. (2011), Kim et al. (2013b), Yen et al (2013) and Wu et al. (2014). Their studies provide valuable insights into the understanding of the roles of TCs in determining online consumer behaviour. The following section will review their work.

Liang and Huang (1998) applied TCT in the study of e-commerce adoption and examined what products are more suitable for marketing electronically and why. Their study posited that whether a customer would buy a product electronically is determined by the TCs of the channel and the TCs of a product on the web are determined by the uncertainty and asset specificity. In total, 86 Internet users were involved and five products with different characteristics (book, shoes, toothpaste, microwave oven, and flower) were used in the study. The TCs were measured by the costs associated with each of the stage of the online transaction process, including search cost, comparison cost, examination cost, negotiation cost, payment cost, delivery cost and post-service cost. The findings showed that the customer acceptance is determined by the TCs, which are in turn, determined by the uncertainty and asset specificity, and while experienced shoppers were concerned more about the uncertainty in e-shopping, inexperienced shoppers were concerned with both.

Although Liang and Huang's (1998) findings had been encouraging and useful, the research was not without limitations. Firstly, the study only chose five products with different characteristics to represent all types of products. It might be problematic to draw a conclusion that different products have different customer acceptance simply based on five products. It is unclear whether the findings can be generalizable to all products and services on the web. A more valid classification of products may be needed. Secondly, as online environments have some notable differences compared to traditional shopping environments, only focusing on uncertainty and asset specificity may limit our understanding towards online consumer behaviour. Online shopping decision-making is a complicated process that is risky and uncertain. Importantly, financial risks (Hong and Cha 2013), product quality risks (Kim and Lennon 2010) and privacy risks (Ruiz-Mafé *et al.* 2009) have all been suggested as major inhibitors to online purchase. Although Liang and Huang's (1998) study highlighted the

importance of uncertainty, they failed to examine the specific uncertainty factors that consumers may be concerned about, in this regard, this study offers limited implications for e-commerce practitioners to alleviate consumers' perceived uncertainty. Their study would provide more valuable insights into the production and causes of TCs if it could decompose uncertainty and asset specificity. Thirdly, buying frequency is a key factor in TCT. However, the study did not present the relationship between buying frequency and TCs.

Teo and colleagues' study (2004) extended Liang and Huang's work (1998) by examining more antecedents (six instead of two) of TCs and testing the model among Internet users across two countries, i.e., the USA and China. The study hypothesized that consumers' TCs of online shopping were affected by six antecedents: product uncertainty, behavioural uncertainty, convenience, economic utility, dependability, and asset specificity. In turn, TCs had a negative relationship with consumers' willingness to buy online. The results showed that behavioural uncertainty and asset specificity were positively related to TCs whilst convenience and economic utility were negatively related to TCs among US consumers and those in China. Product uncertainty and dependability were negatively related to TCs among US consumers but not consumers in China. TCs were found to have a positive influence on willingness to buy online among US consumers and those in China. The study extends the extant literature by explicating the relative importance of the antecedents to TCs and validating the relationship between TCs and online purchase intention in two countries.

However, Teo et al.'s (2004) findings revealed that the model accounts for only one third of the total variance of online buying behaviour, which implies that there might exist other factors that can affect TCs of online shopping. In addition, contrary to the TCT and related studies, product uncertainty was shown to be negatively related to TCs. Nevertheless, the

authors did not pay much attention to explaining the unexpected findings. Another limitation of their study lies in the conceptualization of TCs. TCs were conceptualized as the time spent on searching for information about online stores and monitoring online stores for product delivery. According to their definition, the total TCs incurred by consumers in online shopping are represented by the search costs and the monitoring costs. Although search costs and monitoring costs play significant roles in determining the overall TCs, other costs (e.g., comparison cost, examination cost, negotiation cost, payment cost, delivery cost and post-service cost) identified by Liang and Huang (1998) have largely been neglected. This conceptual limitation should be addressed in future research. The last limitation of their study is that no particular attention has been paid to the effects of different product categories on the hypothesized relationships. Given the importance of product categories in affecting consumer attitude and perception (Lian and Lin 2008, Lian *et al.* 2012), an area that warrants attention is the comparison of the relationships between TCs and its antecedents across various product categories.

In a follow up study, Teo and Yu (2005) further argued that information existing on the Internet could reduce information asymmetry and TCs. The study developed and empirically tested a consumer choice model based on TCT. Consistent with Teo et al (2004), the results confirmed that TCs were negatively related to willingness to buy online. To measure TCs, the authors highlighted three kinds of the costs involved in the online buying processes. They were searching cost (time and effort used to search for relevant products or services information and compare prices or other attributes among different online stores), monitoring costs (time and effort used to ensure that the terms of the contract have been met), and adapting costs (time and effort related to changes and customer service and support during the period of contract). The study extended prior research on online TCs by adding online

trust and buying frequency as new antecedent variables that influenced TCs. By examining various types of uncertainties, the results demonstrated that different kinds of uncertainties had different impacts on TC. They found that three kinds of uncertainties, namely performance uncertainty of products, behavioural uncertainty of online stores and environmental uncertainty of online stores, positively affected TCs of online buying, whereas branding uncertainty of online stores was not found to be positively related to TCs. The study proposed that trust composed of two components (dependability of online stores and privacy policy). The findings showed that dependability of online stores was negatively related to TCs while the relationship between privacy policy and TCs was insignificant. Moreover, the study filled the gap in the literature by testing and validating the negative relationship between buying frequencies and TCs.

Despite their contributions, the findings of Teo and Yu's (2005) study have several limitations. The major limitation lies in the sample selection. As the results indicated, more than 50 per cent of Internet users had not experienced online shopping. In this case, it would be difficult for those Internet users to respond to the questions on the survey regarding their perceptions of TCs, online stores' performance, brand and behavioural uncertainty, and privacy policy toward a specific online store. These questions were designed to be answered by Internet users who have experienced at least one instance of online shopping. To obtain reliable responses, respondents should answer all the questions based on their actual online purchase experience by following the method outlined and used in the majority of online consumer behaviour studies (O'Cass and Fenech 2003, O'Cass and Carlson 2010). However, in Teo and Yu's (2005) study, only general internet users were recruited to fill the survey, which could make the findings dubious and would further limit the generalizability of the findings as Internet users are not fully representative of the ultimate online shoppers.

Secondly, the search costs, monitoring costs and adapting costs may not fully tap into the concept of TCs occurring in the whole online transaction process. This conceptualization was not in line with previous research (Liang and Huang 1998, Teo *et al.* 2004). The measurement scales can be further refined in future research. Thirdly, asset specificity was not considered in the study because the researchers claimed that physical and human asset were not the specific investments that consumers made for online shopping only. This view was contrary to previous research (Liang and Huang 1998, Teo *et al.* 2004) which confirmed the significant role of asset specificity in increasing TCs. In addition, as the researchers acknowledged, other potential antecedent variables of TCs they did not test in their study should be included in future research. Finally, the study examined TCT in an Asian context and demonstrated its applicability in a non-western context. However, as the sample was collected in Singapore only, the study's results might be different if the model was retested in other Asian cultures (e.g., China, India) or a different cultural environment.

Another study by Kim and Li (2009b) applied the TCT to the online travel market and investigated the influences of TCs on customer satisfaction and loyalty. They conceptualized TCs as a three-dimension factor, consisting of searching costs, comparing costs and monitoring costs. The findings echoed previous research (Liang and Huang 1998, Teo and Yu 2005) in the effects of uncertainty and buying frequency on TCs. The study identified personal security as a new antecedent of TCs and found a positive relationship. The result also revealed the negative effects of TCs on customer satisfaction and loyalty with regard to online travel purchases. The study further suggested that TCs served as a key mediator between uncertainty, personal security, buying frequency and customer satisfaction, which was considered as the major theoretical contribution of the study.

Notwithstanding the compelling findings, Kim and Li's (2009b) study contains a number of limitations. Firstly, although personal security as a new antecedent of TCs was added into the TCT, other key antecedents (e.g., asset specificity and convenience) identified and confirmed in previous studies were overlooked. Secondly, the proposed conceptual model was only tested in online travel market by collecting data in South Korea. The results may not be generalized in other types of contexts, such as online apparel market in other countries. Thirdly, the study did not take into account the effects of different products on consumers' perceptions of online shopping. In their research design, the respondents were asked to identify the main travel agency for the product they purchased online. As a result, the variety of travel products with differing purchase cycles and product groups with different levels of competitive intensity could have impacts on the findings.

In the online tourism shopping context, Kim et al. (2011) further developed a theoretical model to examine which factors influenced trust, satisfaction and loyalty. The results of the study indicated that TCs, navigation functionality and perceived security had a significantly positive effect on satisfaction. However, they found that TCs had no effect on trust. Only navigation functionality and perceived security were found to have a significantly positive effect on trust. They further pointed out that satisfaction had a significantly positive effect on trust and both factors positively affected loyalty, which in turn influenced consumer behavioural intentions with respect to tourism products and services online. The study argued that many online customers hesitate at the last moment to click the final order button for a purchase when they confirm the TCs associated with online purchasing. To proceed with a transaction, consumers search for information and monitor the process to ensure the best deal. The costs involved in all such transaction-related activities were called TCs in their study. The TCs were mainly to do with saving money online.

Although Kim et al.'s (2011) study offered greater theoretical and empirical insights into trust formation in online tourism shopping context, some potential limitations that had not been acknowledged by the authors should not be neglected. Firstly, the study adopted a relatively narrow perspective to conceptualize TCs by emphasizing the price reduction and money-saving. For instance, some measurement items of TCs were "Online purchasing can save money as compared to offline purchasing", "E-commerce can provide more discount than offline purchasing" and "Online shopping is the right choice when price and other expenses are considered". Given that previous studies have considered TCs as a broad concept that covers all the costs incurred by consumers at each stage of the online transaction process (e.g., search cost, evaluation cost, monitoring cost, etc.) (Teo *et al.* 2004, Teo and Yu 2005, Kim and Li 2009b), this focus on saving money to depict TCs would constrain our understanding regarding the role of TCs in the online shopping for goods and services. Picking up on this point, future research may consider adopting a more comprehensive measurement approach which includes a wider array of TCs-relevant items in order to improve the statistical power and to reduce the potential for error in this type of research. Secondly, while TCs are the important factors that determine behavioural outcomes, this study did not explore the antecedents of TCs, which offer avenues for future research. Thirdly, the generalization of the results is limited by the context of online tourism shopping in South Korea: all of the observations were from South Korea and online retailing for tourism products in other countries and other product categories may not resemble those in South Korea.

In a subsequent study, Kim et al. (2013b) partially addressed the aforementioned limitations. The study identified factors that affect trust in online tourism shopping based on the TCT, including transaction security, navigation functionality, and cost-effectiveness. The results

indicated that these factors positively affected trust, which in turn positively influenced repurchasing intentions. To explore the factors affecting trust, the authors largely relied on the TCT and its relevant studies. As they stated, TCs could be defined as transaction fees, time, and search effort, which can be viewed as a more comprehensive and advanced conceptualization as compared with that in their previous study (Kim *et al.* 2011). The TCs could be classified into price-type costs (e.g., parking fees, installation fees, taxes, transaction fees), time-type costs (e.g., travel time, waiting time, searching time, general shopping time, and delivery time), and psychological-type costs (e.g., ease of use, inconvenience, frustration, annoyance, anxiety, depression, dissatisfaction, disappointment) (Devaraj *et al.* 2002, Chircu and Mahajan 2006). After identifying the specific types of TCs, Kim *et al.* (2013b) then selected three key factors, namely cost-effectiveness, navigation functionality and transaction security, to represent the price-type costs, time-type costs and psychological-type costs, respectively. The three factors were thought to eliminate uncertainties in transactions. Since alleviating uncertainty can improve trust in online shopping according to the TCT, the authors thus posited that cost-effectiveness, navigation functionality and transaction security were positively related to trust. The results supported this notion by showing significant positive effects.

Although the factors influencing trust were identified based on a strong theoretical foundation, Kim *et al.*'s (2013b) study failed to examine the relationship between TCs and trust. Therefore, future research could test the effects of overall TCs on trust and other behavioural consequences, such as satisfaction and loyalty. Moreover, whether the results can be generalizable to all products in online environments are unknown. In future studies, presenting a broader range of online goods or services and comparing the different product categories may provide more insights for academic and managerial fields.

Prior research has showed that the TCT has not only tested in Business-to-Customer (B2C) commerce, but also extended to Customer-to-Customer (C2C) environment. A prime example of C2C is the online auction. As the construct of repurchase intention has been gaining prominence both in the literature and in business practice, Yen et al. (2013) investigated the factors influencing it. The study integrated the TCT and ECT (expectancy confirmation theory) to understand the determinants of online bidders' repurchase intention in online auctions. The findings indicated that TCs were negatively associated with online bidders' repurchase intention, while satisfaction had a significantly positive influence on repurchase intention. An online auction website's asset specificity and product uncertainty were positively associated with the bidder's perceived TCs. The interaction frequency between bidder and seller negatively affected the bidder's perceived TCs. Bidders' satisfaction was determined by confirmation and by the e-service quality of both online auction sites and sellers. The study contributed to a better understanding of repurchase intention by demonstrating that when online bidders make repurchasing decisions, they undertake a cost-benefit analysis to determine which option offers the greatest net benefits and the least costs. The research results provided a novel approach to understanding bidders' benefits and costs dimensions in online auction marketplaces.

Despite that, the study needs to be considered in the light of specific limitations. The study did not provide a clear definition of TCs. It further measured TCs as a uni-dimensional construct without considering the individual cost involved at each stage of the online auction process. Given that the narrow perspective was adapted to measure TCs of online auction, future research may consider specifying the components of TCs by looking into the cost incurred at each transaction stage. While the study identified product uncertainty as a

dimension of TCs, other uncertainties that bidders could encounter were largely overlooked by the authors. Bidders have expressed concerns about exposure of credit card numbers and personal information (Yeh *et al.* 2012a). This level of concerns highly suggests that it is necessary to take into account the security and privacy uncertainties in the online auction research. Apart from that, other uncertainties in relation to e-service quality, website performance, seller reputation and external environment may also need to be explored as they are likely to exert influences on TCs. Accordingly, research addressing the effects of a comprehensive set of uncertainty factors on TCs is urgently needed. The findings may not be suitable to online B2C studies due to the significant differences in transaction processes and environments between C2C online auction and general B2C online shopping.

A more recent online shopping study by Wu *et al.* (2014) using the TCT proposed an integrative framework to examine the impacts of both TCs-related and value-related factors on repurchase intention from online shoppers' perspective. The study defined the construct of TCs as a three-component conceptualization that consists of information searching costs, moral hazard costs, and specific asset investments. Based upon evidence from survey of 887 online shoppers, the results showed that each cost component and perceived value were positively related to repurchase intention. Importantly, information searching costs exerted the most significant influences on repurchase intentions. It also found that perceived costs positively affected perceived values. The study addressed the research gap by investigating the relative importance of the three distinct costs on perceived value and consumer repurchase intention. Each cost exhibited different impacts on the perceived value and repurchase intentions, which explained why employing a three-component conceptualization of costs to understand consumers' retention and value creation was important.

Beyond theoretical significance, Wu et al.'s (2014) study had several limitations. For example, it did not include the discussion of product types, product complexity and product attributes, all of which would likely affect the TCs. Given that different product categories have different influential determinants of behavioural intention, future research should investigate the effects of product categories on the relationships between TCs, their antecedents and behavioural consequences. The study did not include the possibility of other crucial factors, for example product quality concerns, environment uncertainties, and buying frequency, affecting the TCs. In addition, consumers' personal factors may affect the TCs. For example, consumers' shopping motives (e.g., convenience- oriented) and internet skills (e.g., internet expertise) may affect their perceptions of TCs and, hence, their online shopping behaviour (Keaveney and Parthasarathy 2001, Bart *et al.* 2005). To explore these factors, future research can focus on the impacts of individual consumers' characteristics on their perception of online TCs.

2.4.3 Limitations of the Research on TCs

Although some earlier research has investigated the TCT in the e-commerce contexts, the conceptualization and application of TCT in the B2C online shopping context remains far from complete. There are several limitations in the existing literature on TCs in online shopping.

Firstly, the conceptualizations of TCs are not consistent across studies as displayed in Table 2.1. Different studies employ different components to conceptualize and operationalize TCs. This inconsistency would limit our understanding of the influences of TCs on consumers' online shopping behaviour, and subsequently would confound the mechanisms of costs evaluation on consumer adoption of online channel for purchasing products and services.

Moreover, the extant literature demonstrates little about how TCs vary between online and traditional shopping environments (Wirtz and Lihotzky 2003, Kim and Li 2009b). As such, the conceptualization and operationalization of TCs associated with online shopping need to be re-considered so that a valid instrument can be developed for measuring costs-related variables and offer a better understanding of their roles in online shopping behaviour.

Table 2.1 Summary of the Findings of the Effect of Online TCs on Behaviour-Related Consequences

Dependent variables	Independent variables	Result	Studies
Customer acceptance of online purchase	TCs	Negative correlation	(Liang and Huang 1998)
Consumers' willingness to buy online	TCs	Negative correlation	(Teo <i>et al.</i> 2004); (Teo and Yu 2005)
Customer satisfaction	TCs	Negative correlation	(Kim and Li 2009b); (Kim <i>et al.</i> 2011)
Customer loyalty	TCs	Negative correlation	(Kim and Li 2009b)
E-shopping value	TCs --Information searching cost --Moral hazard cost --Specific asset investment	Negative correlation Negative correlation Negative correlation	(Wu <i>et al.</i> 2014)
Repurchase intention	TCs --Information searching cost --Moral hazard cost --Specific asset investment	Negative correlation Negative correlation Negative correlation Negative correlation	(Yen <i>et al.</i> 2013) (Wu <i>et al.</i> 2014)
Trust	TCs --Transaction security --Navigation functionality --Cost effectiveness	0 Positive correlation Positive correlation Positive correlation	(Kim <i>et al.</i> 2011) (Kim <i>et al.</i> 2013b)

As described earlier and shown in Table 2.2, many attempts have been made to identify the antecedents of TCs. However, there is no agreement in the literature as to what factors may lead to TCs of consumers in online shopping. The study conducted by Liang and Huang (1998) found that uncertainty and asset specificity increase the perceived TCs for the consumers in online shopping while Teo et al. (2004) observed that product uncertainty, behavioural uncertainty, asset specificity, convenience, economic utility, and dependability significantly affect TCs. This implies that there is a lack of consensus on this issue. In addition, the identified antecedents can only account for a relatively small percentage of the total variance in TCs in the studies, which suggests that there might be some other potential antecedents that have been overlooked in prior studies. Scholars (Sholtz 2001, Teo *et al.* 2004, Wu *et al.* 2014) have called for more research on exploring antecedents of TCs of online shopping. A comprehensive list of antecedent factors affecting TCs associated with online shopping should be explored and tested simultaneously in an integrated framework.

Table 2.2 Summary of the Findings of the Antecedents of Online TCs

Dependent variables	Independent variables	Result	Studies
TCs	Uncertainty	Positive correlation 0	(Liang and Huang 1998);(Kim and Li 2009b) (Teo and Yu 2005)
	Asset specificity	Positive correlation	(Liang and Huang 1998);(Teo et al. 2004); (Yen et al. 2013)
	Product uncertainty	Negative correlation (only in US, not in China) Negative correlation	(Teo et al. 2004) (Yen et al. 2013)
	Behavioural uncertainty	Positive correlation	(Teo et al. 2004); (Teo and Yu 2005)
	Convenience	Negative correlation	(Teo et al. 2004)
	Economic utility	Negative correlation	(Teo et al. 2004)
	Dependability	Negative correlation Negative correlation (only in US, not in China)	(Teo and Yu 2005) (Teo et al. 2004)
	Privacy policy	0	(Teo and Yu 2005)
	Trust	0 (as privacy policy was not Sig.)	(Teo and Yu 2005)
	Branding uncertainty	0	(Teo and Yu 2005)
	Performance uncertainty	Positive correlation	(Teo and Yu 2005)
	Environmental uncertainty	Positive correlation	(Teo and Yu 2005)
	Online buying frequency	Negative correlation	(Teo and Yu 2005); (Kim and Li 2009b); (Yen et al. 2013)
	Personal security	Positive correlation	(Kim and Li 2009b)

Past research centres on using TCs to explain consumers' acceptance of and behavioural intention towards online shopping. Prior studies have not applied TCs to examinations of actual online purchase behaviour. In other words, there is a dearth of academic inquiry into the effects of TCs on consumers' online purchase behaviour. Indeed, most of the studies in online TCs literature focus primarily on consumer acceptance of online shopping, satisfaction, and consumer behavioural intention such as willingness to buy, intention to purchase, and intention to repurchase, overlooking the possible influences of TCs on consumers' actual online purchase behaviour. It is acknowledged that the internet makes it easy for consumer to have access to full information on price and product, but it is difficult for online retailers to create differentiation on both their price and product (Reichheld *et al.* 2000, Urban *et al.* 2000, Vatanasombut *et al.* 2004). For online marketers, a more practical question is: what drives consumers to finally purchase from their online store? In such a competitive business environment, it is imperative for them to know what the underlying criteria are for consumers choosing an online retailer to make a purchase. Thus, a closer examination of underlying mechanism of consumer's online purchase decision-making is necessary. Taking into account the crucial roles of TCs in explaining consumer acceptance and behavioural intention, this construct may serve as a useful foundation for understanding actual online purchase behaviour.

Furthermore, within the limited online TCs studies, scholars still focus on the early mentality of doing business online which, in essence, is driven by discrete transactions. More specifically, most studies concentrates on how internet visitors evaluate their initial perceptions of the TCs in an online store based on their transaction experience and how TCs impact their perceived shopping value (Wu *et al.* 2014) and initial purchase intention toward the online store (Liang and Huang 1998, Teo and Yu 2005). Such studies have provided

important insights into mechanisms of initial evaluation of TCs in an online store and have helped online vendors reduce a visitor's perceived TCs and increase consumers' purchase intention. However, with marketing strategies for online vendors switching to retaining customers, researchers need to take a new perspective on the study of the TCs – a perspective directed toward customer loyalty. The literature on online TCs shows that there is a lack of understating on the impacts of TCs on customer loyalty in online shopping context. Thus, on this issue, more studies are needed to investigate how TCs perceived by a consumer impacts his/her decision to be loyal to an online store after he/she has had some purchase experience with the online store.

Although the significant roles of TCs in influencing consumer behaviour has been noted in the literature, to the researcher's knowledge, no published studies have examined the factors that mediate the effects of TCs on their behaviour-related consequences, i.e., online purchase behaviour and loyalty. Some researchers believe that customer satisfaction acts as an important psychological factor that drives customer perceptions into customer loyalty (Caruana *et al.* 2000). Therefore, customer satisfaction can be considered as a mediator between customer perceptions and loyalty. However, whether customer satisfaction has a mediating effect on the relationships between TCs and online behavioural outcomes has not yet been empirically tested. In order to better understand the underlying mechanisms linking TCs and online purchase and post-purchase behaviour such as customer loyalty, further theoretical and empirical attention needs to be paid to issues pertaining to the mediator including customer satisfaction between TCs and online behavioural outcomes.

In addition, previous research is further comfounded by the lack of research into the factors that could be moderating the links between TCs and behavioural consequences. Although

some studies generated valuable insights into the dynamics of consumer TCs (Kim and Li 2009b, Wu *et al.* 2014), such studies have overlooked the effects of potential moderating variables. An exclusive focus on direct relationships to explain the online consumer behaviour may mask divergent consumer reactions to the specific nature of online shopping environment and thus inhibit a more comprehensive understanding of consumer evaluations of TCs and their subsequent shopping behaviour (Byramjee and Korgaonkar 2013b). Consumer behaviour theorists acknowledge that personal traits interact with costs in determining consumers' decision-making (Kleijnen *et al.* 2007). Online shopping indeed offers convenience and fun but in the meanwhile involves greater risks and uncertainties than the traditional shopping channel (Kim and Lennon 2013), which dramatically increase consumers' risks perceptions toward online shopping (Aghekyan-Simonian *et al.* 2012). However, research has demonstrated that consumers differ in their attitude to the risks. Consumer's risk-bearing propensity captures their inherent risk-tendency when facing uncertain situations (Kim and Byramjee 2014). Some consumers are risk-taking whereas others are risk-averse (Kahneman and Tversky 1979). Consumer's risk-bearing propensity may interact with the TCs in online shopping. Moreover, consumers differ in their online shopping orientations (Park *et al.* 2011). Some are convenience-oriented consumers while others are recreational-oriented shoppers who treat online shopping as a fun activity, thus their perceptions of enjoyment of online shopping may vary even under the same shopping conditions (Khare and Rakesh 2011). Therefore, perceived enjoyment may also moderate the relationship between TCs and online consumer behaviour. Investigating such moderating effects is of importance as it provides a full picture of how TCs work in enhancing online purchase behaviour and improving customer loyalty, and helps online vendors more effectively allocate resources to achieve desired outcomes.

Despite the existence of Liang and Huang's (1998) study emphasizing the roles of the product categories in influencing consumer acceptance of online shopping by investigating the impacts of five products with different characteristics on consumer acceptance, the limitation of the study lies in the representativeness of the products, that is, whether the five products can well represent all products. On this issue, there exists a lack of a thorough theoretical understanding regarding how the product categories differ in the relationships among antecedents, TCs and behavioural consequences in an online setting. Understanding the extent to which the effects of antecedent factors on TCs varies by product categories is essential in developing a comprehensive knowledge in relation to TC reduction activities. This is because, when viewed through a managerial lens, understanding the different effects of antecedent factors on TCs across product categories provides managers with guidelines to formulating relevant cost-reduction strategies, delivering cost-saving shopping experiences to customers, and finally achieving superior performance outcomes within different product categories. Therefore, it is of great importance to address the omission regarding the differing effects of product categories on the relationship between antecedents and TCs, and between TCs and behavioural consequences.

Limitations also exist in the sample selection. Most empirical online TC studies use Internet user samples (Liang and Huang 1998, Teo *et al.* 2004, Teo and Yu 2005) and the sample sizes are small. For example, only 86 Internet users are gathered by Liang and Huang (1998) in their study of consumer acceptance of online shopping. The Internet user sample is not considered suitable for the study of online purchase and customer loyalty because Internet users may not necessarily have purchased online products and service, and may have different perceptions of online shopping from the online shoppers who have online purchase experiences. Those who have not purchased products online may be unable to answer the

questions concerning the recent online purchase experiences and are very likely to provide biased information in order to complete the survey. Also, the results generated by the small sample may not be very persuasive as the small sample is hard to be representative of whole populations. One exception is the research conducted by Wu et al. (2014) who use a large-scale sampling and collect data from real online shoppers. To overcome the sampling limitations in the majority of past studies, a large-scale sample randomly selected from real-world online shoppers needs to be employed to provide more robust empirical evidence to the study of the TCs and online purchase and post-purchase behaviour.

The vast majority of prior studies on TCs are strictly confined to the context of developed economies where e-commerce has been widely adopted, such as the USA, Singapore, and South Korea. It is believed that the findings yielded from these studies may not be generalizable in the context of a developing economy where the development of e-commerce is at its early stage (e.g., China) due to the gap in the development of Internet and information technology. Although the study by Teo et al. (2004) made a comparison of TC model between USA and China, the results did not support several hypothesised relationships in China, and the study offered little explanation in the findings. As such, the impacts of TCs on their online shopping behaviour within the Chinese context still need a great deal of study and clarification.

2.5 CHAPTER SUMMARY AND RESEARCH QUESTIONS

This chapter reviewed the relevant literature about online consumer behaviour and TCs and identified the significant gap. The first section reviewed two widely-used theories (TAM and TPB) in studies of online consumer behaviour and their empirical research. In the online

environments, the predictive power of the theories varies from one study to another. These theories to some extent lack the elasticity to predict online purchase behaviour due to their inherent limitations and the complexities of online transaction environments. Therefore, it can be concluded that both theories do not appear capable of investigating the complexities of online shopping behaviour. In this regard, conceptual and empirical extensions seem necessary and an integration of these theories may be needed.

The second section reviewed the major antecedents of online shopping adoption, especially focusing on consumer intention to purchase online and actual online purchase behaviour. Synthesizing a large number of studies while integrating their similar factors, this study grouped the antecedents into three major categories, including consumer characteristics, online vendor/store and product characteristics, and perceived channel characteristics. The review showed that different studies have different ways of identifying the antecedents. Some antecedents, such as online store design, relative advantages and trust receive a lot of attention. They seem to constitute the main streams of research in this area that is, focusing on the benefits of online shopping. However, academic inquiry on the effects of other antecedents, particularly the cost-relevant variables is largely neglected. Perceived costs have been suggested as the important inhibitors to online purchase intention (Teo *et al.* 2004, Teo and Yu 2005). Despite this, far less attention has been focused on online inhibitors (e.g., costs) than online motivators (e.g., benefits). However, an understanding of these constraints is crucial to researchers and practitioners if they are to counteract the negative impacts of these inhibitors on consumers' online shopping decision-making. Accordingly, more studies concerning the roles the costs play in predicting online behaviour are warranted.

In the last section, eight studies pertaining to the TCs of online shopping were carefully reviewed. A closer look at the research shows that to date studies on the effects of TCs on online purchase behaviour and post-purchase behaviour such as customer loyalty are lacking. The main problem unsolved in this area is that TCs associated with online shopping do not have a consistent conceptualization. The issue of taking different approaches to measure TCs has been discussed very rarely in the literature. Little measurement attention has been attempted and the issue merits further investigation into the epistemic structure of the measures. In this sense, it becomes evident that researchers need to be aware of the measures of TCs. Accordingly, one of the purposes of this research is to identify and measure online TCs. Despite an improved understanding on the antecedents of TCs, the careful assessment of the extant studies indicates that that little effort has been made, either theoretically or empirically, to examine a comprehensive list of antecedent variables that affect TCs in the online shopping context. On this issue, there is still a need for thorough investigations into the antecedents of TCs by taking into account the consumers, vendors, and online channel-related characteristics. Furthermore, little is currently known about the mediators and moderators between TCs and online behavioural consequences, and the difference in the relationships between antecedents and TCs, and between TCs and online behavioural consequences across product categories.

In light of the above discussions, there currently exists no empirical research concerning the explanation of online purchase behaviour and customer loyalty from the perspective of TCs in which their antecedents, consequences, mediators, and moderators are combined and studied in an integrated framework with testing the framework across product categories. In an attempt to address the significant gaps in the literature and contribute to current knowledge, the present study aims to examine the antecedents of consumer TCs and their impacts on the

behaviour-related consequences including online purchase behaviour and customer loyalty, test the mediators and moderators between TCs and behavioural consequences, and compare all aforementioned relationships across two product categories, i.e., search products and experiences products in the context of a developing country, China. Specifically, building on previous discussions, the following research questions are proposed and will be addressed in this study:

1. To what extent do the antecedents affect TCs of consumers in online shopping?
2. To what extent do TCs determine online behavioural consequences?
3. Whether and to what extent are the relationships between TCs and behavioural consequences mediated by customer satisfaction?
4. Whether and to what extent are the relationships between TCs and behavioural consequences moderated by consumers' risk-bearing propensity and perceived enjoyment of online shopping?
5. To what extent do the relationships between antecedents and TCs differ across product categories?
6. To what extent do the relationships between TCs and behavioural consequences differ across product categories?

CHAPTER 3: THEORETICAL BACKGROUND AND RESEARCH FRAMEWORK

3.1 CHAPTER OVERVIEW

Based upon the theoretical foundations outlined in the Literature Review (Chapter 2), this chapter will integrate these foundations and develop a theoretical framework of consumer TCs of online shopping. The purpose is to further explain the phenomenon of consumer TCs and their online behaviour; that is, it will attempt to answer the questions surrounding online consumer behaviour from the perspective of TCs, including: What constitute consumer TCs of online shopping? What affects them? What do they affect? What are the key mediator(s)? What are the key moderator(s)? What are the differences in these relationships across product categories? To this end, this chapter firstly explains the TCT which provides the basic principles in this research. Then, it applies TCT to the online shopping environment and comprehensively conceptualizes consumer TCs associated with the online transaction process, followed by the discussion on antecedents of TCs. Next, the proposed integrative model of consumer TCs of online shopping is presented in Figure 3.1 and then discussed generally. Following this, a set of empirically testable hypotheses are developed.

The first group of hypotheses developed in this chapter links a consumer's characteristics (i.e., Internet access availability, perceived Internet expertise, and online buying frequency) to his/her perceived TCs associated with purchasing from an online store. Next, the second group hypotheses associate the consumer's perception of the online store and its product characteristics (i.e., product quality concern, site design, e-service quality, and reputation of online store) with his/her perceived TCs of shopping from the online store. Then, the third group hypotheses are related to the effects of the consumer's perception of online channel

characteristics (i.e., perceived convenience, privacy and security concerns, and environmental uncertainty) on his/her perceived TCs of online shopping. Following that, hypotheses are generated which directly link consumer TCs to the key behavioural consequences (i.e., online purchase behaviour and customer loyalty) under inspection. Next, hypotheses are developed depicting how customer satisfaction impacts the hypothesized relationship between TCs and customer loyalty, which posits an alternative mechanism for the consumer TCs-loyalty relationship. The next hypotheses developed in this chapter delineate how the consumer's risk-bearing propensity and perceived enjoyment of online shopping moderate the hypothesized relationships between TCs and behavioural consequences. The last hypothesis depicts how the hypothesized relationships differ in product category (search product versus experience product). Finally, all of the hypotheses will be presented as a review at the end of this chapter.

3.2 TCT

It is imperative to understand TCT because it serves as an overarching theoretical foundation for this research. TCT is under the umbrella of the paradigm of New Institutional Economics. According to the theory of classical economics, a transaction is conducted without any cost in the market because the information available to a seller and a buyer is symmetrical (Teo and Yu 2005). However, Coase (1937), who proposes the TCT, indicates that information between economic actors participating effectively in economic activities in a form of either business to business (B2B) or business to consumer (B2C) is only partial in the real market. Williamson (1975) has added considerable precision to Coase's general argument and developed the current TCT approach. Williamson (1979) assumes that firms pursued profit maximization, and that profit maximization requires costs minimization. He argues TCs are

incurred by departures from perfection, such as friction. Deviations from the perfectly efficient market result in greater costs to firms when they attempted to buy or sell goods or services. Under some circumstances, TCs may be lower if the transaction takes place in an open market (market), while under other situations, TCs may be lower if managers coordinate the transaction (hierarchy). TCT's contribution lies in the ability the user has to predict the governance structure (market, hybrid, or hierarchy) for a transaction as a function of the dimensions (asset specificity, uncertainty, and frequency) of the transaction. TCT has been applied to address many issues such as the strategic impact of information systems, resource allocation, and outsourcing decisions (Pitt and Foreman 1999, Anderson 2008, Verbeke and Kano 2013). The following section studies the assumptions, dimensions, and basic propositions pertaining to TCT.

3.2.1 The Assumptions of TCT

There are three assumptions underlying the choice between market and hierarchy, including bounded rationality, opportunism and risk neutrality (Rindfleisch and Heide 1997). Bounded rationality refers to the constraints and limitations of individuals of their cognitive capabilities and rationality (Williamson 1981a). TCT recognizes that not all contingencies can be anticipated and can be included in a contract due to humans' limited capabilities to solve complex problems. Thus, Simon (1978) states that individuals' limited information processing and communication abilities may impede their ability to act rationally. Opportunism is the assumption which refers to an individual's quest to serve his/her own self-interests. Williamson (1985) defines opportunism as self-interest seeking with guile. He also considers that individuals might have an inclination toward taking advantage in unforeseen environments. For instance, a service provider could exploit the circumstances opportunistically by taking advantage of the vulnerability of the customer. Risk neutrality is

the assumption that all transactors are neutral in their attitudes toward risk (Williamson 1985). Compared with bounded rationality and opportunism, risk neutrality has received limited attention in the TCT literature (Rindfleisch and Heide 1997).

3.2.2 The Dimensions of the Transaction

According to Williamson (1981a), three critical dimensions for characterizing transactions are asset specificity, uncertainty and transaction frequency. Asset specificity refers to the degree to which assets are specified to a specific transaction (Rindfleisch and Heide 1997). Assets with high levels of specificity involve sunk costs that have little or no value outside of a particular exchange relationship. Asset specificity associated with a transaction is decomposed into four main aspects (site, physical asset, human asset and time). Site specificity means that a product may be more efficient to be traded in a particular location. Physical asset specificity indicates that transactions of certain products might need special physical equipment. Human asset specificity refers to investment in time and effort to accumulate transaction experience. Transactions of certain products may need special human expertise. The last one is time specificity, stating that the timing of transactions may affect the TCs.

Uncertainty refers to the uncertain environments in which the circumstances surrounding a transaction cannot be specified *ex ante* (i.e., environmental uncertainty) and performance cannot be easily evaluated *ex post* (i.e., behavioural uncertainty) (Rindfleisch and Heide 1997). Specifically, environmental uncertainty is unpredicted changes in circumstances surrounding a transaction (Rindfleisch and Heide 1997); behavioural uncertainty arises from the difficulties associated with monitoring and evaluating the contractual performance of

exchange partners. The overall effect of uncertainty on the perceived TCs would be the aggregated effect of these two kinds of uncertainties.

Frequency refers to the frequency with which transactions recur (Williamson 1985). Compared with the dimensions of asset specificity and uncertainty, the TCT literature has paid limited attention to the dimension of transaction frequency.

3.2.3 The Basic Propositions of TCT

The general proposition of TCT is that governance structure (market, hybrid, and hierarchy) is the function of the dimensions of the transaction (asset specificity, environmental uncertainty, behavioural uncertainty, and frequency) (Williamson 1985). Specifically, the original TCT framework contains four basic propositions, each proposition linking the dependent construct and one of the independent constructs.

The first proposition is that high levels of asset specificity induce firms to employ vertical integration to conduct a transaction. The argument is that because of the opportunistic behaviour of exchange partners, a high amount of asset specificity increases the costs of safeguarding contractual agreements; when faced with the need to safeguard specific assets invested in an exchange relationship, a firm will seek to minimize its TCs through vertical integration.

The second proposition is that high levels of environmental uncertainty make firms employ vertical integration to conduct a transaction. The argument is that a high amount of environmental uncertainty increases the costs of adapting contractual agreements; when faced

with the need to adapt to an uncertain circumstance, a firm will seek to minimize its TCs through vertical integration.

The third basic proposition is that high levels of behavioural uncertainty push firms to employ vertical integration to conduct a transaction. The argument is that high levels of behavioural uncertainty increase the costs of measuring the performance of exchange partners; when faced with difficulties in assessing the performance of its exchange partners, a firm will seek to minimize its TCs through vertical integration.

The fourth basic proposition is that high levels of transaction frequency encourage firms to employ vertical integration to conduct a transaction. The argument is that higher levels of transaction frequency provide an incentive for firms to employ vertical integration because large transactions of a recurring kind make it easier for a firm to recover the cost of specific assets invested.

This means that firms choose a governance structure that can minimize TCs. Thus, TCs can determine the transaction mode selection. Understanding this is very important because it serves as the fundamental logic behind the research framework of this study. The next part will explain how to transpose it into an online shopping context.

3.3 APPLYING TCT IN ONLINE SHOPPING

This section discusses the applicability of using TCT as an integrative theory to explain online consumer behaviour and the conceptualization of TCs associated with online shopping. It consists of three parts. In the first part, relevant evidence will be provided to demonstrate

that TCT is a viable theory to explain consumer online behaviour. To justify that TCT is applicable to explain consumer online-purchase and post-purchase behaviour, two issues need to be addressed. Firstly, an issue pertaining to whether consumer TCs exists in an online setting will be discussed. For almost all of the products consumers purchase, they have to bear some costs which are inevitable regardless of purchasing from online or traditional stores. Secondly, based on the proposition of the original TCT, the study argues that it is reasonable to employ TCs to explain consumer shopping choices. Thus, in light of these two justifications, the study suggests that consumer TCs can be applied to explain their online choices regarding whether to buy from an online store and stay loyal towards the online store in future.

In the second part, the notion that TCT can be viewed as the comprehensive integration of TPB and TAM will be reinforced. It is contended that TPB and TAM can be well understood from the perspectives of TCT. In the third part, the conceptualization of consumer TCs associated with online shopping will be proposed to address what constitutes consumer TCs of online shopping.

3.3.1 The Explanation of TCT on Online Consumer Behaviour

“Everything you buy costs you twice, once for the good itself, and once for the transaction.”
– “The Economics of Waiting” (Forbes, 1996, pp 127).

In the literature, traditionally TCT is used to determine whether a transaction is conducted within a firm, in a market, or in a hybrid governance structure (Rindfleisch and Heide 1997). That is, TCT is mainly applied at the firm level of decision-making regarding a transaction (Ellram *et al.* 2008, Liu *et al.* 2012). However, that does not mean that TCs only exist in firm

level transactions. In fact, TCs exist everywhere except in completely Communist societies (Coase 1992) or in one-man Robinson Crusoe economies (Cheung 1992). TCs are described as the costs of running the economic system (Arrow 1969). They are the economic counterpart of friction in a machine (Williamson 1975). It is estimated that interactions – the searching, coordinating, and monitoring that people and firms do when they exchange goods, services, or ideas – may account for as much as 35-40 per cent of the economic activity (GDP) of an economy (North 1990).

Similarly, a study by McKinsey Company (Butler *et al.* 1997) shows that TCs represent over a third of the costs associated with the economic activity in the United States. Thus, not only do firm-firm interactions involve TCs, but human-firm interactions (even human-human interactions) also involve TCs. Inevitably, then, TCs are a part of consumer exchanges (Tyagi 2004). For almost all of the products people consume, they have to incur the monetary, time, and hassle costs of going to a store, waiting in line, making a payment, sometimes customizing the product to our own requirements before using it, sometimes learning how to use the product properly, and finally using the product itself. Therefore, at the individual level, TCs still exist.

Consumers, like firms, are assumed to economize with their scarce resources. A recurring problem in the TC literature is whether transactions should be handled internally or through markets (which can be conceptualized as the buy-or-made problem) (Williamson 1981a). Similarly, consumers are confronted with many buy-or-make decisions such as ‘shall I paint the house myself or shall I hire a painter?’ The outcome of such a decision will, among other things, depend upon the alternative value of the time needed for this task, i.e., opportunity

costs, and the market price of the service. This has its clear parallel in the TC approach as applied to firms.

All kinds of shopping activities, both in traditional and online environments, involve certain element of risks, due to uncertainties faced by the decision maker. Part of the uncertainties stems from the information asymmetries between sellers and consumers, as consumers may not have all the required information to make the purchase decision. The risks and uncertainties in the transaction process are also augmented by the mode of shopping medium interface (Huang *et al.* 2014). Researchers have found that shoppers who have high levels of perceived risks in online environments due to information and other limitations (Miyazaki and Fernandez 2001, Biswas and Biswas 2004, Yeh *et al.* 2012b, Yen *et al.* 2013) would have high levels of perceived costs of online shopping (Yen *et al.* 2013, Wu *et al.* 2014). The web as an online shopping channel presents some unique challenges to the consumer decision processes as consumers are wary of sharing their personal as well as financial information, such as credit card details (Hong and Thong 2013). In addition, they are concerned about the usability of web interface, reliability of online products and effectiveness of e-service (Hausman and Siekpe 2009). All of these concerns may lead to TCs.

Building on the extant studies on consumer behaviour in online and traditional business-to-consumer markets (Bowen and Jones 1986, Byramjee and Korgaonkar 2004), this study contends that consumer TCs in online environments do exist and it is reasonable to extend the concept of consumer TCs to an online shopping setting. Recognition of the importance of these TCs will help many online vendors to take action to effectively mitigate the TCs perceived by consumers.

Importantly, TCs in online shopping environments deserve special attention for a number of reasons. Firstly, in online environments, there is a physical separation between consumers and the retailers. There is also a separation between consumers and the merchandise, and lack of a store environment or a salesperson that facilitates building a direct relationship between a buyer and seller (Yen *et al.* 2013). All these factors create a high level of ambiguity in web-based shopping. The consumers would face high level of risks and bear potential psychological costs stemming from the fear of purchasing inferior products due to their inability to check the products before making the purchase (Yeh *et al.* 2012b).

Secondly, consumers are chary of providing personal information during online transactions, and even if they do so, they want to know that the marketers will handle their personal details with sensitivity. Privacy issues include customer tracking through explicit and implicit means, data collection on consumers and sharing of this information with third parties. Several studies have pointed out privacy as one of the top concerns of consumers (Brown and Muchira 2004, Pan and Zinkhan 2006, Taddei and Contena 2013). High levels of privacy concerns have been found to increase TCs of online shopping (Kim and Li 2009b).

Thirdly, consumers adopting online shopping also need to have the basic knowledge and skills of online shopping. The basic understanding of online shopping process, especially the online payment necessary to complete the online transaction may become an obstacle to online shopping adoption (Van Deursen and Van Dijk 2009). This additional requirement for Internet and online shopping knowledge are likely to increase TCs of online shopping perceived by consumers.

Finally, the large number of online vendors who have emerged in recent years has also created considerable uncertainties regarding the viability and credibility of the online shopping sites (Bock *et al.* 2012). For consumers, online shopping offers opportunities based on efficiency, convenience, and selection. At the same time, Internet-only firms have little history and, therefore, little record of reputation on which consumers can rely to establish their trust (Benedicktus *et al.* 2010). For brick-and-click firms with both physical and online presence, existing reputations may play an important role in allaying consumer concerns and building trust (Ranganathan 2012). These two types of firms (Internet-only firms and brick-and-click firms) both operating in online environments compete with each other to expand their customer bases and market share. In such circumstances, minimizing online TCs by reducing consumers' perceived risks of online transactions might become a critical determinant of firms' competitive advantages. The consumer opportunities inherent in online shopping coupled with the retailers' need to attract and sustain online shoppers necessitate newer interdependencies in ways that are different than the interdependencies fostered in conventional shopping environments. For each of these four reasons, TCs are salient in online environments and reducing TCs is extremely desirable because it means reduced uncertainties and risks which will greatly facilitate the decision-making process in online shopping.

Drawing upon the theoretical propositions of the firm-level TCT, this study further argues that the concept of consumer TCs can be used to understand consumer's general shopping-related choices. According to Williamson and Ghani (2012), TCT can be used to theoretically explain why a transaction subject chooses a particular form of transaction instead of others. In other word, TCs determine the selection of transaction mode. The basic principle of TCT is that people like to conduct transactions in a way that minimizes their TCs. Rational

customers prefer modes of transaction which minimize costs. When consumers go shopping, they mainly face two options. One is to purchase from a brick-and-mortar, offline channel, and the other is to purchase from an online channel. Based on the logic underlying TCT, consumers will choose the shopping channel that can minimize their TCs. If the TCs of online shopping channel are lower than those of traditional shopping channel, consumers will choose online shopping channel (Kim *et al.* 2013b). Therefore, it is reasonable to employ TCT to explain consumers' shopping channel choices.

Since purchasing from an online store can be considered as a consumer's choice between online and offline channel, and being loyal towards the online store can also be viewed as the consumer's choice between certain store rather than other stores, this study argues that TCT is capable of being adapted to online environments to explain consumers' actual online purchase behaviour and post-purchase behaviour (i.e., customer loyalty). TCT therefore appears appropriate for explaining why consumers are willing to adopt online shopping rather than continuing to use their current methods of conducting offline transactions. On this basis, TCT is used as the theoretical foundation for the research model of this study.

3.3.2 TCT as an Integrative Theory

As discussed in Chapter 2 (Literature Review), consumer decision-making research has grown rapidly during the past three decades (Darley *et al.* 2010, Punj 2012). As a result, theories such as expected utility theory (von Neumann and Morgenstern 1947), satisficing theory (Simon 1956), prospect theory (Kahneman and Tversky 1972), stimulus-organism-response framework (Mehrabian and Russell 1974), flow theory (Csikszentmihalyi 1975), regret theory (Bell 1982), theory of reasoned action (Ajzen and Fishbein 1980), its derivative theory of planned behaviour (TPB) (Ajzen 1985, Ajzen 1991), and technology acceptance

model (TAM) (Davis *et al.* 1989), have been developed and tested in a variety of contexts. However, no single unifying theory has emerged to explain consumer decision-making and it seems unlikely individual decision processes fit neatly into a single decision theory (Sirakaya and Woodside 2005). This is highlighted in online consumer behaviour research, where many different models have been suggested (Clawson and Knetsch 1966, Nicosia 1966, Thompson *et al.* 1991, Goodhue and Thompson 1995, Delone and Mclean 2004) and many psychological theories have been tested (Rogers 1995, Compeau *et al.* 1999, Bhattacharjee 2001, Venkatesh *et al.* 2003). In this sense, a comprehensive integration of these theories becomes necessary (Darley *et al.* 2010, Quintal *et al.* 2010).

In the current study, the researcher suggests that the integration across theories can be viewed in terms of TCT and this view provides the basis on which to focus on the cost analysis which has not been fully explored in the online context. The two most widely adopted theories (TPB and TAM) can be explained from a different perspective in terms of a comprehensive list of benefits and costs. The following briefly explain how to place each of TPB and TAM in this context.

In the TPB, both attitudes and subjective norms can be positive or negative with respect to the behaviour. A positive subjective norm can be viewed as rising the costs of an alternative. For example, saving of effort on online shopping can be viewed as a benefit and it raises the cost of traditional, offline shopping. Cho (2004) argued that subjective norm toward an inability to physically examine the goods and concerns over delivery and return can be viewed as liabilities or disadvantages of online shopping, which implies an increase in the costs of online shopping. Measures of perceived behavioural controls (PBC) (such as site accessibility and transaction efficiency) represent the benefits or costs of online shopping,

depending on whether the measure is positively or negatively oriented, and whether a shopping alternative rates higher or lower on it. For example, if consumers have a high level of perceived control over online shopping, they would feel online shopping is easy to conduct and do not need to invest a lot of time and effort, thus their perceived costs would be low.

In the TAM, perceived usefulness (PU) and perceived ease of use (PEOU) can be considered as benefits or costs if negatively oriented. For example, a negative perception of usefulness of online shopping can be viewed as a cost of online shopping while a positive perception can be considered as a benefit of online shopping. In a similar vein, a negative PEOU of online shopping increases consumers' perception of cognitive effort of using online shopping system to complete online transactions, therefore can be regarded as a cost factor whereas a positive PEOU can alleviate consumer concerns about time and effort expended on online shopping, thus can be viewed as a benefit factor.

A first-cut synthesis of these theories can be achieved through the development of a comprehensive list of benefits and costs, using each of the key constructs of the pertinent theories as a guide to identifying the nature of those benefits and costs. Although the evaluating and weighting benefits and costs may vary by individual, each individual is assumed to balance the benefits of each alternative against its costs, and choose the one with the lowest costs. Indeed, cost-reduction analysis is of paramount importance within the context of the TCT and alludes to how customers evaluate TCs when they make purchase decisions. The explanation that individuals choose a transaction channel with the lowest costs is consistent with the basic principle of TCT, which states that people would like to conduct transactions in the most economical way (Williamson 1985). That is, the lower the TCs, the more likely individuals are to conduct the transaction. Thus, in this context, this study

suggests as an initial approach, the integration across theories can be viewed through the lens of TCT. TCs, broadly construed, can contain most or all of the constructs of the other theories. The focus on TCT is in line with a call for additional research on consumer online behaviour from economic approach. TCT can help researchers gain better understanding of online consumer behaviour as it can be considered as a comprehensive integration of several theories.

3.3.3 The Conceptualization of Consumer TCs of Online Shopping

Consumer TCs of online shopping is the central construct of this study. In the literature, the conceptualizations of this construct are not consistent across studies. As this inconsistency may not provide an accurate assessment of the construct or its relationship to other factors, more theoretical attention may be needed to further explore the nature of this construct. Researchers have viewed several types of B2C TCs from different perspectives (Liang and Huang 1998, Konana *et al.* 2000, Devaraj *et al.* 2002), such as, in terms of a consumer's purchase decision process, resource lifecycle, and retail transaction chain.

Specifically, TCs occur in all steps of a consumer's purchase decision process: needs recognition, search, alternative evaluation, purchase, and outcome (Engel *et al.* 1978, Ives and Learmonth 1984). To acquire products or resources, consumers may go through a resource lifecycle that includes several stages, each with associated costs: establishing and specifying requirements, identifying the source, ordering, paying for, acquiring and testing, integrating, updating, monitoring and maintaining, and retiring the product. The study on retail transaction chain (Chircu and Mahajan 2006) demonstrates that access to store involves driving and parking, taking public transportation, or walking, search involves walking through the store and asking salespeople for advice, evaluation implies touching and feeling

products, reading labels, asking salespeople or shopping partners for advice, selection consists of physically placing the chosen products in a shopping cart or in one's hand, ordering implies checking out at a cashier station after waiting in line if any, payment involves paying by cash, writing a check or swiping a bank/credit card, fulfilment consists of carrying products home, service involves obtaining product information, in store or by phone. Finally, the returns step involves taking products back to the store (repeating the activities from the access and ordering steps). Each step is associated with relevant TCs.

Many of these costs tend to arise in any shopping situation, regardless of the medium employed for shopping purpose. For instance, costs of search, learning, adaptation, market opportunism, risks involved, etc. tend to be incurred by a consumer, irrespective of whether he/she shops online or in-store. However, some costs appear pertinent to a particular shopping medium, such as the delivery cost of online purchase owing to the separation between consumers and e-retailers.

In an online setting, because of the dynamic, evolving and multi-faceted nature of the online environment (Darley *et al.* 2010, Demangeot and Broderick 2010), consumer TCs might be different in some respects. However, little research attention has been devoted to conceptualizing consumer TCs of online shopping. In this section the researcher conceptualizes several types of TCs in online context based on existing research on TC analysis (Williamson, 1975, 1979, 1981, 1985), the switching cost approach (Chen and Hitt 2002, Yang and Peterson 2004) and other TC-related studies (Liang and Huang 1998, Wu *et al.* 2014).

To conceptualize online TCs, an emphasis is placed on consumer TCs during the online transaction process as the study aims to explain online consumer purchase behaviour and post-purchase behaviour which are embedded in different stages of online transaction process (Li and Zhang 2002). In general, each stage of online transaction process, in particular, has associated TCs. These stages relating to the time and efforts expended by online consumers generate specific monetary, time, or psychological TCs. Researchers (Teo and Yu 2005, Bauer *et al.* 2006, Darley *et al.* 2010) have proposed that online transaction process can be described by a similar sequences of steps such as internet access (connecting to the Internet, and navigating to a store website), brand and product search (browsing online product descriptions or running a search by brand or product), evaluation (product pictures, virtual tours, text-based descriptions and other customers' online reviews), order (placing the chosen products in a virtual shopping cart through a mouse click and clicking the check-out button), payment (typing in credit or gift card information), delivery (choosing a delivery method and waiting for products to be delivered at home), monitoring (contacting the online store to check whether products ordered are processed), post-sale (products return and customer support) and adaptation (changes to customer service and external environment).

Accordingly, this study defines consumer TCs of online shopping as the costs occurred during the entire online transaction process (pre-purchase → purchase → post-purchase), consisting of both online channel-related TCs and online store-related TCs as follows:

Access cost: the cost of connecting to the Internet, such as the PC/Internet access. At this stage, consumers would encounter some time costs and monetary costs.

Search cost: the cost incurred by consumers in searching for information about online products and stores. Consumers would bear some time costs.

Evaluation cost: the cost incurred at the stage of examining the products to be purchased, such as evaluate the quality of products according to product pictures, virtual tours, descriptions and other customers' online reviews. Consumers would incur time costs.

Ordering cost: the cost incurred by consumers in selecting products, placing the chosen products in a shopping cart and checking out. Consumers would encounter time costs.

Payment cost: the cost incurred at the process of paying for the product, for example, selecting the payment method, opening an online bank account, jumping to the relevant online bank website, typing the credit /debit card information, worrying about the security of the payment process, and learning how to use online payments. At this stage, consumers would bear some time costs and psychological costs.

Delivery cost: the cost incurred at the process of receiving products, such as choosing a delivery method, waiting for products to be delivered at home, and bearing transportation costs. Consumer would encounter some time costs and monetary costs.

Monitoring cost: the costs incurred after ordering or receiving a product in ensuring that the terms of the contract have been met. For instance, consumers check the progress status, sometimes need to contact online stores and ask them to process orders if they forget to process in time, and check the delivery status by contacting the delivery party. During this process, consumers would incur some time costs and psychological costs.

Post-sale cost: the cost incurred after receiving a product, such as maintenance, return, and getting customer service. For example, when the product is wrong or not fit for purpose, consumers may need to return products, leading to monetary cost (transportation cost) and psychological cost (disappointment, dissatisfaction, depression). Some consumers would like to replace the product if the size is not appropriate and have to wait for the product to be delivered again, resulting in monetary cost (transportation cost), psychological cost and time

cost. In addition, consumers may contact the online store to get some customer service, which leads to increased time cost.

Adaptation cost: the cost for adapting to changes, such as the customer service and external environment. For example, if the product quality is not as good as expected but consumers do not wish to return products, at this point they must bear costs of adapting to the products, which is a part of the psychological cost. When online stores change the design or appearance, consumers need to adapt to the change, leading to time and psychological cost. Consumers have to bear adaptation cost when the external environment is changed, such as the changes in circumstances surrounding government regulation, mass media reports and online consumer reviews.

Compared with brick-and-mortar traditional shopping, online transactions may have higher costs in some categories and lower costs in others. For example, online shopping can lower the access cost as it removes the need to drive to the store, and it can lower search cost by providing a search engine (Malaga 2001), and reduce ordering cost by easily placing products in shopping cart and allowing instant check-out with no waiting. Yuliharsi et al. (2011) argue that consumers do not have to go anywhere to shop, stand in lines, and have any problem finding a product. Despite benefits derived from the reduction of some TCs associated with online transaction process perceived by consumers, online shopping also increases some TCs, such as the evaluation cost, since online shopping adds new forms of consumers' risk and uncertainty due to the lack of physical examination and face-to-face contact (Teo and Yu 2005). The increased need for monitoring the transaction in the electronic market due to uncertainties leads consumers to bear additional costs incurred in preventing risk and ensuring that the terms of contract have been met. Unexpected changes in the electronic

market, such as product delivery rescheduling, make consumer adaptation a necessity, thereby resulting in an increase in consumer TCs.

3.4 IDENTIFYING ANTECEDENTS OF CONSUMER TCS OF ONLINE SHOPPING

After clarifying that TCT as an integrative theory is capable of adapting to the online environment to explain consumers' online behaviour and conceptualizing consumer TCs associated with online shopping, this section will specifically identify antecedent variables of consumer TCs of online shopping according to the original TCT dimensions, and group them into categories.

3.4.1 Dimensions of the Online Transaction

The original TCT provides a great way to identify the dimensions of online transaction. As indicated in Section 3.2, the general proposition of TCT is that governance structure (market, hybrid, and hierarchy) is the function of the dimensions of the transaction (asset specificity, uncertainty and frequency) (Rindfleisch and Heide 1997). That is, the dimensions of the transaction affect a firm's choice of governance structure regarding a transaction. Although not explicitly, TCT suggests that the dimensions of the transaction influence the choice of governance structure via TCs. For example, the third basic proposition of TCT is that high levels of behavioural uncertainty (dimension) push firms to employ vertical integration (governance structure) to conduct a transaction. The argument is that high levels of behavioural uncertainty increase the costs of measuring the performance of exchange partners; when faced with high costs in assessing the performance of its exchange partners, a firm will seek to minimize its TCs through vertical integration. It implies that the dimensions of a transaction have direct effects on TCs, which in turn affect a firm's choice of governance

structure. Thus, this study posits that the dimensions of a transaction affect TCs, such as the search cost or monitoring cost, etc. and in turn TCs affect a firm's choice of governance structure.

By adapting this proposition to consumer exchange, it can be further argued that the dimensions of the transaction affect consumers' choice of shopping channel through their perceived TCs. By the same token, in the context of online shopping, the same rationale can be applied, in which the dimensions of the online transaction affect a consumer's online behaviour through their perceived TCs associated with online shopping. As such, the original dimensions (uncertainty, asset specificity and frequency) of a transaction provide the theoretical underpinning for identifying the dimensions of an online transaction in online context. By adapting the original dimensions to the online context, it is expected that the dimensions of the online transaction consisting of uncertainty, asset specificity and frequency would affect consumer TCs of online shopping, which in turn would affect consumers' online behaviour.

In the original TCT, uncertainty refers to the uncertain environments in which the circumstances surrounding a transaction cannot be specified *ex ante* (i.e., environmental uncertainty) and performance cannot be easily evaluated *ex post* (i.e., behavioural uncertainty) (Rindfleisch and Heide 1997). Asset specificity is defined as kind of non-redeployable physical and human investments that are specialized and unique to a task (Williamson 1979). Frequency is used to measure the frequency with which transactions recur (Williamson 1985). Although the three dimensions are good predictors of transaction, in online context they are too broad to specifically explain the details of online transactions, especially considering the

unique characteristics, such as physical separation between online vendors and buyers, quality uncertainty and distrust issues.

Furthermore, scant academic research is available on delineating a theoretically derived set of the uncertainty and asset specificity predictors in online context from the individual consumer's perspective, and these issues merit further investigation into the epistemic structure of the dimensions of online transaction. In this sense, it becomes evident that researchers need to be aware of the specific aspects of the dimensions of online transaction. In an attempt to shed light on this issue, this study intends to disaggregate each dimension into specific aspects and explain the effect of each aspect on consumer TCs. Such outcomes may represent specific aspects of online transaction consumers are concerning about and can help online stores better understand their customers, and better identify their needs and solve their concerns.

Based on the original TCT, uncertainty causes problems due to bounded rationality, opportunism and information asymmetries. It has two sub-dimensions, including behavioural uncertainty and environmental uncertainty. In online shopping, behavioural uncertainty arises from the inherent difficulties faced by buyers in ascertaining the actual performance of online stores or their adherence to contractual agreements (Williamson 1985) while environmental uncertainty reflects the difficulty in ascertaining the external environment in light of changes of shopping circumstances (John and Weitz 1988). The uncertainty people perceived plays an important role in their transactions, especially in an online environment (Yeh *et al.* 2012b). From a consumer's point of view, the obvious drawback of online transactions is that they involve more uncertainties than their physical counterparts. The uncertainties may arise from different aspects, such as online customer service, the products themselves or the online

transaction environment (Teo and Yu 2005). Specifically, behavioural uncertainty may be derived from uncertainties of privacy and security issues, product quality, service quality, site design, inconvenience and reputation, while environmental uncertainty may come from online environmental uncertainty, such as regulatory change. From the perspective of consumers, when they shop online, some concerns emerge, such as worries of how secure the online environment is, how personal data will be used, whether or not the online store's products, service quality and reputation can be trusted, whether or not the online store is well-organized and offers a user friendly interface, whether or not the online shopping can provide convenient services and save time for customers, whether or not the existing laws and regulations are adequate for the protection of consumers' interests. These concerns are particularly common for consumers and would cause an increase in their perceived TCs of online shopping because they would have to spend more time and effort checking, monitoring the behaviours of the online store and adapting to general online environments due to the concerns over product quality, e-service quality, site design and reputation, as well as the general online environment's privacy and security issue, inconvenience and environmental uncertainty.

Similarly, as for the asset specificity in TCT, it includes physical asset specificity and human asset specificity. In the context of online shopping, physical asset specificity refers to investment in special equipment and conditions to get access to the Internet such as personal computers and modems for the purpose of online purchasing, and human asset specificity refers to investment in time and effort to accumulate online purchasing experience (White *et al.* 2000). They can be reflected through internet access availability and consumer's perceived Internet expertise, respectively. Conducting online shopping requires the connection to Internet through wired or wireless devices in the first place and it also requires

consumers to own basic Internet knowledge and skills. In addition, consumers may face challenges such as operation difficulty and online payment, which may increase their perceived access and payment costs. Internet access availability complemented with perceived Internet expertise is employed to scrutinize the role of asset specificity.

In the original TCT, frequency is used to capture the extent to which transactions recur. In online shopping, this study uses online buying frequency to represent frequency in the TCT. When consumers are much familiar with the process after several times of successful online transactions, they know what the whole process of online shopping is like, hence their perceived TCs, such as search cost and evaluation cost, etc. would decrease.

In summary, the above-identified aspects reflect or supplement uncertainty, assets specificity and frequency. Uncertainty is disaggregated into seven specific aspects, reflecting concerns over product quality, site design, e-service quality, reputation of online store, convenience of online channel, privacy and security concerns, and environmental uncertainty. Asset specificity is disaggregated into Internet access availability and consumer's perceived Internet expertise. Finally, frequency is re-conceptualized as online buying frequency. They represent the meaningful dimensions of online transaction that affect consumer TCs associated with the entire online transaction process, such as the access cost, search cost, evaluation cost, monitoring cost, and adaptation cost, etc.

3.4.2 Antecedents of Consumer TCs

As mentioned above, these ten aspects representing three major dimensions of online transaction (i.e., uncertainty, asset specificity and frequency) would affect consumer TCs associated with online shopping as they are the specific forms of the dimensions of online

transaction at the disaggregated level. In the present study, the researcher further suggests that they can be viewed as the antecedents of consumer TCs in online shopping. This notion is supported by the findings of Teo et al., (2004) that product quality uncertainty and convenience are the antecedent variables of consumer TCs. In addition, this view gains some support from Kim and Li (2009b) who indicate that personal security and buying frequency are the antecedents of consumer TCs in the online tourism environment. The logic underlying the relationship between each antecedent variable and consumer TCs will be detailed in the section on Hypotheses Development.

These ten antecedents of consumer TCs of online shopping are actually linked to consumer-related characteristics, online store- and product-related characteristics, and online channel-related characteristics (see more details in Appendix A, B and C), therefore, they are grouped under these three broad categories, namely consumer-related characteristics, online store- and product-related characteristics, and online channel-related characteristics, to examine the impacts of these antecedents on consumer TCs associated with online transaction process, as displayed in Figure 3.1 in the next section on the Conceptual Model.

Specifically, consumer-related characteristics refer to a consumer's perception of online shopping requirements and his/her transaction-related attributes. In this study, three antecedents associated with consumer-related characteristics are derived to test their effects on TCs: Internet access availability, perceived Internet expertise and online buying frequency. Online store- and product-related characteristics refer to a consumer's direct transactional experience with an online store and his/her perception of the product, the online vendor and the site. Four antecedents falling in this category include: product quality concerns, site design, e-service quality and reputation of the online store. Online channel-related

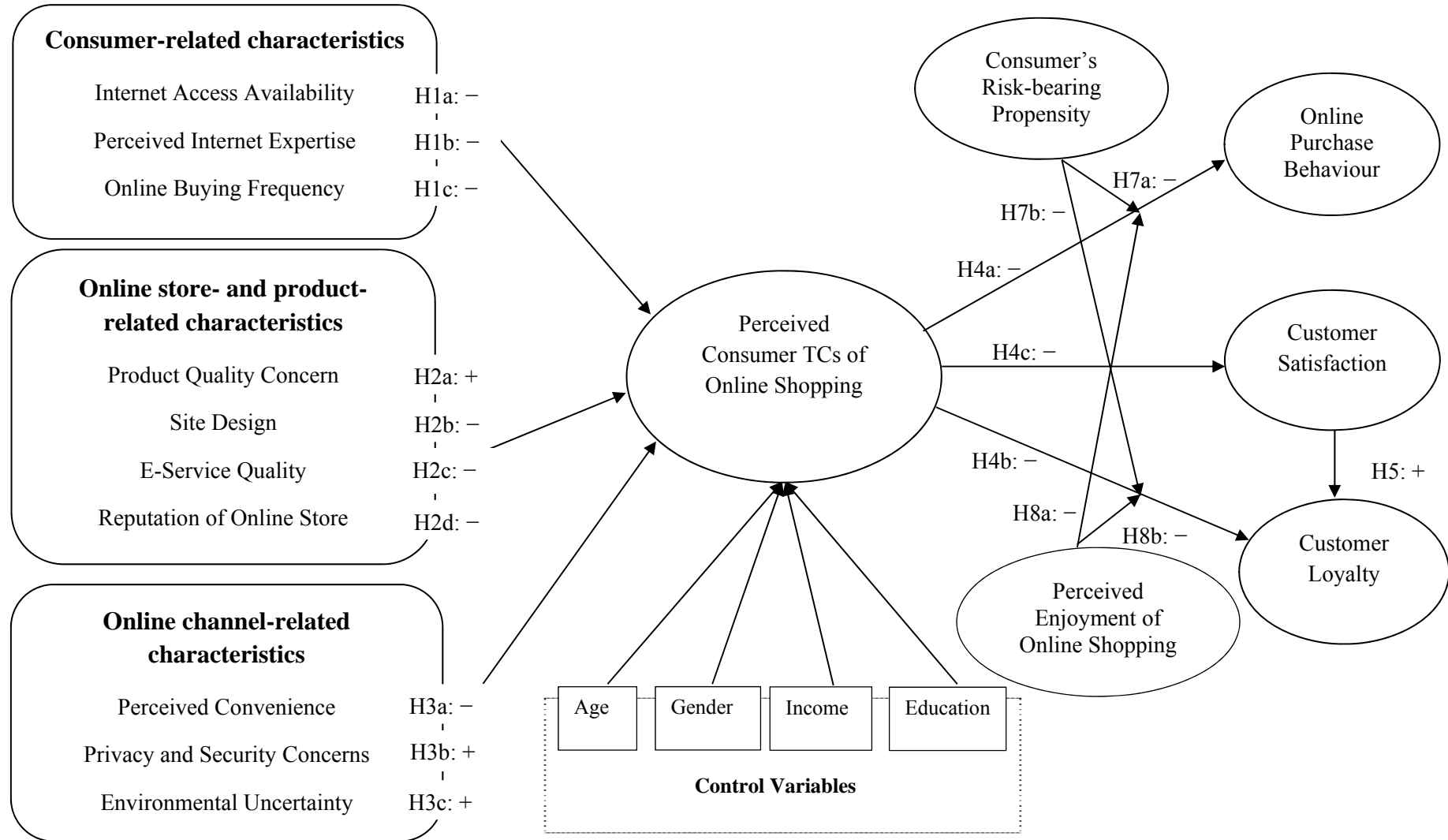
characteristics are defined as a consumer's general perception of online shopping and online environment. Three potential antecedents to consumer TCs falling into this category are examined: perceived convenience, privacy and security concerns, and environmental uncertainty. By analysing from the three categories, it will be easier to explain the details of the dimensions of online transaction and their effects on consumer TCs.

It is important to note the list of antecedents is not exhaustive nor does the researcher assume that these antecedent variables are independent. The conceptual model represents a subset of important and interesting antecedents that may impact consumer TCs associated with online shopping. The study acknowledges some of these antecedents may be interconnected; however, in the interest of parsimony, the study limits its focus to the effects of identified-antecedents on consumer TCs rather than expanding to include all interrelationships between these variables. The proposed model not only offers a cohesive view of antecedents of consumer TCs but also serves as a salient guide for researchers in the online shopping area.

3.5 CONCEPTUAL MODEL OF CONSUMER TCS OF ONLINE SHOPPING

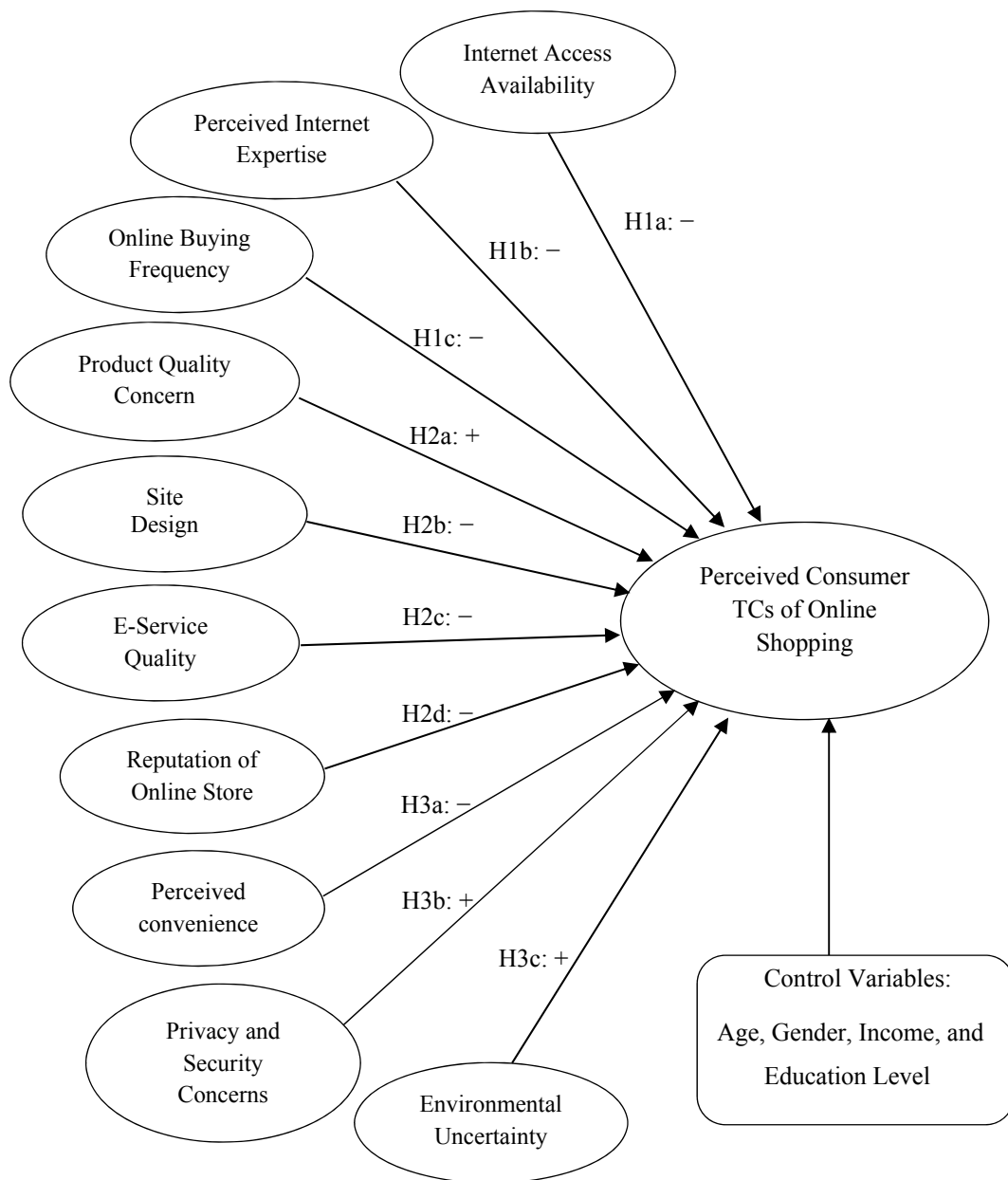
Drawing on the above discussion, an integrative model of consumer TCs of online shopping is presented in Figure 3.1. The proposed conceptual model is designed to address the research questions. It integrates the antecedents of consumer TCs of online shopping at an online store, the central variable in the model, the consequences of consumer TCs, and the mediator and moderators of the influence of consumer TCs on its consequences.

Figure 3.1 An Integrative Model of Consumer TCs of online Shopping



Firstly, consumer-related characteristics (i.e., Internet access availability, Internet expertise, online buying frequency), online store- and product-related characteristics (i.e., product quality concerns, site design, e-service quality, reputation of the online store), and the general online channel-related characteristics (i.e., convenience, privacy and security concerns and environmental uncertainty) are viewed as the major antecedents of consumer TCs associated with transacting with an online store (see Figure 3.2). Consumer TCs refer to the costs occurred during online transaction process including pre-purchase, purchase and post-purchase stages, reflecting the time and efforts consumers expend during the entire transaction process. They include the costs of obtaining the information necessary for making a purchase, the immediate costs involved in transacting with a specific online store for making that purchase, and the costs which arise as a consequence of transacting with the online store, if the transaction should subsequently go wrong. Antecedent variables are proposed to affect time and efforts involved in the online transaction process, thereby influencing consumer TCs. The next section will specifically establish their relationships with consumer TCs, of which the underlying rationale will be provided.

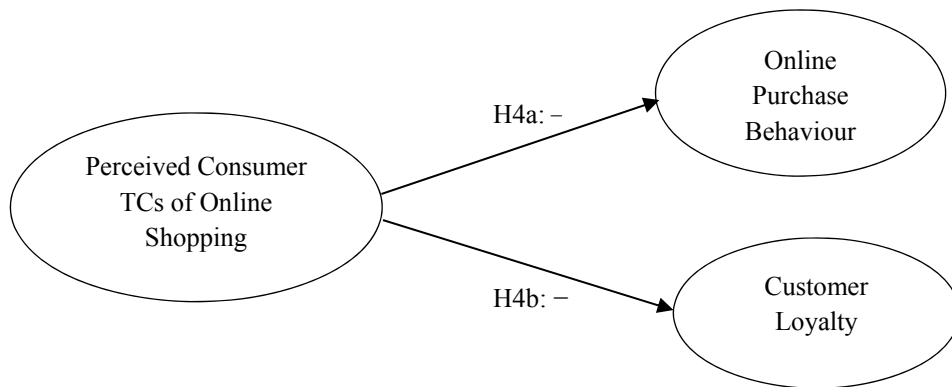
Figure 3.2 The Antecedents of Consumer TCs of online Shopping



Next, consumer TCs of online shopping, the central variable in the model, is proposed as a factor which has influence on a customer’s actual online purchase behaviour and his/her loyalty toward an online store (see Figure 3.3). The online purchase behaviour examines the amount of products a customer actually purchased from an online store and the amount of times of the transaction with the online store within a particular period. It captures the real purchase transaction with a specific online store. Customer loyalty represents a customer’s

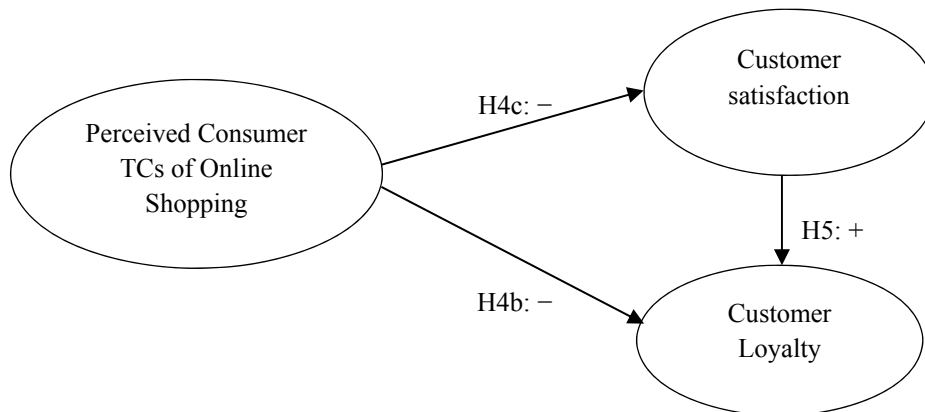
favourable attitude toward an online store that results in repeat purchase intentions toward the online store and recommendation to other consumers. This variable is used to capture a customer's relational continuance with the online store and it involves a deeper relationship as well as more risks. Previous research indicate that there are many factors that can affect consumers' online shopping behaviour, by synthesizing these factors and finding out the underlying rationale, the conceptual model adopts the mechanism of TCs to explain consumers' actual online purchase behaviour and their loyalty based on TCT.

Figure 3.3 The Consequences of Consumer TCs of online Shopping



Following that, an alternative mechanism for the TCs- customer loyalty relationship is proposed whereby customer satisfaction mediates the effect of TCs on customer loyalty (see Figure 3.4). Customer satisfaction refers to how pleased the customer is with the online store where he/she purchased the products. It has often been used to measure e-commerce success and its positive influence on customer post-purchasing behaviours, such as customer loyalty (MacDonald and Smith, 2004).

Figure 3.4 The Partially Mediating Role of Customer Satisfaction



Next, consumer risk-bearing propensity and perceived enjoyment of online shopping are proposed to moderate the direct relationships between consumer TCs and behavioural consequences (see Figures 3.5 and 3.6). Specifically, consumer risk-bearing propensity (i.e., individuals differ in their risk-bearing attitude; some are risk-taking, while others are risk-averse) and perceived enjoyment (i.e., consumer's perception of online shopping being fun, exciting, enjoyable and interesting) are proposed to exert interaction effects with consumer TCs on online purchase behaviour and customer loyalty.

Figure 3.5 The Moderating Role of Consumer Risk-Bearing Propensity

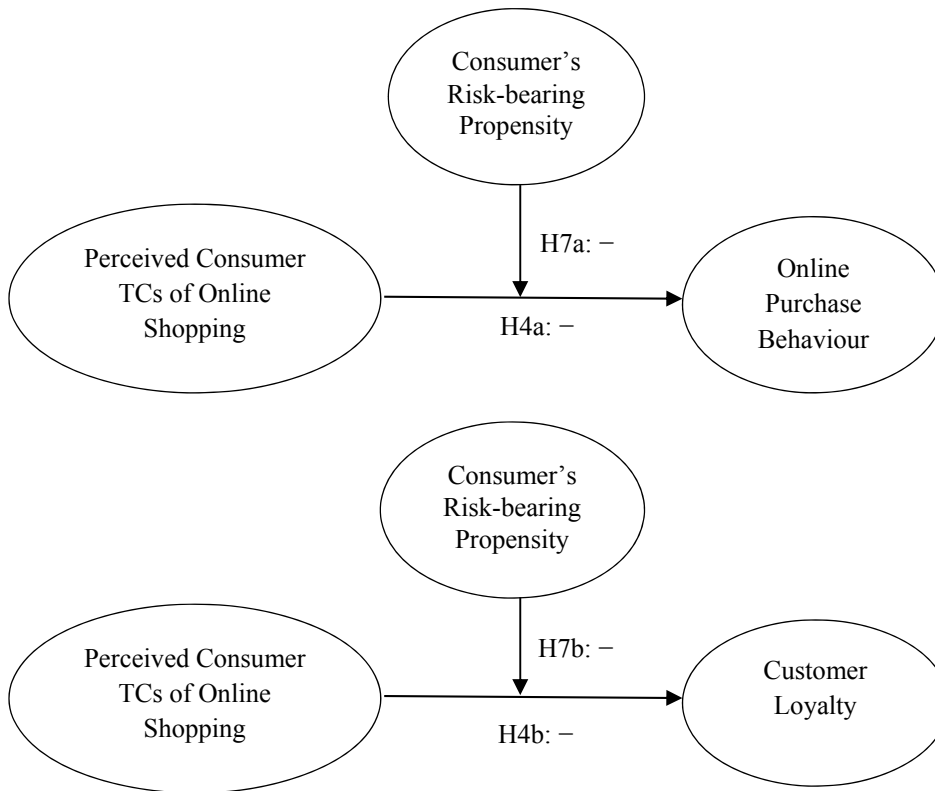
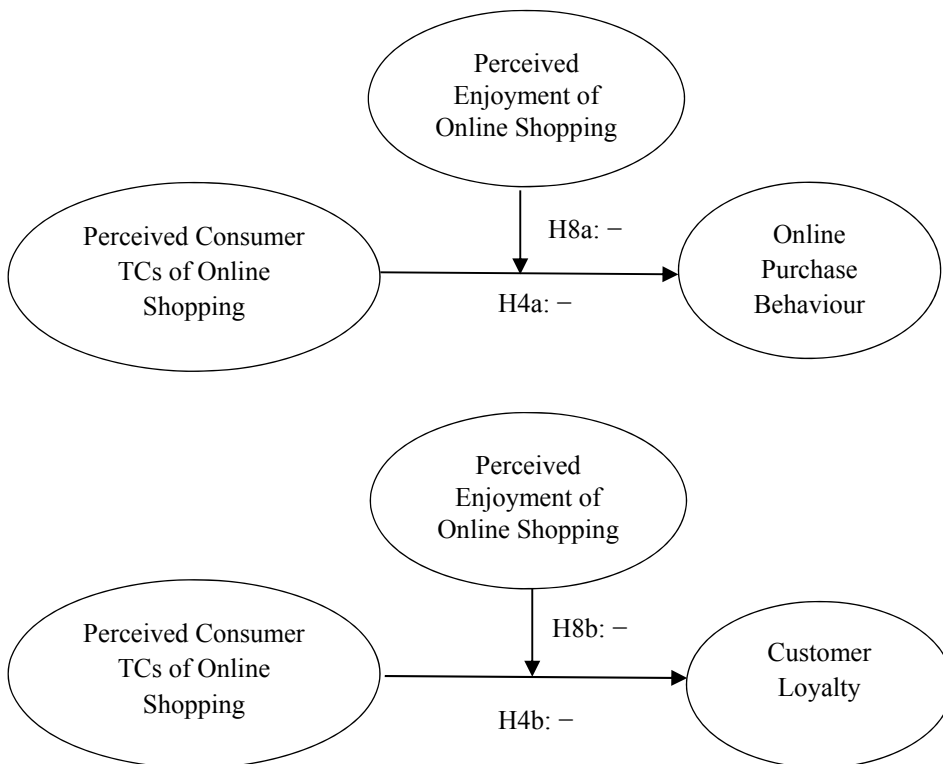


Figure 3.6 The Moderating Role of Perceived Enjoyment of online Shopping



Finally, the study proposes that the effects of antecedent variables on consumer TCs and the effects of TCs on the behaviour-related consequences may differ across product categories (search product versus experience product). Search products tend to represent products for which information can be easily obtained prior to purchase while experience products tend to represent products for which attributes-related information cannot be known prior to purchase.

In summary, the proposed conceptual model specifies perceived Internet expertise, Internet access availability, online buying frequency, product quality concern, site design, e-service quality, reputation of the online store, perceived convenience, privacy and security concerns, and environmental uncertainty as the antecedents of consumer TCs associated with online shopping, online purchase behaviour and customer loyalty as the consequences of consumer TCs, customer satisfaction as the mediating variable between TCs and customer loyalty, and consumer's risk-bearing propensity as well as perceived enjoyment of online shopping as the moderating variables between TCs and behavioural consequences. Construct definitions for the model and the rationales for the proposed hypotheses are detailed in the following section. The conceptual framework based on previous research on TCT and extended research offers a means of explaining online consumer behaviour, which can be useful to both e-business practitioners and academics.

3.6 HYPOTHESES DEVELOPMENT

3.6.1 Antecedents of Consumer TCs

Ten hypotheses will be developed in this section. The relevant evidence from existing literature has been found to support that the identified antecedent variables may affect time

and efforts expended on certain stages of online transaction process or pose influences on certain types of TCs associated with online transaction process, such as search cost, evaluate cost, monitoring cost and adaptation costs, etc., thereby affecting the overall TCs.

3.6.1.1 Consumer-Related Characteristics

Consumer-related characteristics refer to a consumer's perception of online shopping requirements and his/her previous transaction-related attributes. The antecedents falling in this category, including Internet access availability, perceived Internet expertise and online buying frequency, are suggested as important to consumer TCs.

Internet Access Availability

To some extent, Internet access reflects the physical asset specificity which refers to investment in special equipment, such as personal computers and modems for the purpose of online shopping (Teo *et al.* 2004). Accessibility is an important factor in explaining technology use (Mathieson 1991, Venkatesh and Brown 2001), and research suggests that it is a central reason why differences in Internet usage exist (Hoffman *et al.* 2000, Porter and Donthu 2006).

To complete an online transaction, the potential customer must first have access to a computer that has an Internet connection (Cho *et al.* 2003). Consumers in China still have to invest a significant amount of time and money to engage in online transactions (White *et al.* 2000). For instance, they buy computer equipment that may be costly and need to pay a high connection fee to Internet service providers, which increases the access cost of online shopping. With the increase in Internet access availability or the decline in access barriers, the Internet tends to be easily accessible in schools or workplaces, providing more

opportunities for consumers to browse and purchase at the shopping websites (Porter and Donthu 2006), thereby reducing physical asset specificity of online purchase and lowering the access cost of online shopping. Based on this reasoning, the following hypothesis is proposed:

H1a: Internet access availability is negatively related to a customer's perceived TCs associated with online shopping.

Perceived Internet Expertise

The Internet expertise refers to a consumer's knowledge of, experience with, and confidence in using, the Internet (Montoya-Weiss *et al.* 2003). It is associated with human asset specificity which means the investment in time and effort to accumulate online purchasing experience. The majority of consumers have to invest time and efforts in this kind of human asset because they do not own relevant Internet skills for online purchasing. The extent to which consumers are familiar with the usage of Internet skills is viewed as an important indicator of online learning efficiency (Van Deursen and Van Dijk 2009). Generally, Internet skills can be easily transformed to online purchase process, which are essential to online transactions (Livingstone and Helsper 2010), and therefore can lower the human asset specificity of online shopping and further reduce the TCs associated with online shopping.

When Internet users have accumulated sufficient Internet skills via their adoption of the technology, it will result in a belief in their efficacy for the extension of Internet skills into online retail usage for purchasing products. Davis *et al.* (1989) and Venkatesh and Davis (1996) have previously suggested that Internet expertise is an antecedent of perceived ease of use, and further demonstrated that Internet expertise is a precursor of online shopping

usability and online direct experience. O’Cass and Fenech (2003) contend that Internet expertise is invariably a necessary component for use of the Internet for purchasing products.

Empirical studies indicate that the Internet expertise causes a positive reception to the idea of online transaction (Bart *et al.* 2005). As online shopping is primarily concerned with using a new technological innovation, its adoption is predicated upon the user’s receptive inclination toward technological advances. The higher the users’ internet expertise is, the higher their receptivity to online shopping, and the more confidence consumers have to use Internet for online purchasing. They would have a belief in their capability to search for products online, make the payment, and adapt to the online environments, etc. Accordingly, the time and efforts expended in the related activities would be reduced. Subsequently, the corresponding costs with regard to searching products, ordering, making the payment and adapting to online shopping environments would be alleviated. As such, the high level of Internet expertise would likely lower consumer perceived TCs of online shopping.

In addition, Internet expertise may create a greater sense of comfort with an online vendor and reduce the uncertainties associated with it. Empirical results from various studies tend to exhibit that uncertainties (e.g., privacy concerns and product quality concerns) diminish with increased Internet expertise (Montoya-Weiss *et al.* 2003, Bart *et al.* 2005, Forsythe *et al.* 2006, Lai 2008). It is argued that expertise gained through simple usage of the Internet for non-purchase purposes such as information gathering and non-commercial communication will lead consumers to discover that uncertainties associated with the Internet (e.g., privacy and security) are often exaggerated (Miyazaki and Fernandez 2001). For example, concerns over cookies - pieces of information that a website stores on a consumer’s computer that are used to identify repeat visitors and personalize the online shopping experience - could

dissipate as consumers learn that cookies typically cannot access data other than that already provided to the website by the consumer. Therefore, this study argues that consumers with higher levels of Internet expertise would have more knowledge and control of online risks and uncertainties, thus their perceived TCs towards evaluating the risks and uncertainties would be lower. Evaluating uncertainties requires information or knowledge about the Internet environment and online vendors, in this sense consumers' Internet expertise plays an important role in estimating the online uncertainties (Kunreuther 2002, Yen *et al.* 2013). This claim is also supported by the view that online uncertainties diminish with increased Internet expertise (Forsythe *et al.* 2006). All of the above leads to the following hypothesis:

H1b: A customer's perceived Internet expertise is negatively related to his/her perceived TCs associated with online shopping.

Online buying frequency

Transaction frequency refers to the extent to which transactions recur (Yen *et al.* 2013). Williamson (1981a) suggests transaction frequency is one of the critical dimensions for describing transactions. Higher transaction frequencies provide companies with a motive to employ hierarchical governance structures, as these structures make it easier to recover large transactions of a recurring kind (Williamson 1985, Teo *et al.* 2004). Many researchers have failed to confirm empirically that transaction frequency is related to a choice of governance structure (Rindfleisch and Heide 1997, Anderson 2008). While some studies investigating the factors that affect online shopping behaviour chose to omit this construct from their research models (Liang and Huang 1998, Teo *et al.* 2004), when transactions are supposed to occur at a high frequency, both transaction parties are likely to desire a specific or convenient platform to deal with the repeated transactions. Thus, this study continues to explore the relationship between transaction frequency and online shopping behaviour.

Online buying frequency is here defined as the extent to which an online shopper perceives that he or she frequently conducts online buying from a certain online store. The study considers online buying frequency as an important antecedent of consumer TCs since it represents the dimension of frequency in the original TCT. According to TCT (Williamson 1981a, Williamson 1985, Williamson and Ghani 2012), a high level of transaction frequency reduces perceived TCs associated with the shopping channel.

The results of the empirical studies built on TCT in the context of online shopping show that consumers with high buying frequency sense less TCs than those with low buying frequency (Teo and Yu 2005, Kim and Li 2009b, Yen *et al.* 2013). This may be because consumers get used to the process once they have experience buying online. They are more likely to understand the risks and uncertainties of online shopping. The learning process may reduce their perceived TCs associated with online shopping (Wu *et al.* 2014). Teo (2006) states that consumers may not be familiar with online purchase in their first time of online shopping. For instance, they would not know how to open an online bank account or how to pay for the products by using the online payment system, etc., which increases the perceived learning cost of online purchase. When consumers are more familiar with the process after several times of successful online transactions, they will have a better understanding of the entire process of online shopping, hence their perceived TCs, such as search cost, evaluation cost, etc. would decrease. Furthermore, if consumers are satisfied with the products purchased at an online store, they will be very likely to continue to buy from the online store (Cronin and Taylor 1992, Anderson and Sullivan 1993, Zeithaml *et al.* 1996, Bolton 1998, Bolton and Lemon 1999, Hennig-Thurau *et al.* 2002) as they do not need to spend the same amount of time checking the performance of the online store.

Liang and Huang (1998) explicates that the reaction of inexperienced and experienced online consumers to the same level of uncertainty in the transaction process is different because there is a difference in their tolerance of uncertainty. Generally speaking, to consumers who have online buying experience, their perceived uncertainties are reduced sharply because of their experience with buying online, whereas consumers without online buying experience would perceive much more uncertainties in online shopping, and are less likely to buy products online (Yen *et al.* 2013). As Furnell *et al.* (2008) claim, novice consumers worry about credit card theft more than experienced consumers. Experienced Internet users believe that online shopping is more trustworthy than inexperienced users (George 2002) and consequently their perceived TCs of online shopping is lower than inexperienced users (Yen *et al.* 2013). The above arguments lead to the following hypothesis:

H1c: A customer's online buying frequency is negatively related to his/her perceived TCs associated with online shopping.

3.6.1.2 Online Store- and Product-Related Characteristics

Online store- and product-related characteristics refer to the key attributes and features of the online store and its products, which may affect a customer's perception of online TCs. Antecedents falling into this category, encompass product quality concern, site design, e-service quality, and reputation of the online store.

Product quality concern

Product quality concern refers to the difficulties in ascertaining the quality of products (Teo *et al.* 2004). It reflects the uncertainty of online shopping. Prior to or upon ordering, consumers are likely to wonder if the purchased products will meet their expectation after

purchasing. The product quality uncertainty is one of the consumers' major concerns (Wu *et al.* 2013), because most consumers worry about product quality without being able to physically check products prior to purchase (Yen *et al.* 2013).

Dholakia *et al.* (2010) highlight that consumers value physicality as it helps them understand product quality more easily. When consumers shop physically, they can examine a product and then decide whether they will take it home, while in online shopping, consumers face the difficulties in examining the quality of products due to the lack of physicality, thus they are more concerned about the product quality (Teo and Yu 2005). Consumers rely on the quality examination that online stores conduct for them. This characteristic of online shopping significantly increases the uncertainty of inspecting products. In this situation, consumers might put themselves at risk.

To ascertain the quality of products which they intend to buy, consumer would spend additional time and efforts evaluating their quality and communicating with online vendors about the product quality, which would result in an increase in their evaluation cost. If the quality of products cannot meet their expectation after a series of inspection processes, consumer would bear some psychological costs, such as frustration, anxiety and dissatisfaction, which subsequently raise their perceived TCs. However, if consumers do like certain features of the products, such as the design, style, colour and the like, they may have to invest more time and effort in searching for suitable alternatives and examining their quality again, in this case, they would sense high search cost and evaluation cost, leading to a rise in their perceived overall TCs.

Most internet users are dissuaded by concerns about product quality in online shopping due to a lack of physical check (Teo *et al.* 2004, Yeh *et al.* 2012b). In support of this notion, Yen *et al.* (2013) have found that the difficulty in inspecting products is positively associated with online bidders' perception of uncertainties of online auctions. The more concerns about the uncertainties with respect to product quality, the more time and effort consumers would invest in evaluating and searching, the higher the TCs they would bear and the less likely they would buy from online stores. To this end, this study postulates a positive relationship between product quality concern and consumer TCs.

H2a: A customer's concern over the product quality in an online store is positively related to his/her perceived TCs associated with purchasing from the online store.

Site design

Site design reflects visual appeal, ease of use, navigation, access speed, information sufficiency, information accuracy, information timeliness and overall transactional efficiency (Kim *et al.* 2004). It represents one of the major uncertainties consumers may encounter during online shopping. Site design is an element quite crucial in shaping online experience and influencing buying decision-making (Yoon 2002, Ranganathan 2012). Like shoppers in traditional shops, for first-time web site visitors, this element is particularly important. But unlike traditional shoppers, online consumers spend much less time in online shops they visit. Given the very limited time the average consumers spend on browsed pages when searching for information or products online, the site design must attract consumers' attention and capture their interest in a very short time (Kuo and Chen 2012).

Previous studies indicate that site design has great implications in customers' perceived ease of use (Chen and Tan 2004, Chen and Teng 2013b). A poor interface design makes the use of

an online transaction website difficult and has an increased impact on the consumers' learning cost, search cost and adaptation cost of online purchase, thereby increasing TCs. Yang et al. (2003) highlight that customers are more likely to purchase from an online store when they find easy to use navigation and search functions, otherwise they will feel confused and find it complicated to use, resulting in adaptation problem and leading online consumers to reject purchasing from the online store (Kim *et al.* 2011, Kim *et al.* 2013b). Consumers who perceive that the online store has a good interface design are prone to believe that the online store is dependable and favourable for making purchases (Lee and Chung 2009, Ganguly *et al.* 2010, Eid 2011). However, if the online store has poor interface design, consumers would feel that the online vendor lacks ability and integrity necessary to offer quality services, thus they would perceive high levels of risk and uncertainty (Lee and Chung 2009, Ganguly *et al.* 2010, Kim *et al.* 2013b). When faced with the need to adapt to high levels of risk and uncertainty in an online store, consumers would seek to minimize their TCs through purchasing at another online store or a conventional, offline store. Any changes occurring in online interface design would increase the difficulty in searching for products online (Roy *et al.* 2001). For example, any changes made to an online store's web navigation of product guide could cause difficulties to consumers searching for products to buy, which in turn increase the costs of search and adaptation. Usually online stores attract more online consumers by updating their visual interface design. However, they might also lose consumers by doing so, especially for those who have few online shopping experiences, because consumers have to invest additional time and effort to get familiar with the new interface design, purchasing environment and process. In this case, consumer would encounter more communication, negotiation, and coordination costs due to the unpredictability and changeability of the site design.

Consumers' evaluation of site design may also derive from their perception of information quality (Ganguly *et al.* 2010). The information presented in a web site is a fundamental reason that attracts and brings consumers to a site (Ranganathan 2012). Information quality is an important measure of effectiveness of site design, which can be achieved through providing consumers with sufficient, accurate and up-to-date information. Several researchers have highlighted the importance of information quality in building relationships with online consumers (Ganguly *et al.* 2010). Lohse and Spiller (1999) point to the importance of providing of complete information about the company, its products/services, and providing ways to interact with the company in improving the web site traffic as well as sales generated through the web site. Robbins and Stylianou (2003) note that providing consumers with options to evaluate and compare multiple products or services can improve consumer perception of information quality and facilitate decision making process. Consumers expect to adopt online shopping to acquire product information and purchase products at anytime from anywhere with an Internet access. If the information is limited, inaccurate or out-of-date, consumers may doubt online vendors' ability and integrity to present quality services (Ganguly *et al.* 2010, Eid 2011). This may result in additional time and effort expended in information searching and evaluating, leading to an increase in search cost and evaluation cost, and finally increasing overall TCs.

Furthermore, cumbersome and lengthy processes required for online transaction are still one of the most important sources of consumer TCs (Wang *et al.* 2012b), as they increases uncertainties, trouble, and psychological-type costs, such as inconvenience and annoyance. Consumer may lose goodwill and may interrupt online transactions due to the lack of effectiveness of overall transaction.

In summary, a well-designed online store site is able to improve learnability, decrease mental workload, guide consumers to complete transactions smoothly and is likely to lower consumer TCs. In contrast, a bad site design would increase TCs and impede customers' online purchasing as it increases the costs of learning, searching and adaptation (Eid 2011). Therefore, the effect of site design on consumer TCs is expected to be negative and significant, which forms the basis of the following hypothesis:

H2b: The site design of an online store is negatively related to a customer's perception of TCs associated with purchasing from the online store.

E-service quality

In the literature of service marketing, perhaps service quality has been the most explored topic (Swaid and Wigand 2009). Prior research has associated service quality with the business performance of firms (Boulding *et al.* 1993, Zeithaml *et al.* 1996), customer satisfaction (Lee and Lin 2005, Zhang and Prybutok 2005, Collier and Bienstock 2006, Cristobal *et al.* 2007, Udo *et al.* 2010) and purchase intention (Boulding *et al.* 1993, Zeithaml *et al.* 1996, Collier and Bienstock 2006, Udo *et al.* 2010). In line with Bitner and Hubbert (1994), e-service quality in this study is defined as a consumer's overall impression of the relative inferiority/superiority of an online store/vendor and its services. It reflects reliability, responsiveness and personalization. Customers always require quality guarantees in order to reduce the uncertainty of e-service (Ladhari 2010, Pearson *et al.* 2012). Datamonitor reports that 7.8 per cent of online transactions initiated by consumers are abandoned because of poor service quality. In this sense, e-service quality is of paramount importance because it influences the long-term relationship between customers and online vendors (Reibstein 2002, Harris and Goode 2004).

Providing superior quality services will signal online vendors' credibility (Yang and Jun 2002). In contrast, if online vendors present unreliable services to consumers, consumers cannot build trust in them (Tams 2012). They would spend more time and effort monitoring online vendors' behaviour, such as order processing and delivering, etc. For example, owing to the physical separation between customers and online vendors, the purchased products typically need to be delivered to customers, which brings a concern about the discrepancy between what is ordered and what is received (Ofek *et al.* 2011). If online vendors do not deliver precisely what is being promised, consumers would have to bear some psychological costs, such as disappointment and anxiety, and they would need to return the products to online vendors (Wu *et al.* 2014). When consumers face the issue of product return, they have to obtain return-related information from the online vendor's webpage, and then ship products back to the online vendor through the third-party logistic organization, and wait for several days to get new products. In this process, return issues result in an additional inconvenience and potential expense, thereby greatly increasing the consumers' perceived post-purchase costs and overall TCs (Chintagunta *et al.* 2012).

Good e-service quality is embodied in the way that online vendors anticipate and respond promptly and effectively to customers' needs and requests, providing customers with the knowledge necessary to make purchase or solve problems (Jarvenpaa and Todd 1996, Connolly and Bannister 2006). In online shopping, customers expect online stores to respond to their inquiry promptly (Liao and Cheung 2002). For example, when a potential buyer has inquires about the product delivery method, if the online vendor can quickly explain the differences in expected delivery times and charges for different delivery options, the customer would perceive low costs for obtaining the information, resulting in a decrease in the search cost. On the other hand, if e-service providers present slow responses to customers,

the slow responses may decrease customers' perceived control over online shopping and further undermine their shopping experience (Kassim and Abdullah 2010). Since most online stores may not have a physical presence, consumers can contact online stores only via email, telephone and fax. This fact prompts consumers to be concerned about the service quality. They are afraid of getting their inquiries or requests for help ignored by online stores. As such, consumers would have to spend additional time and effort monitoring online stores to check if their requests are processed as expected. The slow responses may also decrease customers' perceived control over online shopping and make them sense more TCs as they need to expend effort in searching for product and store-related information to address their inquiries.

Recently, personalization has become more important and is an essential part of e-service quality (Ho *et al.* 2011, Dabrowski and Acton 2013). If the information is irrelevant and not tailored to customers' needs, customers may doubt online vendors' ability to understand and meet their needs (Stoecklin-Serino and Paradice 2009). This may undermine their experience of online shopping. On the other hand, providing personalized service can increase customers' perception of the net benefits gained by increasing the perceived relevant benefits (Vernuccio *et al.* 2012) and reducing sacrifices derived from the online shopping process, such as time and effort expended during the process of searching relevant products. Online vendors can provide recommendations based on customers profiling or create a personalized list of favourite goods. They can collect buyers' preference information with relatively low cost and high efficiency, and further design a specific product or service towards certain customers, which makes the customer perceive extra benefits of online shopping and would reduce their perceived TCs.

In light of the above discussion, this study proposes that good service quality pertaining to reliable transaction, responsive service and personalized recommendations are likely to increase the benefits of online shopping and alleviate uncertainties of online shopping. Online stores with the ability to provide error-free after sales services, promptly address consumers' inquiries and offer personalized service will add credibility to themselves and further reduce consumers' perceived TCs. On the contrary, poor services quality tends to increase their perceived TCs of purchasing from the online store. It follows that:

H2c: A customer's perception of the e-service quality of an online store is negatively related to his/her perceived TCs associated with purchasing from the online store.

Reputation of online store

The reputation of a vendor is the perception a customer has about an organization (Qureshi *et al.* 2009). It includes the vendor's public image regarding its commitment to customer satisfaction, innovativeness in customer service, the quality of market offerings, and issue relating to corporate social responsibility (Ba and Pavlou 2002, Ranganathan 2012, Tams 2012). In the offline world, prior studies suggest that reputation is a valuable asset that requires a long-term investment of resources, effort, and attention to customer relationships, and indicates past forbearance from opportunism (Buckley and Casson 1988, Chen and Pan 2012) which in turn generates trust. This trust emerges from the belief that firms with a good reputation are reluctant to risk their goodwill by acting opportunistically (Kramer 1999, Qureshi *et al.* 2009, Kim *et al.* 2012a) as the costs of untrustworthy behaviour are perceived to be higher for firms that already have a good reputation. As such, firms with a good reputation enhance consumer trust and alleviate their perception of uncertainties when they conduct transactions with the firms.

In e-commerce, an online store's reputation is perhaps even more critical to the customer's evaluation of the store's credibility because there are fewer visible signals of credibility and greater risks in a virtual environment (Wirtz and Lihotzky 2003, Kim *et al.* 2013a). Reputation has long been cited as a critical factor evoking a prospective customer's initial trust in an online context (Jarvenpaa *et al.* 2000, Koufaris and Hampton-Sosa 2004, Kim *et al.* 2008, Chang *et al.* 2013). Having a good reputation can alleviate risks and uncertainties of products or services perceived by consumers because they have formed trust in the online vendor (Qureshi *et al.* 2009). An online store with a good reputation is attractive to consumers as it tends to provide reliable information without the need to try the merchandise. For online shoppers, although they do not have the chance to physically inspect the products which makes it hard to verify the quality of online purchases, a good reputation can compensate for the lack of physical check in e-commerce and act as a reassurance of the quality of the products or services to the consumers. It also influences on consumers' search and evaluation costs as it reduces the costs for evaluating the quality of products/services and exploring alternatives.

Consumers are not willing to put themselves at risk when they make a purchase at an online store that they are not familiar with or have never heard about (Teo and Yu 2005). Pavlou *et al.* (2003) indicate that consumers prefer well-known online stores in order to reduce uncertainties because these stores reassure consumers and diminish evaluation and monitoring costs that arise especially when consumers conduct business with an unfamiliar online vendor. In this sense, good reputation guarantees good quality and customer service, and reduces the difficulty in assessing the performance of online vendors, thereby reducing evaluation cost and monitoring cost perceived by consumers. Following this line of reasoning,

the researcher contends that reputation remains instrumental in reducing consumers' perceived TCs. This leads to the following hypothesis:

H2d: A customer's perception of the reputation of an online store is negatively related to his/her perceived TCs associated with purchasing from the online store.

3.6.1.3 Online Channel-Related Characteristics

Online channel-related characteristics refer to a consumer's general perception of online shopping and the online environment. Three main antecedents of consumer TCs associated with the online channel-related characteristics are perceived convenience, privacy and security concerns and environmental uncertainty.

Perceived convenience

In this study convenience is defined as the advantages (i.e., saving time and effort) that consumers enjoy through online shopping. Convenience mainly refers to two dimensions of shopping activities: where to shop and when to shop. Online shopping is convenient compared to traditional stores since it is free from temporal and spatial constraints. Kaufman-Scarborough and Lindquist (2002) believe that online shoppers consider online shopping to be convenient by providing place-convenience since they can shop without leaving their location and take advantage of time convenience.

Since consumers rarely visit multiple physical retail stores prior to purchase (Childers *et al.* 2001), online shopping lowers the costs of acquiring pre-purchase information while at the same time increase search benefits by providing a broader array of product alternatives at a small incremental costs (Yen *et al.* 2013). Thus, convenience is likely to reduce consumers' search cost when they purchase online. Prior studies (Jensen 2012, Workman and Cho 2012)

have revealed that convenience-oriented consumers are more likely to purchase online due to the opportunity to search and compare a large number of alternatives at a relatively low search cost (Alba *et al.* 1997). Many studies have suggested the saliency of perceived convenience in predicting online shopping adoption (Chen *et al.* 2009, Clemes *et al.* 2013).

In addition, the convenience in online shopping increases transaction efficiency through the ability to shop at home, by eliminating such frustration as fighting traffic and looking for a parking space, and avoiding long checkout lines, while also offering single-stop shopping that eliminates travel to and from a variety of stores (Childers *et al.* 2001). According to the CINIC (2012), consumers in China consider time saving as one of the main benefits of online shopping because it eliminates the necessity of having to travel to one or more traditional stores. As Srinivasan *et al.* (2002) indicate, the very nature of electronic transactions means that consumers expect fast, efficient processes that favour the development of the purchase. Chocarro *et al.* (2013) argue that, in the absence of the speed and efficiency, many consumers will choose to leave the website without completing the purchase process, and Cao and Gruca (2004) state that transaction inconvenience represents an opportunity cost to consumers. These findings suggest that consumers who are motivated by the great convenience of online environment are more likely to consider online retail stores for purchase of products and services as convenience can facilitate ease of search and product comparisons and further reduce their perceived TCs, especially the search cost. Thus, the following hypothesis is provided:

H3a: The perceived convenience of online shopping is negatively related to a customer's perception of TCs associated with online shopping.

Privacy and security concerns

Privacy and security concerns reflect the uncertainty of online shopping (Yeh *et al.* 2012b). Urban *et al.* (1999) stated if customers do not trust that their personal data will be kept private and that payment is secured and executed only with appropriate authorization, they will not use the Internet. This statement suggests that online privacy and security concerns are inextricably linked and when combined, may actually prevent online purchasing from taking place.

The important parts of privacy concerns include sharing (selling, renting) personal information to other companies without the consumers' approval, tracking of shopping habits, receiving junk mail and unsolicited messages, placement of cookies on a consumer's computer, and being contacted by the company without providing consent (Tavani 1999, Tsai *et al.* 2011). Privacy concern is the most frequent reason cited by consumers for not making online purchases (Buchanan *et al.* 2007, Castañeda and Montoro 2007, Wirtz *et al.* 2007, Eid 2011, Hong and Thong 2013, Taddei and Contena 2013). Recent studies (Spake *et al.* 2011, Kumar and Reinartz 2012, Shareef and Kumar 2012, Yeh *et al.* 2012b) indicate that consumers bear the costs of losing their personal information when shopping online because their personal information might be used to send them unwanted offers by online stores or other companies or accessed by a third party for non-authorized activity. Miyazaki and Fernandez (2001) explicate that gathering, sharing personal information by placing cookies on the computer and contacting the consumer without his consent increase consumers' privacy concerns and reduce their perceived benevolence and credibility of the online vendors. Consumers are afraid that once their information is open to other unrelated parties, the benefits they gain from the online transactions cannot off-set the loss they might have to suffer because of identity theft (Njite and Parsa 2005). When facing a high possibility of opportunism by leaking personal information without the consumers' approval and

difficulties in protecting their personal data, a consumer's monitoring cost of the usage of their personal information is very likely to increase and the overall TCs of protecting personal information may increase as well (Yeh *et al.* 2012b). Thus, consumers' privacy concern may positively affect their TCs of online shopping.

In addition to privacy concern, the security of financial transactions has been recognized as one of the obstacles in stimulating online shopping (Suh and Han 2003, Yeh *et al.* 2012b). Consumers worry about the security-related risks of fraud or financial loss from their use of credit cards during the online transaction (Eid 2011). An Internet user viewing the Internet as having a low level of security would perceive high uncertainties of online shopping, and is unlikely to become an online shopper. The issue of security has drawn much attention in online shopping. For example, Miyazaki and Fernandez (2001) contend that both experienced and inexperienced users of online shopping consider security as a major concern. Bhatnagar *et al.* (2000a) show that the uncertainties associated with financial transactions, such as transmitting credit card information on the web, affect consumers' online purchasing behaviour. Udo (2001) argues that the security threats fuel consumer concerns over the uncertainties and risks of online shopping, directly affect consumers' perceived TCs and their online shopping behaviour. Also, Teo and Yu (2005) confirm that security concern is an influential factor of TCs, and it positively influences the retail TCs. Chircu and Mahajan (2006) advance that consumers perceive lower TCs from booking their tickets at online website Firstsort.com after they perceive lower security concerns on the Internet. Kim and Li (2009) identifies low levels of data security positively influence consumers' TCs in the online travel market.

From the studies cited above, it is argued that if the consumers do not feel secure, they may be reluctant to give credit card information over the online to vendors. It may take much time and effort to monitor online vendors' behaviour to ensure the security of financial transactions carried out via the Internet. This leads to an increase in the monitoring cost of online shopping. Subsequently, their perceived overall TCs of online shopping would increase. As such it is hypothesized that consumers' privacy and security concerns are positively related to their TCs of online shopping. It follows that:

H3b: A customer's privacy and security concerns over online shopping are positively related to his/her perceived TCs associated with online shopping.

Environmental uncertainty

No business can isolate itself from the external environment. Environmental uncertainty of online shopping refers to the unpredicted changes in circumstances surrounding an online transaction and the difficulty in determining the potential impact of the external environment on decision makers (Rindfleisch and Heide 1997). It mainly creates an adaptation problem which arises when decision makers are limited by bounded rationality and have difficulty altering contractual terms to changes and adverse impacts in the external environment (Rindfleisch and Heide 1997). Accordingly, TCs arise which are associated with adapting to the uncertain external environment. In the online shopping context, the consumers' perceived uncertainty of transaction environment generally comes from the concerns over the effectiveness of government regulation, credibility of media reports and reliability of online consumer reviews.

First of all, no country has developed comprehensive legislation regarding e-commerce. Government regulation in e-commerce in China market is likewise not complete, especially

the legislation on digital signatures, copyright and intellectual property, property right protection, consumer laws, and laws on taxes (Yang and Wang 2013). In such an immature environment, it is difficult to be assured that the existing laws and regulations are adequate for the protection of consumers' interests (Connolly and Bannister 2006, Turban *et al.* 2009), thus potential consumers would encounter uncertainties and risks in online shopping (Cheung and Lee 2002, Connolly and Bannister 2006, Pavlou *et al.* 2007). For example, a lack of appropriate regulation on credit usage via credit cards and protection of credit card security would increase consumers' perception of online risks and uncertainties, thus further hindering online purchase behaviour (Dabholkar and Sheng 2012, Hong and Cha 2013). Once problems occur due to insufficient protection by government regulations and laws, consumers would have to bear a cost of adaptation which would increase their perception of TCs in online shopping.

Secondly, marketing scholars contend that media reports as an external environmental factor plays an important role in affecting consumer purchasing decisions (Hennig-Thurau *et al.* 2010). In the case of online buying, media reports provide consumers with guidelines for safe shopping via e-commerce and inform consumers regarding the most secure methods of payment over the Internet (Wei *et al.* 2009, Aljukhadar *et al.* 2010, McCombs 2013). Although they have aforementioned advantages, disadvantages that discourage potential online shoppers should not be ignored (Yannopoulou *et al.* 2011). According to the CECRC (2010), reports about fraud on the Internet are frequently contradictory. Some reports claim that the Internet is an extremely safe place to transact business while other reports demonstrate that fraud is a clear and present danger, and cybercrime is ubiquitous. For consumers, it would be difficult to determine which report is credible. In fact, there is an inevitable tendency for the media to sensationalize news reports by exaggerating any e-

commerce security breach stories. By doing so, it attracts more readers/listeners/viewers. Since consumers are already very concerned about the intrinsic security of online transaction (Farrell *et al.* 2000), such an exaggerated report of online security breaches on television, radio and in the press would make potential consumers more reluctant to transact online. Therefore, the media report can be either beneficial or damaging to the adoption of online shopping by educating the public about it or exaggerating online fraud, respectively. In this respect, consumers find it hard to assess whether reports by mass media are authentic or exaggerated. Their costs of evaluating the quality of the media reports would increase, thereby raising the overall perceived TCs.

In addition, the use of the internet as a venue for expressing opinions on products and online stores has become an important tool for potential consumers to evaluate the quality of online products and services (Chatterjee 2001). Online reviews would provide a trusted source of product and store information for some consumers (Lee *et al.* 2008, Lee *et al.* 2011b, Serra Cantallops and Salvi 2014). However, most online reviews are from strangers or are anonymous to receivers (Chevalier and Mayzlin 2006, Zhang *et al.* 2010, Mayzlin *et al.* 2012). Thus, in some cases, consumers would hesitate to trust the previous consumers' comments. For example, a consumer who is also a competitor of an online vendor from which he /she bought products might give negative reviews to the online vendor in order to ruin its reputation. As malicious comments always exist, the credibility of online reviews is questionable (Lee 2009b). When facing a high level of uncertainty of the reliability of online reviews, consumers' evaluation cost and monitoring cost would increase. Cheung *et al.* (2012) state that a favourable attitude will be formed when online reviews consist of understandable and fact-supported arguments which are more persuasive than reviews expressing subjective feelings and emotional comments. Pan and Chiou (2011) indicate that authentic reviews can

reduce the uncomfortable feelings of risk exposure and strengthen online shoppers' confidence. Nevertheless, the problem is that consumers are limited by bounded rationality, and as such it is difficult for them to judge the quality of the reviews. To evaluate the credibility of online reviews, consumers would have to invest a large amount of time and effort. Therefore, the uncertainties of online reviews are likely to increase consumers' perceived TCs.

Taking the above contentions and drawing on empirical findings, the following hypothesis is provided:

H3c: Environmental uncertainty of online shopping is positively related to a customer's perception of TCs associated with online shopping.

3.6.1.4 Control Variable: Demographic Characteristics of Online Shoppers

Although the researcher focuses on the influences of the antecedents derived from three dimensions of the online transaction on consumer TCs, it is recognized that individual differences (e.g., age, gender, education level and income level) also affect consumer perception of TCs of online shopping (Teo 2006, Byramjee and Korgaonkar 2013a, Yen *et al.* 2013). Therefore, in order to avoid such effects, this study includes the above four factors under the category of control variables. Controlling for these demographic characteristics, like age, gender, education and income level provides a stronger test of the theory developed in the model.

3.6.2 Consequences of Consumer TCs

Consumer TC economizing affects consumer choice of vendors (Liang and Huang 1998, Chintagunta *et al.* 2012, Yen *et al.* 2013), and the specific form of the choice depends on the

situation. In an initial transaction, the consumer's choice of an online vendor is a purchase choice. After the consumer has some transactional experiences with the online vendor, the "choice of vendor" means to choose to continue the exchange relationship with it (Teo *et al.* 2004, Tyagi 2004), by continuing to purchase from it. In this study, customer loyalty is used to capture a customer's relational continuance with an online vendor. Loyalty involves a deeper and longer exchange relationship.

3.6.2.1 Role of Consumer TCs in Online Purchase Behaviour

Previous researchers attempted to adapt TCT to consumer exchange and posited that TCs determine the selection of transaction modes (Liang and Huang 1998, Teo and Yu 2005, Chircu and Mahajan 2006). It theoretically explains why a transaction subject favours a particular form of transaction over others. The basic principle of TCT is that people like to conduct transactions in the most economical way. Specifically, the low TCs in certain transaction mode will lead consumers to choose it while the high TCs in this transaction model will entice consumers to choose other transaction mode. Assuming rational decision-making, with all else being equal, consumers will choose a transaction mode that costs the least among all the available choices (Sriram *et al.* 1992, Cannon and Perreault Jr 1999, Cannon and Perreault 1999). In this sense, TC economizing determines a consumer's choice of a transaction mode in which the consumer will conduct a transaction.

Given that there are two main transaction modes available for consumers to choose from, shopping in a traditional channel and the shopping in an online channel, it is presumed that low TCs in the online channel will encourage consumers to choose online shopping while high TCs in the online channel will prompt offline shopping. Indeed, some consumers adopt online shopping because it reduces the time and effort expended searching for product

information and enhances transaction efficiency (Liang and Huang, 1998; Wu et al., 2012), whereas some consumers refuse to adopt online shopping because they perceive high risks in relation to online vendors' opportunistic behaviour and uncertain external environment which increase their perceived TCs of online shopping. Teo et al. (2004) found that TCs of both consumers in the U.S.A and China negatively affect their willingness to shop online. Also, Teo and Yu (2005) validate the findings that perceived TCs are negatively related to consumer's willingness to purchase online. As such, it is hypothesised that consumers who perceive lower TCs of online shopping are likely to buy more items from an online store and patronize it more frequently, whereas the rise of TCs would hinder consumers' online purchase at the online store, which is mainly reflected in the reduction in the purchasing frequency and the total amounts of items bought online.

H4a. A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her actual online purchase behaviour at the online store.

3.6.2.2 Role of Consumer TCs in Customer Loyalty towards an Online Store

In this study, customer loyalty is defined as a customer's favourable attitude toward an online vendor resulting in repeat buying behaviour and positive word-of-mouth (Anderson and Srinivasan 2003). In online exchanges, Kim and Li (2009b) claim that TC economizing is particularly important for online loyalty development. The rationale behind this proclamation can be explained from two aspects.

Firstly, online consumers are endowed with relative ease of access to information compared to consumers in the brick-and-mortar, offline context (Fan *et al.* 2013a). It is easy for them to make comparisons across competitive vendors (Jiang *et al.* 2013). Thus, the importance of price and other product information in determining customer loyalty as documented in the

literature is lessened. In contrast, the role of TCs manifested in time and effort expended becomes more salient (Reichheld and Schefter 2000, Wu *et al.* 2014, Yen *et al.* 2013). The notion of TC economizing interestingly is a cornerstone in customer loyalty (Kim and Li 2009b). Indeed, there is growing recognition that in the Internet age, consumers place a greater focus on time and effort saving, with greater attention to TC economizing. Speed becomes the measurement standard and time becomes a more scarce resource when it comes to online shopping. According to a Greenfield Online survey, consumers choose online shopping in order to save time (60 per cent) and avoid crowds (47 percent) (Tyagi 2004). On this point, time and effort saving reflecting TC saving plays an imperative role in determining continuance of future transactions.

Secondly, in an online setting, the difficulty of assessing the online vendor's performance puts a burden on consumers because they have to invest additional time and effort to closely monitor the products and services provided by the online vendor (Bowen and Jones 1986). Such transactional difficulty would increase TCs, leading to the emergence of switching behaviour. Ultimately the increased TCs would hinder the establishment of customer loyalty. As a result, the TC consideration becomes more salient in affecting the development of customer loyalty toward an online store. When TCs are perceived to be high, customers would not stay loyal toward an online store as they tend to choose the vendor who can minimize their perceived TCs. Empirical evidence from Cannon and Homburg (2001) show a direct relationship between customers' procurement cost savings and their desire to increase future transactions. Bharadwaj and Matsuno (2006) identify that low TCs influence customer retention positively. Kim and Li (2009b) illustrate that loyalty of customers purchasing travel products over the Internet are affected negatively by TCs. The foregoing discussion leads to the next hypothesis:

H4b. A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her loyalty towards the online store.

3.6.3 Customer Satisfaction as a Mediating Variable

Recent research has greatly enhanced knowledge concerning the link between value, customer satisfaction and loyalty (Cronin *et al.* 2000, Deng *et al.* 2010, Flint *et al.* 2011), however, at yet little attention has been devoted to examining the link between TCs, customer satisfaction and loyalty in the e-commerce domain. This study posits an alternative mechanism for the TCs - customer loyalty relationship whereby customer satisfaction mediates the effect of TCs on customer loyalty. Understanding how satisfaction acts in the relationship between TCs and loyalty provides guidelines for management practices in online firms seeking to improve their customer loyalty.

3.6.3.1 TCs Affect Customer Satisfaction

In this study, customer satisfaction is defined as how pleased the customer is with services and products provided by an online store (MacDonald and Smith 2004). The Internet is believed to reduce cognitive dissonance and information asymmetry through portrayed availability of information and data pertaining to the availability of markets' offerings (Mavlanova *et al.* 2012), the fact that this data is drafted by online vendors on their websites gives them a chance to conceal vital information, which may raise the consumers' concern over online vendors' opportunistic behaviour (Dinev *et al.* 2012). This would create uncertainties in the online transaction process and result in consumers bearing the evaluation, monitoring and adaptation costs, eventually leading to dissatisfaction. In online buying, before receiving the product purchased online, consumers might be concerned about the transportation fee and delivery time. They would invest additional time and effort to monitor

online vendors to check if their orders are processed in time and to contact the delivery party to check the delivery status. The time, money, and effort involved in this process would reduce customer satisfaction with online shopping.

When consumers receive the products, product quality problem may necessitate a need to return the products for refund or replacement. To this end, they would bear some psychological, time and monetary costs, which would greatly increase the post-sale costs. The increased TCs would result in dissatisfaction with the product quality, e-service, or delivery performance. In a study of TCs in brick-and-mortar stores, Grønhaug and Gilly (1991) state that satisfaction is related to TCs while Bharadwaj and Matsuno (2006) note that low TCs positively influence customer satisfaction. In a similar vein, Kim and Li (2009b) and Kim et al. (2011) suggest that customers tend to be satisfied with the reduced TCs in the online travel context. Hence, the following hypothesis is put forward:

H4c. A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her satisfaction with the online store.

3.6.3.2 Customer Satisfaction Affects Loyalty

According to Anderson and Srinivasan (2003), customer satisfaction means the contentment of customer with respect to his or her purchasing experience with a given electronic commerce firm. A dissatisfied customer is more likely to search for information on alternatives and more likely to yield to competitor overtures than is a satisfied customer. Also, a dissatisfied customer is more likely to resist attempts by his or her current service provider to develop a closer relationship and more likely to take steps to reduce dependence on that provider. Dissatisfied customers may wish to redefine the relationship while satisfied consumers are more likely to repeat purchase, to resist competitive offers, and to generate

positive word of mouth (Horppu *et al.* 2008, Kassim and Abdullah 2010, Flint *et al.* 2011). Several empirical studies have revealed that customer satisfaction is a general antecedent of loyalty (MacDonald and Smith 2004, Kim and Li 2009b), and these studies indicate that a customer cannot be loyal without being highly satisfied. Therefore, the following hypothesis is advanced:

H5. A customer's satisfaction with an online store is positively related his/her loyalty towards the online store.

3.6.3.3 Partially Mediating Role of Consumer Satisfaction

The discussion so far suggests that consumer TCs affect customer loyalty and customer satisfaction, which in turn affects customer loyalty. Kim and Li (2009b) provide evidence for some of these links but do not formally test the mediating role of customer satisfaction in the relationship between TCs and customer loyalty. Theoretical justification for the mediating role can be attributed to a well-investigated framework in attitudinal literature (Ajzen and Fishbein 1980). The framework is depicted as follows: Cognition → Affect → Behavioural intent or behaviour.

Applying this framework to the online retailing context, this study proposes a mediating effect for customer satisfaction. Consumer TCs reflect consumer's perceived costs of purchasing a product or service online and thus is regarded as a cognitive variable. Customer satisfaction is an affect variable. Customer loyalty concerns behaviour or a disposition to behave positively toward an online vendor. Thus, the framework provides a basis for hypothesizing that customer satisfaction mediates the effect of consumer TCs on loyalty. Customer satisfaction, serving as the missing link in a chain of causation, may provide a more accurate explanation for the causal effect the consumer TCs have on loyalty.

In addition, consumer and advertising research suggests that cognition about a product may also affect a consumer's purchasing intention and behaviour directly (Vakratsas and Ambler 1999, Koufaris 2002, Ha and Stoel 2009, Yuliharsi *et al.* 2011). The purchase decision of these products is directly affected by information that consumers have about these products (Pavlou and Fygenon 2006). Thus, given the significant direct and indirect effects from TCs on customer loyalty, the mediation performed by customer satisfaction on the relationship between TCs and loyalty may be partial. Furthermore, the partial mediation is consistent with the study by Woodruff and Gardial (1996) that report both a direct effect of consumer TCs on loyalty and an indirect effect of TCs on loyalty through consumer satisfaction. The findings of Kim and Li's (2009) study also imply that a customer's satisfaction mediates the impact of his/her perception of TCs on loyalty in the online travel market.

The partially mediating effect of customer satisfaction on the relationship between perceived TCs and loyalty gains support from the partially mediating effect of customer satisfaction on the relationship between perceived value and loyalty hypothesized and tested in prior research. For example, Eggert and Ulaga (2002) state that customer satisfaction partially mediated the effect of perceived value on loyalty in the retailing context. Although the authors have their own explanations for why consumer perceived value increases satisfaction and satisfaction in turn increases loyalty, this researcher believes that the rationale lies in the concept that it is the consumer TCs that influence value in the first place. Reduced TCs increase consumer's perceived value which then increases the satisfaction and satisfaction finally enhances loyalty.

Based on this reasoning and the associated evidence, it is hypothesized that customer satisfaction partially mediates the relationship between TCs and loyalty. Direct effect of TCs on customer loyalty may achieve significance, consistent with H4b, in addition to the mediated effect through consumer satisfaction, consistent with H4c and H5.

H6. A customer's satisfaction with an online store partially mediates the effect of his/her perception of TCs on loyalty towards the online store.

3.6.4 Risk-Bearing Propensity and Perceived Enjoyment as Moderating Variables

Apart from TCs, certain personal traits of a consumer such as risk-bearing propensity (Byramjee and Korgaonkar 2004) and the perception of enjoyment of online shopping (Al-Maghrabi and Dennis 2011, Domina *et al.* 2012) also affect online behaviour. An individual's ability to handle risk classifies him/her as either risk-taking or risk-averse (Kahneman and Tversky 1979), which accordingly determines the individual's higher or lower level of confidence in purchasing online, and his/her affinity to purchase from certain online store (Kim *et al.* 2008, Aghekyan-Simonian *et al.* 2012). Further, the degree of enjoyment (high or low) in online shopping also tends to affect a consumer behaviour in relation to online purchasing and loyalty development (Ha and Stoel 2009).

Teo and Yu (2005) argue that the specific consequences of consumer TCs are determined by individual consumer's personality traits such as risk attitude, perception of the level of enjoyment, innovation attitude, etc. However, little is currently known about the cumulative effects of TCs and personal traits when integrated together to determine online consumer behaviour (Belanche *et al.* 2012b). Therefore, in an attempt to shed some light on this issue, this study empirically tests the interactive effects of TCs, risk-bearing propensity and perceived enjoyment of online shopping on online purchase behaviour and customer loyalty.

These empirical verifications attempt to expose the underlying reasons for consumers' online purchase behaviour and loyal behaviour.

Balasubramanian et al. (2005) use a few interesting vignettes to explain consumers' online behaviour and their channel choices. In lieu of a lack of prior research pertaining to the interactive effects being investigated in this study and due to the nuance of the posited relationships, the researcher borrows ideas from these vignettes and further builds scenarios which can help to develop the hypothesized interactive relationships that are examined in the study.

3.6.4.1 Consumer's Risk-Bearing Propensity

Individuals differ in their risk-bearing attitude. Some are risk-taking while others are risk-averse (Kahneman and Tversky 1979). Risk-takers are generally more enterprising and growth-orientated. They are the promotion-focused type who can better deal with uncertainties when trying to reach out for potential gains and positive outcomes (Dohmen *et al.* 2011). Thus, they are the type who depart from the status quo by taking the risk in anticipation of benefits. Risk-averse individuals, on the other hand, are more prevention-focused and try to keep away from uncertainties in their environment (Li and Huang 2009). Their psyche leads them to maintain the status quo to minimize potential losses and negative outcomes (Dohmen *et al.* 2011).

Lee and Cuningham (2001) identify consumers' inherent risk-tendency and their perceptions of risk as major factors when selecting a service provider. Burnhan et al. (2003) argue that social, financial and psychological elements of risk may induce risk aversion in the buyer, and serve as a considerable impediment to switching behaviour. Applied to online shopping,

consumers' risk-averse attitude may function as an important deterrent to online vendor switching. Sholtz (2001) explains that consumers' differing risk-bearing propensity determines the extent of trust they place in the transaction environment. Helmut (1993) proposes that in spite of the risks arisen from the information asymmetry and uncertainty, consumers' inherent tendency towards risk-bearing would ultimately influence how well they adjust to the transaction environment and their behaviour therein.

Consider a scenario where a consumer at the grocery store checks the apples before purchasing them. He experiences this need for self-affirmation in order to convince himself of a comfortable and confident purchase. A deeper reflection of his behaviour may reveal that his inherent trait is the risk-averse type. The low risk-bearing propensity induces him to carefully inspect merchandise before purchase in order to avoid post-purchase regret, and that would drive him to shop through only brick-and-mortar stores where he could touch and feel the offerings before buying them. Thus, in this case, the individual's risk-bearing propensity tends to emerge as the pivotal variable in determining preference of shopping medium. Transposing this logical deduction into an online setting the researcher argues that risk-averse individuals would be so afraid of the uncertainties and risks associated with online shopping that they would not purchase from online stores or simply reduce the amount of items purchased online. Risk-averse consumers who have very limited risk tolerance feel threatened by ambiguous or unknown situations and tend to exhibit strong uncertainty avoidance behaviour (Curley *et al.* 1986, Baker and Carson 2011). They are very concerned about the uncertainties and risks and are eager to get rid of the instabilities in online environments (Yeh *et al.* 2012b), eventually leading to giving up online shopping. Thus, their perceived TCs, reflected in uncertainties and risks of online shopping, would play a dominate role in determining their online decision making (e.g., online purchase behaviour and loyalty). In

this sense, their low risk-bearing attitudes magnify the effects of TCs on online purchase behaviour (or loyalty).

The quality of certain products, such as shirts and perfumes, is hard to confirm prior to the online purchase. It would take a lot of time and effort to find out whether the quality is good or bad, which would result in a high level of TCs of online shopping (Teo *et al.* 2004, Yen *et al.* 2013). Nevertheless, if a consumer is a risk-taker, he would be more likely to tolerate risks in online environments and tend to trust the quality of the product offered by the online vendor and buy the product without any extra quality inspection. In this situation, the high risk-bearing attitude would tend to make him purchase from an online store and develop loyal relationship with the online vendor even if his perceived TCs are high. The consumer's risk-bearing propensity plays an important role and seems to matter more to this individual, while the TCs seems to take a back-seat. Thus, the high risk-bearing attitudes lessen the effects of TCs on online purchase behaviour and customer loyalty.

The above discussion shows that it would be difficult to predict upfront consumers' online purchase behaviour and their loyalty without taking their risk-bearing propensity into consideration. This study further argues that if a consumer is a risk-averse person, the effects of perceived TCs on purchase behaviour and customer loyalty will be stronger, while if a consumer is risk-taker, the effects of perceived TCs on purchase behaviour and loyalty will be weaker. As such, consumers' risk-bearing propensity is expected to play a moderating role in the relationship between TCs and purchase behaviour (or customer loyalty). Accordingly, the following hypotheses are proposed:

H7a. A customer's risk-bearing propensity moderates the relationship between his/her perception of TCs associated with purchasing from an online store and his/her online purchase behaviour from the online store.

H7b. A customer's risk-bearing propensity moderates the relationship between his/her perception of TCs associated with purchasing from an online store and his/her loyalty towards the online store.

3.6.4.2 Perceived Enjoyment of Online Shopping

This study defines enjoyment of online shopping as the extent to which the activity of adopting online shopping is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Moon and Kim 2001, Heijden 2003, Domina *et al.* 2012). It can be two-fold: enjoyment from the product purchased as well as the process of shopping itself (Baker and Wakefield 2012). Evidence from previous studies has shown that enjoyment of shopping is regarded as an important determinant of why consumers shop (Mathwick and Rigdon 2004, Doolin *et al.* 2005, Cai and Xu 2007, Chiu *et al.* 2009a, Ha and Stoel 2009, Parboteeah *et al.* 2009, Al-Maghrabi and Dennis 2011, Kim and Eastin 2011).

When consumers value fun, exciting, enjoyable and interesting experience of shopping, they reduce the concern about the time and effort expended during the shopping process (Leischnig *et al.* 2011), instead, they pay more attention to the degree of enjoyment obtained through browsing and purchasing at the online shopping websites. Hence, TCs seem not so important in this particular situation where perceived enjoyment matters more to their decision making than their perceptions of TCs. In the online shopping context, if consumers treat online shopping as an enjoyable or fun activity and emphasize the fun or entertainment

brought by the online vendors or their products, they would be more likely to purchase at the online stores no matter how many TCs they may encounter. In this case, they would not worry too much about the risks of online shopping and would not spend much time and effort evaluating the products and monitoring online vendors' behaviour. Therefore, the effects of TCs on online purchase behaviour are reduced when consumers perceive a high level of enjoyment.

However, there exists another completely opposite situation. Assume a consumer needs to buy an airline ticket for a meeting held in another city after returning home from a stressful work-day. Buying tickets becomes a task so he just wants to complete it as soon as possible. If he chooses to buy the ticket online, he would be more concerned about the time and effort expended during the purchasing process and would not care much about whether buying online is fun or not. In this case where purchasing becomes a task, task-oriented consumers would not have a particular pursuit of enjoyment. Without a strong sense of enjoyment, time and effort saving will emerge as their biggest concern. Thus, the TCs (represented by time and effort expended) consumers bear during the shopping process matters more than the perception of enjoyment. In other words, consumers' perceived TCs are of paramount importance in determining their behaviour in the situation where they do not care about or experience the pleasure and joy from shopping at an online store. In this sense, the low enjoyment perceived by consumers would strengthen the effects of TCs on their online behavioural consequences. As such it is hypothesized that:

H8a. A customer's perceived enjoyment of online shopping moderates the relationship between his/her perception of TCs associated with purchasing from an online store and his/her online purchase behaviour from the online store.

H8b. A customer's perceived enjoyment of online shopping moderates the relationship between his/her perception of TCs associated with purchasing from an online store and his/her loyalty towards the online store.

3.6.5 Differences Cross Product Categories

After identifying and categorizing the antecedents and consequences of consumer TCs of online shopping, this study further develops hypotheses concerning the differences in the hypothesized causal relationships across product categories.

The extant literature has highlighted the importance of product categories in designing different marketing strategies and leveraging firms' resources and capabilities in both traditional and online firms (Hassanein and Head 2004, Lian *et al.* 2012, Sharkey *et al.* 2012). Given the importance of product categories in formulating company strategies, it is puzzling that no previous study has sought to provide empirical support systematically addressing what the differences are in the relationships between antecedent factors, TCs and behavioural consequences across different product categories. This study attempts to address these issues by exploring the differences in the aforementioned relationships between product categories. To this end this study will advance the TCT by signifying the importance of product category and articulating the possible different relationships across product categories. From a managerial perspective, the study attempts to provide guidelines for managers in relation to marketing strategies development in terms of the different effects of product categories on the linkages between antecedents and TCs, and between TCs and behavioural consequences.

By drawing up the merits and deficiencies of the prior product classification research, this study adopts Nelson's (1974) search and experience goods classification framework to

examine the differences in the relationships between antecedents, TCs and behavioural consequences across two product categories. Nelson's classification (1974) is applicable to online shopping context and appears to be a more salient product classification scheme compared to the conventional classification framework (Girard *et al.* 2002, Leahy 2011). It has been widely used in the previous research (Wright and Lynch Jr 1995, Huang *et al.* 2009, Park and Lee 2009, Mudambi and Schuff 2010, Leahy 2011).

According to Nelson (1974), search products tend to represent products for which information can be easily obtained prior to purchase, and the customer can have reasonable confidence of making the purchase decision without having to use or sample these products. In contrast, experience products tend to represent products for which attributes-related information cannot be known prior to purchase, and the customer cannot have reasonable confidence of making the purchase decision without inspecting, previously using or sampling these products. Deriving from Nelson's definitions, Klein (1998) describes that a search good's quality is verifiable on inspection, whereas an experience good's quality is difficult to judge on inspection. Only on the purchase and usage of an experience good can its true quality be revealed.

Search products require less direct examination (such as books, computer software, airline tickets etc.) and are therefore perceived as less risky to buy online as opposed to experience goods where customers expect quality assurance (Klein 1998, Liang and Huang 1998, Vijayasathya 2002). Girard *et al.* (2003) maintain that consumers may prefer shopping from homes for search products such as books and toys that involve less uncertainty, whereas they may be more brand-conscious and risk-averse toward experience products such as jewellery and clothes that involve more risks, and may be more willing to spend time to see, smell, test

and feel the products in retail stores. Thus, it can be concluded that the Internet would seem a more suitable purchase medium for search products due to the vast availability of information online and the need to make a confident purchase without having to physically be present to sample or inspect the products (Liang and Huang 1998, Lian and Lin 2008), whilst the brick-and-mortar store would be a better shopping channel for purchasing experience products because consumers can inspect or sample the products at the shopping location, gather more information first-hand, and acquire confidence prior to making the purchase (Chocarro *et al.* 2013). To a large extent, consumers' shopping channel preference depends on the product category they intend to buy and consumers' shopping efforts vary with respect to the type of products (Girard *et al.* 2002, Park 2002, Vijayasathy 2003).

In the online context, due to the differences in potential uncertainties and risks in the purchase of search products and experience products (Bock *et al.* 2012), consumers' perceived TCs between the two product types may differ in some aspects as the time and cognitive efforts involved in the process of searching, evaluating and monitoring may vary (Liang and Huang 1998). The search cost represented by the amount of time and effort for gathering and processing product attributes-related information prior to purchase depends on the amount of discrepancy between what they already know and what they need to know about the products that they are searching for in order to feel confident enough to evaluate the quality of the products and finally purchase them (Liang and Huang 1998). The discrepancy increases as the products move from search to experience category (Liang and Huang 1998). Accordingly, the degree of search cost consumers perceive is expected to be lower for purchasing search products, but higher for experience products due to the increasing uncertainty in the information quality and difficulty in searching for reliable information. A similar rationale can be applied to explain the difference of other components

of TCs. Thus, there will be significant differences between search products and experience products with respect to the overall perceived TCs. Since the overall TCs differ by the product categories, their effects on subsequent behavioural outcomes are expected to be different for products from two product categories.

Similarly, the antecedents affecting consumer TCs of online shopping may be varied by the product categories. For those who have purchased experience products their concerns about product quality, e-service quality, privacy and security, and online environmental uncertainty may be higher than those of purchasing search products. Consumers have to spend more time and effort evaluating the experience products' quality prior to purchase because it is very difficult to be assured that the quality of experience products are reliable without trying and touching them (Chocarro *et al.* 2013), whereas it may be easier for consumers to evaluate the search products' quality as the full information for dominant search product attributes can be known prior to purchase and their quality can be ascertained without trying or touching them (Liang and Huang 1998). As such, product quality concern has a relatively stronger effect on TCs for experience products than for search products. Similarly, in addition to product quality concern, other antecedents (e.g., e-service quality, and online store reputation) can also pose different impacts on TCs between two product categories.

Building on these discussions, the magnitude of the aforementioned relationships in the proposed research model, including the effects of antecedent variables on TCs and their effects on online behavioural consequences, may vary depending on the product categories online shoppers have purchased. Thus, the study posits the following research hypotheses:

H9a. The effects of antecedent factors on a customer's perceived TCs associated with purchasing from an online store are different between experience products and search products.

H9b. The effects of a customer's perceived TCs associated with purchasing from an online store on his/her behavioural consequences are different between experience products and search products.

3.7 CHAPTER SUMMARY

This chapter proposed the conceptual framework of consumer TCs associated with shopping at an online store. It consisted of the discussion on the applicability of TCT in online context, conceptualization of consumer TCs associated with online transaction process, the integrative model of consumer TCs of online shopping, and the set of empirically testable hypotheses accompanied by arguments for each hypothesis. The model examined how antecedent factors affect consumer TCs of online shopping, which in turn affect online purchase behaviour and customer loyalty. It also explored the role of customer satisfaction as a mediator between TCs and customer loyalty, as well as the moderating roles of the consumer's risk-bearing propensity and perceived enjoyment in the relationships between TCs and behavioural consequences. Finally, the study proposed the hypotheses in regard to the possible differences of hypothesized relationships shown in the research model (excluding the moderating effects) between search products and experience products. A summary of all hypotheses generated can be seen in Table 3.1. The next chapter will describe the methodology for this research.

Table 3.1 Summary of Hypotheses

Hypotheses about Antecedents

Consumer-Related Characteristics:

H1a: Internet access availability is negatively related to a customer's perceived TCs associated with online shopping.

H1b: A customer's perceived Internet expertise is negatively related to his/her perceived TCs associated with online shopping.

H1c: A customer's online buying frequency is negatively related to his/her perceived TCs associated with online shopping.

Online Store- and product-Related Characteristics:

H2a: A customer's concern over the product quality in an online store is positively related to his/her perceived TCs associated with purchasing from the online store.

H2b: The site design of an online store is negatively related to a customer's perception of TCs associated with purchasing from the online store.

H2c: A customer's perception of the e-service quality of an online store is negatively related to his/her perceived TCs associated with purchasing from the online store.

H2d: A customer's perception of the reputation of an online store is negatively related to his/her perceived TCs associated with purchasing from the online store.

Online Channel-Related Characteristics:

H3a: The perceived convenience of online shopping is negatively related to a customer's perception of TCs associated with online shopping.

H3b: A customer's privacy and security concerns over online shopping are positively related to his/her perceived TCs associated with online shopping.

H3c: Environmental uncertainty of online shopping is positively related to a customer's perception of TCs associated with online shopping.

Hypotheses about Consequences

H4a. A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her actual online purchase behaviour at the online store.

H4b. A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her loyalty towards the online store.

Hypotheses about Mediator

H4c. A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her satisfaction with the online store.

H5. A customer's satisfaction with an online store is positively related his/her loyalty towards the online store.

H6. A customer's satisfaction with an online store partially mediates the effect of his/her perception of TCs on loyalty towards the online store.

Hypotheses about Moderators

H7a. A customer's risk-bearing propensity moderates the relationship between his/her perception of TCs associated with purchasing from an online store and his/her online purchase behaviour from the online store.

H7b. A customer's risk-bearing propensity moderates the relationship between his/her perception of TCs associated with purchasing from an online store and his/her loyalty towards the online store.

H8a. A customer's perceived enjoyment of online shopping moderates the relationship between his/her perception of TCs associated with purchasing from an online store and his/her online purchase behaviour from the online store.

H8b. A customer's perceived enjoyment of online shopping moderates the relationship between his/her perception of TCs associated with purchasing from an online store and his/her loyalty towards the online store.

Hypotheses about Product Comparison

H9a. The effects of antecedent factors on a customer's perceived TCs associated with purchasing from an online store are different between experience products and search products.

H9b. The effects of a customer's perceived TCs associated with purchasing from an online store on his/her behavioural consequences are different between experience products and search products.

CHATER 4: METHODOGLY

4.1 CHAPTER OVERVIEW

This chapter presents the major aspects of the research methodology utilized to undertake this study. The chapter begins with a discussion of research methods. The second section depicts the sample used in this study. Then, data collection and the process of questionnaire development are delineated in sections three and four, respectively. Instrument development is detailed in the fifth section. The sixth section presents the instrument's validity and reliability, followed by discussion on common method variance. Then, the data analysis technique employed for testing the research hypotheses - structural equation modelling - is described and discussed with reference to any specific issues that need to be understood for the sound application of this technique and the interpretation of the results. The chapter concludes with a summary.

4.2 RESEARCH METHODS

Researchers, as they prepare their studies, can choose quantitative, qualitative, or mixed methods. Qualitative method is primarily concerned with an in-depth exploration of the subject under study and focuses on finding and examining as many details as possible. Quantitative method is chosen when the purpose of the research is to collect primary data, that is, data gathered and assembled specifically for the study, as opposed to secondary data (Babbie 2007). The value of the quantitative method is its ability to test hypotheses, compare responses, and produce generalizations. The ability to test hypotheses also allows the relationships in theories to be tested and validated (Babbie 2007).

Previous TC research has used quantitative methods through survey investigation to analyse the relationships between constructs of interest (Liang and Huang 1998, Teo *et al.* 2004, Kim and Li 2009b, Yen *et al.* 2013, Wu *et al.* 2014). In particular, Teo *et al.* (2004) tested a consumer TC model of online shopping in U.S.A and China using structural equation modelling of survey data. In line with that and other studies, the present study focuses on theory testing at the consumer level of analysis and adopts a primarily quantitative and survey-based method. It is argued that the quantitative method is appropriate because it allows for the collection of answers to a number of questions from a large sample of the population of online shoppers, which is required to achieve valid results (Wu *et al.* 2014).

The survey questionnaire approach is the most common method of generating and collecting primary data and is considered to be the best method available to social scientists interested in collecting data for describing a population too large or too dispersed to observe directly (Babbie 2007). This type of research method asks respondents to answer on a Likert-type scale along a continuum (Saris and Gallhofer 2007). Items on the survey are assigned a value, for example, “strongly disagree” (value of 1) to “strongly agree” (value of 7). The advantages of a questionnaire are economy, speed, lack of interviewer bias, and the possibility of anonymity and privacy to encourage responses that are more candid. Survey results can be quantified to provide additional empirical support (Babbie 2007).

In the present study, closed questions in a survey-based format were used to address research questions and hypotheses. This method was selected for the following reasons. Firstly, the study intends to test the TCT in the context of online shopping by gathering a wide range of information from a large population, specifically it aims to explicate the relationships between consumer TCs and their online behavioural consequences, and to identify the

antecedents of consumer TCs associated with online purchasing from a large sample of the population of online shoppers. Accordingly, a survey is appropriate to accomplish this goal of the study.

Secondly, given that limited amount of data available from published sources, the use of a structured, self-reported survey for the purposes of data collection is both legitimate and dominant in consumer behaviour research (Ganesh *et al.* 2010, Hasan 2010). Primary data was collected by the researcher because the type of data required for this research is customers' perceptual data in the context of online shopping in China which were not available in any public sources. A survey method also enables data to be confidentially and inexpensively collected from a targeted but geographically diverse population, thereby making it suitable for collecting the data from the study sample that is used to test the proposed model in this study.

Thirdly, a survey with closed questions allows for standardization of the data collected across individuals and provides a rapid turnaround time for data collection. Responses can be easily classified, thus making analysis very straightforward (Davis and Cosenza 1895). Fourthly, the data required for this study are perceptual, and consumers' perception is the reflection of people's belief and attitudes towards online consumption experience, while the survey method is the best to serve such purposes (Kerlinger 1973). Previous studies investigating TCs have shown that a survey approach is an efficient and acceptable data collection method to adopt (Yeh *et al.* 2012b, Yen *et al.* 2013, Wu *et al.* 2014). Following the previous research, the study used survey data to test the hypotheses.

4.3 SAMPLE

The population for the study consisted of Chinese online shoppers. Online shoppers refer to consumers who have purchased goods or services at certain online store at least once. As the study aims to investigate the consumers' online purchase behaviour from the perspective of TCs, without a direct interaction with the online vendor, non-online shoppers would not be able to answer the specific questions concerning their online shopping experiences as well as the characteristics and performance of the online store's products and services.

In the online environment, consumers are more likely to switch to another online vendor since they are endowed with relative ease of access to information and lower searching costs, compared to consumers in the brick-and-mortar, offline context. Developing a long-term relationship with customers has been recognized as an important factor in creating profitability for online vendors (Ranganathan and Ganapathy 2002). Improving customer loyalty is an imperative issue to online vendors. Exploring the formation of customer loyalty from the perspective of TCs is one of the purposes of this study. It should be noted that the customer here means the online shopper who has experienced at least one instance of online shopping from an online vendor. Understanding the online shoppers' loyalty will provide online vendors with direct information regarding formulating marketing strategies and leveraging their resources and capabilities to retain existing customers. In light of the above two reasons, online shoppers were selected as the sample population.

There were no sex or age range requirements for this study as the aim is for studying the online purchase and post-purchase behaviours of general online shoppers. However, online shoppers under 18 years old will not be taken into consideration because they are probably

not financially independent and do not represent the mainstream population of consuming online goods in China.

To ensure the representativeness of the survey respondents, it is critically important that a large number of randomly selected online shoppers are included in the survey. As the sample size gets larger, the size of sampling error gets smaller and sample statistics like sample mean, sample standard deviation, and so on resemble the population statistics more closely (Gravetter and Wallnau 2008). The next section delineated the data collection procedure.

4.4 DATA COLLECTION

In order to make the sample represent the whole online shoppers in China, one economically developed city and one economically less-developed city were chosen. The developed city has a relatively higher level of education, income, computer literacy, higher frequency of information exchange, wider Internet usage, and better development of information industry, leading to a higher percentage of online shoppers, while the less-developed city has a lower level of education and income, and a lower scale of development of information industry, resulting in a lower percentage of online shoppers. In China, most developed cities are located in the coastal areas of China. Due to the Reforming and Opening Policy, coastal areas have developed at the very fast speed and become the most developed economic region since the convenient sea transportations have raised a large number of exports. On the contrary, inland areas of China are lack of transport facilities and thus become the less-developed regions.

In this study, the developed city was randomly selected from the pool of coastal cities in China, and the less-developed city was randomly selected from the pool of inland cities of China. The sample can be used as a good representative of general online shoppers in China. Specifically, the names of five large coastal cities from China were written on pieces of paper and folded in the same manner. One had been drawn at random. Similarity of the paper and the way the pieces of paper were folded ensure that a random selection was made. Ultimately, data for the study was gathered from the city of Shanghai as a representative of the developed city. Similarly the names of five small inland cities from China were written on similar pieces of paper and folded in the same manner. One was selected at random. Similarity of the paper and the way the pieces of paper were folded ensure that a random selection was made. Finally, the data from the less-developed cities was gathered from the city of Nanchong.

It can be noted that many previous studies have used a sample drawn only from universities and colleges. The research took the view that the survey of just universities would exclude people who work in offices and shop online from locations other than universities (Rinnawi 2002), therefore such samples are not representative of the total online shoppers' population (Van Slyke *et al.* 2004). In addition, student characteristics may differ from the general online shoppers' characteristics. For example, cost-conscious student consumers may weight price heavily in their purchase decisions, which may be different from the population of online shoppers as a whole. Students may also be more risk-taking, more innovative and more trusting in online vendors than the elderly consumers. Accordingly, this study suggests that the student samples may limit the generalizability of the whole online shopper population. In addition, a large number of studies have used the Internet as the data collection tool. Studies using email to announce their surveys sent an invitation email to a mailing list, with a URL link to the survey web site. Although e-mail-based web surveys have demonstrated

superiority over postal surveys in terms of response speed and cost efficiency (Flaherty *et al.* 1998, Weible and Wallace 1998, Sheehan and Hoy 1999, Sheehan and McMillan 1999), its disadvantages should not be overlooked.

The largest defect is its response rate. The response rates for e-mail-based web surveys may not match those of other survey methods (Cook *et al.* 2000, Couper 2000), since individuals' overall attitudes toward the unsolicited e-mail survey may be unfavourable. The increase in unsolicited e-mail to Internet users and the ill will generate among potential respondents can be viewed as an important reason for the lower response rates (Frost and Strauss 2013). This would also increase the difficulty for the researcher in planning to use e-mail surveys as it is likely that some types of unsolicited respondent contacts will be necessary when using random sampling techniques. Studies show that some Internet users receive more than 39 unsolicited e-mails per day at the workplace alone (NUA Internet Surveys 2000a). The information overload causes individuals to develop ways for dealing with e-mail, which includes using filtering software or developing heuristics such as deleting all unsolicited e-mail without opening it. Besides, potential survey participants may be concerned about the Internet security, such as the threat of viruses delivered from unsolicited e-mail (Sills and Song 2002), which discourages potential participants from reading unsolicited e-mail survey. In addition to the low response rates of the e-mail survey, obtaining thousands of email addresses of online shoppers is a big challenge. Also, issues such as changing Internet Service Provider and e-mail address, and holding of multiple e-mail addresses by a single individual have consequences for under-representation (Bradley 1999). Given the aforementioned reasons, e-mail-based web surveying would not be an appropriate data collection method in the study.

To overcome the potential sampling problems, this study was designed to gather data on the streets through using a face-to-face survey in Shanghai and Nanchong, at the regular thoroughfares or near the shopping mall entrances, where the researchers could meet people from all walks of life. The method of surveying people on the streets was appropriate for this study in terms of the quality and complexity of the data collected. The reasons can be specifically explained as follows. On-street data collection method could include different segments of online shoppers, for example those who adopt online shopping at home, in offices or in Internet cafés (Legris *et al.* 2003), resulting in generalizability and representativeness of the whole online shopper population in China.

Compared with e-mail surveys, face-to-face surveys offer significant advantages in terms of the amount and complexity of the data that can be collected. For example, face-to-face surveys can be significantly longer (Holbrook *et al.* 2003). Most people will allow a researcher to conduct the research for up to an hour, whereas respondents will typically not tolerate e-mail surveys that require more than 15 or 20 minutes of effort (Doyle 2009). The additional length allows researchers to design more questions, longer questions, more detailed questions, and more complicated questions (Doyle 2009). Since sixteen variables were included in the research model of this study, the survey questionnaire was very long. As such, the face-to-face survey was considered as the most appropriate method for this study.

The face-to-face survey could improve the response rate. Since it is much more difficult for people to refuse the invitation to participate in the face of a live human being than toss a written survey into the recycling bin with the junk mail or hang up on a disembodied voice, face-to-face surveys typically offer the highest response rates obtainable (over 90% in some cases) (Doyle 2009). From the respondent's point of view, face-to-face survey could

effectively address any questions or problems that arise (Doyle 2009). If the respondent finds a question to be confusing or ambiguous, the researcher can immediately clarify it. Based on the above arguments, the sample drawing from different streets through a face-to-face survey in Shanghai and Nanchong allows the capture of most of the population segments that shop online. The sample can be generalizable to Chinese populations of online shoppers.

To collect data on the streets, the researcher contacted people and inquired whether they would like to participate by undertaking the survey and if yes, whether they had online purchase experience. Only respondents with positive answers were asked to continue on and answer the questionnaire. This screening question was employed to ensure that the sample consisted only of online shoppers. In order to ensure the respondents recalled an experience they were familiar with, the survey instructed them to recall the most recent purchase they made from an online vendor. They were also asked to write down the online store's name and the product(s) and/or service(s) they bought from the online store, and attempted all questions based on that particular purchase experience.

The survey was conducted on a one-to-one basis considering it might be hard to gather people to fill out the questionnaire at the same time. In order to randomise the selection process, the researcher selected every 3th, 5th or 10th person (depending on the flow of people) to overcome any selection bias. Also, the researcher ignored children in this selection process if they happened to be the 3th, 5th or 10th person, because children did not represent the desired sample features. However, age is not of major concern of this study because previous research (Dawson 1997) has suggested that people (especially women) were constantly lying about their age which had brought significant errors to the research. Data were collected at different times of the day (morning and afternoon) and during different days

of the week (Tuesday through Saturday) to ensure a representative sample. The data-gathering process lasted for two months and 984 responses were obtained. For the purpose of this study one assumption was made regarding the sample and population. It assumed that each respondent answered only one survey. The chances of the same respondent filling in the questionnaire more than once were further reduced by the fact that the data collection conducted in China for a short span of time, which reduced the chance of someone forgetting and filling out the survey instrument again.

4.5 QUESTIONNAIRE DEVELOPMENT

A multi-stage process was employed for the development of the questionnaire that was used in the survey. First, this study generated a pool of items that tapped the domain of each construct based on previous validated research. The literature on consumer behaviour, marketing, online retailing and information system (Pavlou and Chellappa 2001, Anderson and Srinivasan 2003, Lee and Lin 2005, Kim and Li 2009b, Kim *et al.* 2011, Wu *et al.* 2014) was a guide to generate and refine the scales. Operationalizations of the variables included in this study and their measures will be delineated in detail in the next section.

The second stage of questionnaire development involved a back-to-back translation procedure. As the questionnaire was administered in Chinese, to ensure the validity of the translation, the translation procedure outlined by Wagner *et al.* (1987) was adopted. First, all original items were translated into Chinese by one professional translator whose native language was Chinese. Then, a second professional translator independently translated the items back to English. Further, the two translators confirmed the meaning of the Chinese version by comparing the two English versions.

The third stage of questionnaire development involved an expert evaluation. To ensure content validity and the appropriateness of items being investigated, the purification processes by means of expert judgement to address the relevance and completeness of scale items drawn from the literature were adopted. The study provided five senior academic experts from different universities who possessed expertise in the area of consumer behaviour, online retailing and TCT with the construct definitions, corresponding items and a set of instructions for judging (Teo and Yu 2005). The expert judges were asked to rate each item as, “not representative”, “somewhat representative”, or “very representative” to the construct definition (Subrahmanyam 2004). After receiving the expert-judges’ feedback, decisions about which items to delete or keep were based on a three-stage procedure: a synthesis of the sumscore approach and the complete approach increasing in level of sophistication at each stage was adopted resulting in a draft set of 99 items.

In the final stage of questionnaire development, the study pre-tested the draft survey with 30 online shoppers and asked them to complete the draft questionnaire. These online shoppers are recruited from the streets and excluded from the main sample used for hypotheses testing. Prior to the pre-test, participants were made aware that the study had received ethics approval from the Tasmanian Social Sciences Human Research Ethics Committee. Upon completion discussions were held with them about the items in the questionnaire focusing on item comprehension, logic, and relevance. Specifically, the study asked these online shoppers whether they could think of more than one way to interpret each item and to report these interpretations, and explain why they responded the way they did on each item. Having completed the in-depth interview with online shoppers, no serious problems with any of the items were reported. Thus, 99 items were retained in the final survey. Finally, the two initial

translators rechecked the final version and compiled the final Chinese questionnaire. The final items used in the questionnaire are listed in the Appendix E.

The questionnaire consisted of seven sections. Section 1 aimed to gather background information about demographic characteristics of the respondents. Section 2 was designed to collect the respondents-related characteristics of online shopping and conditions required for online shopping, such as the internet access availability, perceived internet expertise, online buying frequency and their risk-bearing propensity. Section 3 focused on the respondents' perceptions about the online environments/channels, for instance, their perceived convenience, perceived enjoyment, privacy and security concerns, and environmental uncertainty. Section 4 consisted of questions about online purchases. Respondents needed to specify the products/services and the online store's name where they made the most recent online purchase. The amount of items and buying frequency from the online store were also required. Section 5 aimed to gather respondents' perceptions about the TCs of purchasing products/services from the online store. In Section 6, the focus was on collecting data that showed the respondents' perceptions about the online vendor, including the product quality, site design, e-service quality and store reputation. The emphasis of Section 7 was on collecting data relating to respondents' satisfaction with and loyalty towards the online store.

4.6 MEASURES

A survey instrument for this study was developed based on both the use of existing validated questionnaire items and the extant literature providing theoretical definitions and domains of the other constructs of interest (for measuring internet access availability and environmental uncertainty). The existing items with minor modifications in wording were adapted to

increase their applicability to the Chinese context and the purposes of the study. For the items that were not previously verified, they were carefully designed based on the relevant literature, evaluated by field experts and pre-tested by real online shoppers to ensure their validity.

The measures of consumer TCs are discussed first in this section. Following this discussion, the next portion focuses on the measurements of Internet access availability, perceived Internet expertise, online buying frequency, product quality concern, site design, e-service quality, reputation of online store, perceived convenience, privacy and security concerns, environmental uncertainty, online purchase behaviour, customer satisfaction, customer loyalty, risk-bearing propensity and perceived enjoyment. Finally, the operationalizations of the demographic variables (including gender, age, education and household income) not central to the hypotheses are presented.

4.6.1 Consumer TCs

Consumer TCs are defined as a respondent's perceived TCs associated with an online transaction with an online store. Since it is difficult to obtain the actual TCs in an online transaction, the study focuses on the perceived information of the consumer. This is appropriate because it is, in fact, the perceived information that leads to consumer decisions due to bounded rationality, in this case referring to the fact that people have limited memories and limited cognitive processing power. Generally, they cannot digest all the information they have and cannot accurately work out the consequences of the information. In the context of online shopping, due to the limited memories and cognitive processing power, consumers would not be able to accurately measure their TCs during the online transaction process. Therefore, measuring perceived TCs is deemed as appropriate. In addition, the literature

shows that there is a high correlation and concurrent validity between subjective and objective data on TCs (Teo and Yu 2005), implying that both are valid when calculating the consumer TCs (Teo *et al.* 2004, Wu *et al.* 2014). In this sense, the perceived TCs can reflect the actual TCs in online shopping.

Consumer perceived TCs are related to consumers' perception of time and cognitive effort expended during the online transaction process. Such perceived TCs associated with the pre-purchase, purchase and post-purchase process constitute nine components: access cost, search cost, evaluation cost, ordering cost, payment cost, delivery cost, monitoring cost, post-sale cost and adaptation cost as identified in the last chapter. To simplify the measurement model of consumer perceived TCs, this study aggregates all of these costs under a common construct, and then categorizes them with respect to their communalities and differences with regard to the impact they bear on consumers in online shopping context.

According to Chen (2007) and Dyer and Chu (2003), consumer perceived TCs can be disaggregated into three major parts, namely, pre-TCs (perceived costs of obtaining the information necessary for purchasing the product prior to transaction), contemporaneous TCs (perceived immediate costs involved in the transacting with a specific online vendor for making that purchase), and post-TCs (the costs which arise as a consequence of transacting with the online vendors for the products/services). In line with these studies, the researcher groups the nine components of consumer perceived TCs into the three parts. More specifically, pre-TCs include access cost and search cost; contemporaneous TCs consist of evaluation cost, ordering cost, payment cost and delivery cost; and post-TCs constitute monitoring cost, post-sale cost and adaptation cost. The perceived TCs can be measured

using the mean of items measuring pre-TCs, mean of items measuring contemporaneous TCs, and mean of items measuring post-TCs.

Building on Chen (2007), Kim and Li (2009b) and Teo and Yu (2005), 17 items were employed tapping three dimensions of consumer TCs, as shown in Table 4.1, Table 4.2, and Table 4.3, respectively. Specifically, pre-TCs were measured via five-item scale taken from Teo and Yu (2005), contemporaneous TCs were measured via a four-item scale derived and refined from Chen (2007) and Teo and Yu (2005), and post-TCs were measured via an eight-item scale adapted from Chen (2007) and Kim and Li (2009b). Respondents were asked to think of the most recent online purchase they made from an online vendor, and respond to the items focusing on their perception of pre-, contemporaneous, and post-TCs based on that particular purchase experience. All the items were measured using a seven-point scale anchored by 1 'strongly disagree' and 7 'strongly agree'. A high score was indicative of high TCs.

Table 4.1 Pre-TCs Measurement Items

PRTC1. It took time and effort to connect to the Internet.
PRTC2. It took time and effort to navigate to this store's website.
PRTC3. I spent a lot of time and effort getting information that would be a help in decision-making of online purchase from this store.
PRTC4. I spent a lot of time and effort searching for product information at this store.
PRTC5. I spent a lot of time and effort getting familiar with the layout of this site and the organization of its products.

Table 4.2 Contemporaneous TCs Measurement Items

COTC1. I spent a lot of time and effort assessing the credibility of this online store.
COTC2. I spent a lot of time and effort placing an order with this online store (including completing information about this product, my personal contact and delivery).
COTC3. It took time and effort to complete the online payment.
COTC4. It took time and effort to wait for this product to be delivered at home.

Table 4.3 Post-TCs Measurement Items

POTC1. I spent a lot of time and effort checking the status of my order.
POTC2. I spent a lot of time and effort contacting this online store to check whether the products I ordered are processed as promised.
POTC3. I spent a lot of time and effort monitoring the processing of my order.
POTC4. I spent a lot of time and effort resolving post-purchase problems.
POTC5. I spent a lot of time and effort returning and replacing this product.
POTC6. It took time and effort to deal with the unpredictable events in the transaction.
POTC7. It took time and effort to make changes to orders that has been sent to this online store.
POTC8. It took time and effort to arrange another time to receive this product ordered if it was not physically delivered on time as promised.

4.6.2 Internet Access Availability

Internet access availability in this study is defined as the extent to which consumers can approach the potential available Internet around them and the ease of access to the Internet for the purpose of online shopping. Because of the lack of a published survey instrument, items for measuring internet access availability were originally developed using extant relevant literature on Internet accessibility (Yoh 1999, Cho *et al.* 2003) and discussions with the pre-test participants. The respondents were asked to evaluate the internet accessibility and ease of access to the internet in their study or work place. All of the items were measured via a seven-point Likert scale with endpoints of strongly disagree and strongly agree. A high score was indicative of a high availability of internet access. The measurement items are listed below in table 4.4.

Table 4.4 Internet Access Availability Measurement Items

IAA1. I can easily find Internet, whether it is a wired network or wireless.
IAA2. My PC can easily connect to the Internet.
IAA3. I can easily access to Internet in my study or work place.
IAA4. I can easily access to the Internet at anytime and anywhere.

4.6.3 Perceived Internet Expertise

To assess perceived Internet expertise, four items were adopted from the work of O’Cass and Fenech (2003). The items captured the consumer’s knowledge of Internet and experience with and confidence in using the web to search product information and locate retail sites. The respondents indicated the extent to which they agreed or disagreed with statements about their perception of Internet expertise, with 1 = ‘strongly disagree’ and 7= ‘strongly agree’. A high score was considered indicative of a high level of Internet expertise. The items are presented in table 4.5.

Table 4.5 Perceived Internet Expertise Measurement Items

EXP1. I could easily use the web to find product information on a product/service.
EXP2. I can get to a specific website with a browser.
EXP3. I feel comfortable searching the World Wide Web on my own.
EXP4. I would be able to use web on my own to locate retail sites.

4.6.4 Online Buying Frequency

Online buying frequency was operationalized as the number of purchasing times. It may be difficult for consumers to remember the exact number of their online transaction times, instead, the researcher asked the respondents to circle the frequency that best describes their situation, such as less than once per month, about once a month, a few times a month, a few times a week, about once a day and several times a day. These six measurement items (see table 4.6) were adapted from a scale developed by Teo et al. (1997).

Table 4.6 Online Buying Frequency Measurement Items

On average, how often do you buy online?

FRE1. Less than once per month

FRE2. About once a month

FRE3. A few times a month

FRE4. A few times a week

FRE5. About once a day

FRE6. Several times a day

4.6.5 Product Quality Concern

Product quality concern refers to the difficulties in ascertaining the quality of products. It was measured via the five-item scale based on the work of Wolfinbarger and Gilly (2003), Shimp and Bearden (1982) and Liang and Huang (1998). The researcher adapted items that capture concerns respondents displayed in response to the quality and performance of products purchased from the online store. A seven-point scale anchored by 1 ‘strongly disagree’ and 7 ‘strongly agree’ was used in the current study. A high score was considered indicative of great product quality concern. As shown below, table 4.7 addresses the items of product quality concern.

Table 4.7 Product Quality Concern Measurement Items

PQC1. It is difficult to be assured that this product will perform as well as it is supposed to.

PQC2. It is difficult to be assured that this product is reliable without trying and touching it.

PQC3. I am worried that this product received cannot represent accurately by this online store’s website.

PQC4. I am worried that the performance of this product I purchased from this online store cannot live up to what is promised.

PQC5. I am worried that the quality of this online product cannot be as good as the one in the physical store.

4.6.6 Site Design

Site design was measured using an eight-item scale that asked the respondent to rate the online store's visual appeal, ease of use, navigation, access speed, information sufficiency, information accuracy, information timeliness and overall transactional efficiency using a seven-point scale (1= 'strongly disagree' to 7= 'strongly agree'). These items were drawn from Kim (2004). A high score was indicative of an excellent site design. Table 4.9 lists the items for measuring the site design.

Table 4.8 Site Design Measurement Items

DES1. This site is visually attractive.
DES2. This site is easy to use.
DES3. This site is easy to navigate.
DES4. This site quickly loads all the text and graphics.
DES5. This site provides me with sufficient information.
DES6. This site provides me with accurate information.
DES7. This site provides me with up-to-date information.
DES8. This site is quick and easy to complete a transaction.

4.6.7. E-Service Quality

E-service quality was assessed by respondents' overall impression of the relative inferiority/superiority of the online store/vendor and its services. Because service quality is an elusive and broad concept (Ladhari 2010), existing research lacks a universal viewpoint about its components. One viewpoint deems service quality to be a unidimensional concept and measures it with five items (Strahilevitz 1999). However, most research argues that service quality is a concept composed of multiple dimensions. Lee and Lin (2005) noted that the e-service quality includes five dimensions: reliability, responsiveness, personalization, website design and trust. Swaid and Wigand (2009) suggested e-service quality includes six

dimensions: reliability, responsiveness, personalization, information quality, website usability and assurance. Ribbink et al. (2004) identified five dimensions of e-service quality: responsiveness, personalization, ease of use, assurance and e-scape. In addition, other components such as competence, empathy (Li et al. 2002), system availability, fulfilment (Parasuraman et al. 2005), efficiency and privacy (Parasuraman et al. 2005) are also found to be components of e-service quality.

Among the components of e-service quality, reliability, responsiveness and personalization are three of the most-often used factors (Rindfleisch and Heide 1997, Ribbink et al. 2004, Kassim and Abdullah 2010, Swaid and Wigand 2012). Thus, this study adopted the three components of reliability, responsiveness and personalization as the dimensions of e-service quality. Reliability refers to online vendors' ability to perform the promised service dependably and accurately. Responsiveness is defined as the online vendor's ability and willingness to provide prompt service when customers have questions/problems. Personalization reflects the degree to which service is tailored to meet the needs of the customers.

Specifically, reliability was measured by five items assessing the extent to which the online store fulfils the promise made. Items were adapted from Lee and Lin (2005) and Swaid and Wigand (2009). Responsiveness was measured using four items adapted from Lee and Lin (2005), Ribbink et al (2004), and Swaid and Wigand (2009). The respondents rated the online store's ability and willingness to provide prompt service when they have questions/ problems. Personalization was measured by three items adapted from Lee and Lin (2005), Ribbink et al. (2004), and Swaid and Wigand (2009). The respondents were asked to indicate the personalized service provided by the online store. All items in Table 4.9 were rated on a

seven-point scale with ‘strongly disagree’ and ‘strongly agree’ anchors. A high score was indicative of an excellent of e-service quality.

Table 4.9 E-Service Quality Measurement Items

Reliability

REL1. This online store delivers on its undertaking to do certain things by a certain time.

REL2. Transactions with this online store are error-free.

REL3. The product I purchased is delivered by the time promised by this online store.

REL4. This online vendor shows a sincere interest in solving customer problems.

REL5. The performance of this online store is as desired.

Responsiveness

RESP1. When I have a problem, this online store is always willing to help me.

RESP2. This online store is never too busy to respond to customer requests.

RESP3. It is easy to get in contact with this online store.

RESP4. This online store is prompt in replying to queries.

Personalization

PERS1. This online store provides me with information and products according to my preferences.

PERS2. This online store gives me individual attention.

PERS3. This online store can understand my specific needs.

4.6.8 Reputation of Online Store

The reputation of online store refers to the perception a customer has about an online store. Drawing from the literature, including Jarvenpaa (2000), Qureshi et al. (2002) and Spencer (1999), the reputation of online store was measured using a four-item scale. These items were designed to cover the vendor’s public image, its commitment to customer satisfaction, concern for customers and overall reputation compared to others. The respondents were requested to indicate the extent to which they agreed or disagreed with statements that tapped their perceptions of the reputation of online store where they made their most recent purchase, on a seven-point scale (1 = ‘strongly disagree’ and 7= ‘strongly agree’). A high score was considered indicative of a good reputation of online store. The measurement items are shown in Table 4.10.

Table 4.10 Reputation of online store Measurement Items

REP1. This online store has excellent public image.
REP2. This online store is extremely committed to customer satisfaction.
REP3. This online store is known to be concerned about consumers.
REP4. This online store has a good reputation compared to other rival online stores.

4.6.9 Perceived Convenience

Convenience was measured via a six-item scale that assessed the extent to which online shopping allowed consumers to search for product information in least time and at any time. It reflects the time and cognitive effort saving in terms of shopping at any time from anywhere. These six items were adopted from Chung (2001) and Reynolds (1974). The items were written as statements to which the respondents answer using a 7-point Likert scale (1='strongly disagree' to 7='strongly agree'). A high score was indicative of a high level of convenience perceived by the respondents. Table 4.11 contains the items for measuring perceived convenience.

Table 4.11 Perceived Convenience Measurement Items

CONV1. I can save time by shopping on the Internet.
CONV2. I shop online where I can reduce my efforts in travelling, walking, parking, and waiting as much as possible.
CONV3. Online shopping is convenient to search product information.
CONV4. I can shop on the Internet at home.
CONV5. I can buy things on the Internet at any time when I want.
CONV6. I would assess the experience of online shopping as convenience.

4.6.10 Privacy and Security Concerns

Privacy and security concerns have been viewed by some researchers as two clearly distinct constructs (Belanger *et al.* 2002), whereas others do not necessarily agree that this distinction is meaningful in studies of online buying behaviour (Zhang and Von Dran 2000, Grewal *et al.*

2004, McCole *et al.* 2010). The researcher decided to treat privacy and security concerns as one construct in the context of this study for four main reasons.

Firstly, McCole *et al.* (2010) and Urban *et al.* (1999) suggested that privacy and security concerns are inextricably linked. The financial information is a part of consumers' personal information. Secondly, Zhang and von Dran (2000) labelled privacy and security concerns as a hygiene factor associated with essential functionality in order for an online transaction to take place. Thirdly, in relation to Grabner-Krautner and Kaluscha's (2003) two types of uncertainty, the researcher believed that privacy and security concerns associated with online purchasing fit into both uncertainty camps in that privacy and security "mishaps" can result from both exogenous (e.g., hackers) and endogenous (e.g., misuse of data in-house) actions. Fourthly, online shoppers are seldom able to differentiate between the two. They are often viewed as one and the same in that to facilitate a secure payment it is assumed that a private infrastructure must be in place and vice-versa. Privacy and security may be viewed as theoretically separate constructs, but in the context of the average person's conception of the online channel, they blend into one because the technical details are beyond the comprehension of most users. It is for these reasons that the researcher decided not to decouple the construct for the purposes of the current study.

To tap this construct, a five-item scale derived from Korgaonkar and Wolin (1999), Pavlou and Chellappa (2001) was incorporated. These items capture the extent of the respondents' concerns about privacy and financial security issues when shopping online, with endpoints 1 = 'strongly disagree' and 7 = 'strongly agree'. A high score was indicative of a high level of privacy and security concern. Table 4.12 lists the items for measuring privacy and security concerns.

Table 4.12 Privacy and Security Concerns Measurement Items

PSC1. I am concerned over the security of personal information exchange via the Internet.
PSC2. I am concerned that my personal information may be shared with business without my consent as a result of purchasing via the Internet.
PSC3. When sending a message or transmitting information via the Internet, I am concerned that it may be read or stored by some other person/entity/company without my knowledge.
PSC4. I am worried about the security of financial transactions carried out via the Internet.
PSC5. I am uncomfortable giving my credit card number via the Internet.

4.6.11 Environmental Uncertainty

Environmental uncertainty of online shopping is defined as the unpredicted changes in circumstances surrounding an online transaction and the difficulty in determining the potential impact of external environment on online shoppers (Rindfleisch and Heide 1997). Discussions with pre-test participants indicated that the respondents' concerns about the external environment beyond the direct control by the two transaction parties mainly derive from the uncertainty of the effectiveness of governmental regulation in protecting consumers' interests, the credibility of media reports and reliability of online consumer reviews.

Drawing from a review of online environment uncertainty literature (Cheung and Lee 2002, Edwards *et al.* 2002, Negash *et al.* 2003, Do-Hyung *et al.* 2007), this study developed seven items (see table 4.13) to measure a consumer's environmental concern. The items reflect the possible sources of environmental uncertainty that a consumer might encounter with respect to laws and regulations, mass media report as well as online reviews about product/service/store. Respondents were asked to rate the level of difficulty in ensuring whether existing laws and regulations are good enough for protecting them from problems on the Internet, protecting their interests, and regularizing the online vendors' behaviour, whether media reports are credible and can well supervise e-retailers, and whether online

reviews are authentic and provide facts in support of their position on a seven-point scale (1 =‘strongly disagree’ and 7=‘strongly agree’). A high score was indicative of a great concern about external environment.

Table 4.13 Environmental Uncertainty Measurement Items

EUN1. It is difficult to be assured that the existing laws and regulations are good enough to protect me from problems on the Internet.
EUN2. It is difficult to be assured that the existing laws and regulations are adequate for the protection of my interest.
EUN3. It is difficult to determine whether the existing laws and regulations can well regularize the online vendors’ behaviour.
EUN4. It is difficult to determine whether media reports are credible and authentic.
EUN5. It is difficult to be assured that media reports can well supervise online vendors.
EUN6. It is difficult to be assured that online reviews are always authentic and credible.
EUN7. It is difficult to determine whether online reviews provide facts in support of their position.

4.6.12 Online Purchase Behaviour

Online purchase behaviour consists of two items capturing two dimensions of purchasing behaviour (one item for product amounts and one item for number of purchase times). These items were generated from the work of Eastlick and Lotz (1999) and Shim and Drake (1990a). The first item measured the total amount of products the respondents purchased from an online store during the past 12 months. The possible choices included 1 item, 2-3 items, 4-5 items, 6-7 items, 8-9 items, 10-11 items and more than 11 items. The second item measured the total number of shopping visits at the online store during the last 12 months. The answers that could be selected included 1-2 times, 3-4 times, 5-6 times, 7-8 times, 9-10 times, 11-12 times and more than 12 times. The respondents were asked to indicate the answers that could best describe their online purchase behaviour in terms of total amounts and number of times. The final online purchase behaviour was created by computing the mean of the two items. The two items for measuring online purchase behaviour are displayed in Table 4.14.

Table 4.14 Online Purchase Behaviour Measurement Items

PUR1. How many products have you purchased from this online store during the past 12 months?			
1. 1 item	2. 2 – 3 items	3. 4 – 5 items	4. 6 – 7 items
5. 8 – 9 items	6. 10 – 11 items	7. > 11 items	
PUR2. Altogether, how many times have you purchased from this online store in the last 12 months?			
1. 1–2	2. 3 – 4	3. 5 – 6	4. 7 – 8
5. 9 – 10	6. 11 – 12	7. > 12	

4.6.13 Customer Satisfaction

Customer satisfaction is defined as the contentment of the customer with respect to his or her prior purchasing experience with a given online store. It was measured using a three-item scale adopted from Anderson and Srinivasan (2003) These items were stated as “My choice to purchase from this online store was a wise one”, “I am satisfied with this online store, when compared with expectation” and “I think I did the right thing by buying from this online store”. Respondents were asked to evaluate these statements on a seven-point scale with scale poles ranging from strongly disagree to strongly agree. A high score indicated a high degree of satisfaction towards the online store. Table 4.15 lists the items of customer satisfaction.

Table 4.15 Customer satisfaction Measurement Items

CSAT1. My choice to purchase from this online store was a wise one.
CSAT2. I am satisfied with this online store, when compared with expectation.
CSAT3. I think I did the right thing by buying from this online store.

4.6.14 Customer Loyalty

Consumer loyalty toward an online store refers to a consumer's favourable attitude toward an online vendor resulting in positive word-of-mouth and repeat buying behaviour (Anderson and Srinivasan 2003b). The items for measuring loyalty (see Table 4.16) were adapted from a scale used by Srinivasan and Srinivasan (2003b) and Gefen (2002). Respondents were asked to indicate their level of agreement with the following items using a seven-point Likert scale where (1) indicates strongly disagree and (7) indicates strongly agree.

Table 4.16 Consumer Loyalty Measurement Items

LOY1. When I need to buy this kind of products, this online store is my first choice.
LOY2. I will recommend this online store to other consumers.
LOY3. I will encourage other friends to purchase at this online store.
LOY4. I doubt that I would switch online stores in terms of buying this kind of product.
LOY5. To me, this online store is the best one to do business with.

4.6.15 Consumer's Risk-Bearing Propensity

Consumers' risk-bearing propensity determines their inherent trait as the risk-bearing type or risk-averse type. It was measured via a five-item scale. This scale was built on the work of Bruner and Hensel (1994). Items that captured aspects of risk-taking, innovativeness and involvement were adopted. A seven-point scale anchored by 1 'strongly disagree' and 7 'strongly agree' was used. A higher score along this scale would imply that an individual shows higher risk-bearing propensity while shopping, and vice versa. The measurement items for measuring risk-bearing propensity are listed in Table 4.17.

Table 4.17 Consumer's Risk-Bearing Propensity Measurement Items

RISK1. I am usually among the first to try new products.
RISK2. I like to buy newer and different things.
RISK3. I like to try new and different places and modes to shop.
RISK4. I would not mind taking a risk with unfamiliar shopping situations.
RISK5. I enjoy buying unfamiliar brands.

4.6.16 Perceived Enjoyment

Adapting from Heijden (2003) and Moon and Kim (2001), this study measured perceived enjoyment using a five-item scale. The word 'the Website' in the original work was replaced by 'online shopping' in order to best suit the context of online purchase. These items capture the extent to which the activity of adopting online shopping is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated generating from the literature (Moon and Kim 2001, Heijden 2003). The respondents were requested to rate the extent of agreement with statements on a seven-point scale with anchors ranging from strongly agree (1) to strongly disagree (7). A high score was indicative of a high level of enjoyment perceived by the respondents. Table 4.18 contains the items for measuring the product variety.

Table 4.18 Perceived Enjoyment Measurement Items

ENJ1. Shopping on the Internet is one of my favourite leisure activities.
ENJ2. When shopping online, I feel playful.
ENJ3. I would assess the experience of online shopping as enjoyment.
ENJ4. I enjoy shopping on the Internet.
ENJ5. Online shopping can bring me happiness.

4.6.17 Control Variables: Demographics

Several control variables were incorporated to enhance the robustness of findings. Demographic variables, including gender, age, education, and income were measured using a

categorical format. Specifically, the demographic variables were operationalized and measured as follows:

- Gender: Female, male (nominal data).
- Age: Age in years is indicated by selecting the appropriate age range (ordinal data).
- Education: Highest level of formal education completed (nominal data).
- Income: Indicate by selecting the appropriate household income range (ordinal data).

4.7 INSTRUMENT VALIDITY AND RELIABILITY

It is important to assess the instrument validity of reliability in this study. Research validity determines whether the research truly measures what it was intended to measure, or how truthful the research results are (Campbell *et al.* 1963). To ensure the research rigor, issues related to internal validity, content validity, construct validity and reliability must be addressed. Without rigor, research is worthless, becomes fiction, and loses its utility.

According to Straub (1989), internal validity raises the question of whether the observed effects could have been caused by or correlated with a set of unhypothesized and/or unmeasured variables. Internal validity also refers to the confidence that can be placed in the cause-and-effect relationship. Campbell *et al.* (1963) stated that internal validity is the basic minimum, without which any experiment is uninterpretable. Straub (1989) further emphasized the need for a good instrument to ensure internal validity. He noted that survey instrument design has two basic goals: to obtain information relevant to the purpose of study, and to collect this information with maximal reliability.

Content validity measures the degree to which the survey items represent the domain or universe of the trait or property being measured (Straub 1989). To ensure content validity, previously used and validated measures were used in this study.

According to Straub (1989), the construct validity concerns with the degree to which the survey items measure the construct they were designed to measure. Most importantly, the theory underlying the construct to be measured must be considered (Harrington 2008). Since most of the survey instruments developed for this study have borrowed the survey items from previously validated and tested instruments, to some extent, it can reduce such threat. Factor analyses including exploratory and confirmatory factor analyses were adopted to test the construct validity.

Reliability of the instrument is considered as an important issue in ensuring the rigor of this research. As presented by Straub (1989), reliability is a statement about the stability of individual measures across replication from the same source of information. Straub (1989) further suggested that Cronbach's Alpha is a reliability coefficient that measures how well a set of items (or variables) measure a single unidimensional latent construct. When data has a multidimensional structure, Cronbach's Alpha will usually be low.

4.8 COMMON METHOD VARIANCE

As the study used a self-report questionnaire for the purposes of data collection from a single informant, the potential for common method variance (also known as common method bias) may cause concern (Bagozzi and Yi 1991, Gupta and Kim 2007). Common method variance, as described by Fiske (1982), refers to variance that is attributable to the measurement

method rather than to the constructs the measures represent. Such a variance may occur as a result of factors such as social desirability, halo effect and selective memory brought about by the self-reporting method, and it can threaten the internal validity of conclusions about the predictive relationships between measures (Campbell and Fiske 1959, Howard 1994, Spector 1994). As suggested by Kaynak (1997), a researcher therefore should plan how to overcome common method variance.

As confirmed in the literature, one of the techniques for minimizing common method variance is to carefully design the questionnaire and survey procedures. Specifically, assurances were given that the data provided by respondents would be held in strict confidence, the analysis would be done at the aggregate level, and no respondent would be identified individually. All of this information was stated clearly on the project information sheet provided to each informant. These procedures also were aimed at reducing respondents' evaluation apprehension, so making them less likely to edit their responses to be more socially desirable (Gupta and Kim 2007). In addition, the measurement scales in the survey were arranged so that the measures of independent variables preceded the dependent variables and items on constructs which have the same scale poles (e.g., TCs, e-service quality, etc.) were distributed in a non-sequential order (Salancik and Pfeffer 1977).

In the behavioural sciences, there have been a number of published techniques which assist with the assessment of common method variance, for example, partial correlation procedures, Harman's one-factor test, multiple method factors test, etc. However, no test is without its disadvantages (Podsakoff et al., 2003).

A statistical technique widely used by scholars to determine the influence of common method variance is Harman's one-factor (or single-factor) test (Podsakoff and Organ 1986). Researchers using this technique traditionally load all variables in their study into an exploratory factor analysis (EFA), and examine the unrotated factor solution to determine the number of factors that are necessary to account for variance in the variables (Organ and Greene 1981, Andersson and Bateman 1997, Aulakh and Gencturk 2000). It is assumed that if only one factor emerges from the unrotated factor solution as accounting for most of the variance observed in the data, it is likely that common method variance is the primary source (Podsakoff and Organ 1986).

As an alternative to EFA, confirmatory factor analysis (CFA) can be used when implementing Harman's single-factor test (Podsakoff and Organ 1986). Specifically, in the CFA approach, all of the manifested items are modelled as the indicators of a single factor that represents method effects. Common method bias are assumed to be substantial if the single-factor model fits the data significantly better than the proposed model with many factors (Podsakoff and Organ 1986). In this study, Harman's one-factor test was performed through both EFA and CFA (reported in the next chapter) in order to detect the severity of common method variance in the current data.

4.9 DATA ANALYSIS TECHNIQUES: STRUCTURAL EQUATION MODELLING

Structural equation modelling (SEM) is a powerful statistical technique that allows measurement analysis (specifying relationships among observed variables underlying latent variables) and structural analysis (specifying relationships among the latent variables) to be performed simultaneously (Kelloway 1995, Schumacker and Lomax 2004, Kline 2011). It

allows more flexible assumptions, has the ability of testing models overall rather than coefficients individually, is able to model mediating variables, and can handle difficult data (Anderson and Gerbing 1988, Hair *et al.* 2006). Schumacker and Lomax (2004) describe the following five basic-building blocks of all SEM analyses: model specification, model identification, model estimation, model fit testing and model modification. These basic-building blocks are absolutely essential to both the measurement and structural models.

SEM is particularly valuable in inferential data analysis and hypothesis testing where the pattern of relationships among the study constructs is specified a priori and grounded in established theory. It allows the researchers to test prior theoretical assumptions against empirical data statistically (MacCallum and Austin 2000, Schumacker and Lomax 2004, Arbuckle 2011). For these reasons, the present study employed SEM (using the AMOS 21.0 software program) to test the proposed hypothesized models. However, there are a number of issues that must be addressed when using the SEM technique.

4.9.1 Analysis Approach

The first issue in the application of the SEM technique is the sequence in which structural and measurement analysis should occur. Although SEM is capable of testing the measurement model and structural model simultaneously, Anderson and Gerbing (1988) recommend a two-stage model-building approach and that the measurement model should be tested separately, using confirmatory factor analysis (CFA) in order to detect any inadequacy in fit, prior to testing the full structural model. They suggest that the measurement model provides an assessment of convergent and discriminant validity, while structural model provides an assessment of predictive validity. By using a sequential approach in analysis, the researcher is able to pinpoint where a model is misspecified (Anderson and Gerbing 1988). The present

study adopts this approach by measuring the fit of a model with the current data, before testing the structural relationships among the constructs in the model.

In addition, Mulaik and Millsap (2000) and Byrne (2009) suggest that it is best to have a few good indicators for each of the latent variables in order to check more easily how well each observed variable measures a latent variable. Therefore, rather than using individual items as indicator variables, the present study also uses EFA for each of the proposed sixteen latent variables and so reduce a large number of related items to a manageable number prior to using them in the measurement and structural analyses (See the next chapter).

4.9.2 Model Specification

Another issue with any form of SEM is the requirement for prior specification of the model (Kelloway 1995, Byrne 2009). The propositions incorporated in a model are most frequently drawn from previous research or theory (Bollen and Long 1993). In other words, pre-existing theoretical information is used to decide which variables (both observed and latent variables) to include in the proposed model, and how these variables are related. Model specification involves determining every relationship and parameter that is of interest to the researcher (Kelloway 1995, Byrne 2009). As highlighted by Schumacker and Lomax (2004), this is the hardest part of SEM as the exclusion of important variables or the inclusion of unimportant variables can produce an implied model that is misspecified resulting in bias parameter estimates (known as specification error). Specification error makes it likely that a theoretical model will not fit the data statistically and thus it will be deemed as unacceptable (Schumacker and Lomax 2004, Kline 2011).

The structural model proposed and tested in this study draws on TCT (Williamson 1981b, Williamson and Ghani 2012) and prior research (Szajna 1996, Liang and Huang 1998, Teo *et al.* 2004, Teo and Yu 2005, Kim and Li 2009b). The measurement model is operationalized using multi-item scales specified according to factor structures used in previous research and the extant literature (Anderson and Gerbing 1988, Taylor and Todd 1995b, Pavlou and Chellappa 2001, Cho *et al.* 2003, Lee and Lin 2005, Teo and Yu 2005, Kim and Li 2009b, Wu *et al.* 2014).

4.9.3 Model Identification

In SEM, it is crucial that the level of model identification must be clarified prior to estimation of parameters (Schumacker and Lomax 2004). Traditionally, there have been three levels of model identification: underidentified, just-identified and overidentified (Bollen 1989, Byrne 2009). According to Schumacker and Lomax (2004), a necessary but insufficient condition for model identification is ensuring that the number of free parameters to be estimated in a theoretical model must be less than (called overidentified) or equal to (called just-identified) the number of distinct values in the sample variance-covariance matrix (distinct values = $p(p + 1)/2$ where p is the number of observed variables). On the other hand if the number of free parameters exceeds the number of distinct values in the sample matrix (called underidentified), then the model parameters cannot be uniquely determined because there is not enough information in the matrix. A method for avoiding these problems is to ensure that either one indicator for each latent variable must have a factor loading fixed to 1, or that the variance of each latent variable must be fixed to 1 (Bollen 1989, Schumacker and Lomax 2004, Byrne 2009). Utilizing this method will often eliminate the problem of scale indeterminacy; however, additional constraints (e.g. a parameter is constrained to equal one or more other parameters) may also be necessary (Schumacker and Lomax 2004).

4.9.4 Model Estimation

The most widely used type of estimation is maximum likelihood (ML), followed by generalized least square (GLS) and unweighted least squares (ULS) (Anderson and Gerbing 1988, Bollen 1989, Hoyle 1995, Kelloway 1996). The ML estimates are consistent, unbiased, efficient, scale-invariant and scale-free under the assumption of normality (Schumacker and Lomax 2004). As indicated by SEM scholars, the ML estimates are highly appropriate when the observed variables are interval scaled and normal distributed (or minor deviations). Nevertheless, if observed variables are ordinal scaled and/or extremely skewed or peaked (non-normally distributed), then the ML estimates are not robust (Anderson and Gerbing 1988, Bollen 1989, Hoyle 1995, Kelloway 1996). The GLS estimates have the same properties as the ML approach under a less stringent normality assumption. Meanwhile, the ULS estimates do not depend on a normality distribution assumption, but the estimates are neither efficient, scale-invariant nor scale-free (Schumacker and Lomax 2004). In this study, the ML estimation method was used to estimate the parameters in the proposed hypothesized models. The current data were screened and examined for normality prior to their analysis in AMOS 21.0 (see the next chapter).

4.9.5 Model Fit Testing

A number of goodness-of-fit measures have been developed to assist in interpreting how well the structural equation models fit the sample data. Such measures can be classified into absolute fit, incremental fit and parsimonious fit measures (Ho 2006, Hair *et al.* 2006). As described by McDonald and Ho (1999), absolute fit measures determine how well the a priori model fits, or reproduces the data. Some commonly used measures of absolute fit include the chi-square (χ^2), the goodness-of-fit index (GFI), the root mean square error of approximation

(RMSEA), and the standardized root mean squared residual (SRMR). Incremental fit measures compare the proposed model to a null model to determine the degree of improvement over the null model. Common incremental fit measures are the comparative fit index (CFI), the normed fit index (NFI) and the Tucker-Lewis index (TLI). Parsimonious fit measures evaluate the fit of the model versus the number of estimated coefficients needed to achieve that level of fit. Examples of these measures include the parsimonious normed fit index (PNFI) and the parsimonious goodness-of-fit index (PGFI) (Tian and Stewart 2007). Given a lack of consensus on the best measure of fit, SEM scholars recommend the use of multiple measures rather than rely on a single choice in evaluating the model fit (Bollen 1989, Hu and Bentler 1999, Schumacker and Lomax 2004, Ho 2006, Byrne 2009, Hair *et al.* 2006).

As indicated by Byrne (2009), the chi-square (χ^2) is the only statistical test of significance for testing the fit of a proposed model. A low χ^2 value relative to the degrees of freedom (*df*), indicating non-significance ($p > 0.05$), would point to a good fit. This is because such non-significance means that there is no statistical difference between the actual and predicted input matrices (Byrne 2009). Nevertheless, there are two cases in which the χ^2 may be misleading (Hoyle 1995). Firstly, the χ^2 is very sensitive to the complexity of the model; the more complex the model, the more likely the results will indicate a poor model fit. Secondly, it is too sensitive to the sample size; the larger the sample size, the more likely it is that the model will be rejected even if it is, in reality, a good fit with the data (a Type II error-accepting a false null hypothesis). To recognize these problems, this study complements the χ^2 measure with other goodness-of-fit measures.

Marsh *et al.* (1988) propose that the criteria for ideal fit measures are relative independence of sample size, accuracy and consistency to assess different models, and ease of interpretation

aided by a well-defined pre-set range. Based on these stated criteria, Grace and Weaven (2011) recommend the use of the GFI, CFI, TLI and RMSEA. Also, in their studies of the performance of various fit measures in relation to sensitivity to model misspecification, Hu and Bentler (2010) and Kline (2012) recommend the use of the RMR in tandem with one of several other indices particularly the TLI and RMSEA. In line with these recommendations, the present study reports the GFI, CFI, TLI, RMSEA and RMR in combination with reporting the χ^2 . The following is a brief discussion of the fit measures and their interpretation taken into account by the present study when testing model fit.

The GFI is a measure of fit between the hypothesized model and the observed covariance matrix. Holmes-Smith and Coote (2012) argue that the good model fit is achieved if GFI is above 0.90. The CFI estimates the proportion of improvement in the proposed model beyond the null model, based on the noncentral χ^2 distribution that allows for unbiased estimation of small sample size. The CFI has a value ranging from 0 to 1 (1 = perfect fit), with a value of 0.90 or greater representing a good-fitting model. Similarly, the TLI indicates the percentage improvement in fit over the null model by taking into account *df*. Higher values of the TLI indicate a better fitting model, and it is common to apply the 0.90 rule as indicating a good fit to the data. RMSEA estimates the lack of fit in a model compared to a perfect (saturated) model. A value of 0.08 or less indicates a good-fitting model, while a value greater than 0.1 represents a poor-fitting model (Steiger 1990, Browne and Cudeck 1993). The RMR is the square root of the discrepancy between the sample covariance matrix and the model covariance matrix. The RMR values range from 0 to 1, with value of 0.05 or less indicating a good model fit (Hooper *et al.* 2008).

Importantly, the statistical significance of individual parameter estimates for the paths in the proposed model also needs to be considered for assessing model fit (Schumacker and Lomax 2004). A ratio of the parameter estimate to the estimated standard error can be formed as a critical value. If the critical ratio exceeds 1.96 at a significant level of less than 0.05, then the parameter is statistically significant. Furthermore, as suggested by Schumacker and Lomax (2004), the parameter estimates obtained from the analysis should be theoretically meaningful, and should be within an expected range of values (e.g., variances should not have negative values and correlations should not exceed 1).

4.9.6 Model Modification

Another aspect of the SEM techniques is the need to recognize that an initial specified model may not provide a good fit of the data; re-specification and re-estimation of the model is often necessary to achieve a better fit of the model (Anderson and Gerbing 1988). Based on the two-stage model-building approach developed by Anderson and Gerbing (1988), this study adjusted and fitted the measurement model to the data (through CFA) prior to testing and modifying the structural component of the model.

As suggested by Baumgartner and Homburg (1996), if an *a priori* measurement model provides a poor fit to the data, improvements to the model fit can be made by utilizing modification indices provided by the SEM software program. Modification indices suggest ways that the model might be altered by allowing the error covariance of corresponding parameters to become free or by allowing indicators to load more than one factor (multidimensional factors). A better fitting measurement model might then result (Bollen 1989, Byrne 2009). However, because of reasons related to the study's theoretical justification, no modifications were made that allowed indicators to load on multiple factors.

Importantly, according to Kline (2011), if the modified measurement model is plausible (good fit), then the following patterns should also be seen by the researcher: (i) convergent validity is demonstrated by all indicators specified to measure a common underlying latent factor having relatively high standardized loadings on that factor, and (ii) discriminant validity is demonstrated by estimated correlations between latent factors not being excessively high (e.g., > 0.85).

Importantly, to assess how well the latent constructs are measured by their indicators in CFA, SEM scholars (Anderson and Gerbing 1988, Hair *et al.* 2006) urge the researcher to report the composite reliability (CR) and the average variance extracted (AVE). The CR measures the internal consistency reliability of a summated scale (> 0.7 indicating internal reliability), and the AVE measures the amount of variance captured by a construct in relation to the variance due to measurement error (> 0.5 indicating convergent validity) (Hair *et al.* 2006). However, as AMOS does not output the CR and AVE directly, they were thus calculated by hand in this study based on the following formulas provided by Anderson and Gerbing (1988).

$CR = (\sum \text{standardized loading})^2 / [(\sum \text{standardized loading})^2 + (\sum \text{indicator measurement error})]$ $AVE = (\sum \text{standardized loading})^2 / [(\sum \text{standardized loading})^2 + (\sum \text{indicator measurement error})]$
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After the modified measurement model is assessed, a structural model is estimated. The fit of the structural model is evaluated, and modification indices are again examined. In the structural model, modification indices indicate how much the model could be improved by adding in significant but unspecified paths (Schumacker and Lomax 2004). Nevertheless, it is vital to note that modifications of the structural model, based on the inclusion of paths shown to be significant but not theoretically predicted, is considered to be problematic because it increases the probability of Type I errors (Kline 2011). In addressing these concerns in this

study, non-specified paths (between latent variables) were not added to the modified structural model.

4.10 CHAPTER SUMMARY

This chapter has described the methodological approach used to conduct the present study. A sample of Chinese online shoppers was surveyed. A four-stage process was employed for the development of the questionnaire. The data collection was conducted on the streets in Shanghai and Nanchong based on a face-to-face survey. The survey instrument was developed based on both published survey instruments and the broader extant literature. The major issues pertaining to reliability and validity in the design of the study, as well as comments on the appropriateness and soundness of the methods utilized were discussed in this chapter. A discussion of the analytical technique employed (SEM) highlighted the important considerations in the interpretation of results from such an analytical technique. Specifically, in this study, the two-stage model-building approach, where the measurement model is adjusted and fitted to the data prior to testing the structural model, was employed, and six goodness-of-fit measures (χ^2 , GFI, CFI, TLI, RMSEA and RMR) were used to assist in data interpretation.

CHAPTER 5: DATA ANALYSIS

5.1 CHAPTER OVERVIEW

Chapter five consists of eleven sections and is structured as follows. The chapter begins with data cleaning and screening to check for incompleteness and inconsistencies, followed by an overview of the respondent profile. Then, preliminary analysis of the data was conducted via correlation analysis, exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and reliability estimates. Following this, results of the preliminary analysis of the items measuring each multi-item construct were presented. The purpose of the preliminary analysis is to identify a set of indicators that represents each multi-item constructs in the overall measurement model. Next, using the two-stage model-building approach recommended by Anderson and Gerbing (1988), the overall measurement model was first confirmed and then the structural model (n = 962) for controlling for age, gender, income and education level were assessed, respectively. The structural model was to test the causal research hypotheses of this study (i.e., H1a, H1b, H1c, H1d, H1e, H2b, H2c, H3a, H4a, H4b, H4c, and H5). The mediation testing was conducted in order to address H6 which proposed that customer satisfaction partially mediates the effect of consumer TCs on loyalty. Following this, the moderating effects of consumer's risk-bearing propensity and perceived enjoyment of online shopping (i.e., H7a, H7b, H8a, and H8b) were tested using multiple group analysis via structural equation modelling. Lastly, a comparative analysis was undertaken to determine if the proposed model differed across two product categories (i.e., search products vs. experience products), which aimed to test the final hypotheses H9a and H9b of this study. The chapter concludes with a summary of the findings associated with the tested hypotheses.

5.2 DATA CLEANING AND SCREENING

During the data collection process, a total of 984 online shoppers completed the survey. The raw data obtained from the questionnaires underwent preliminary preparation before they were analysed using statistical techniques advocated by Kumar et al. (2002). Data cleaning and screening were performed to check for incompleteness and inconsistencies in order to ensure accuracy and precision of the data.

Data cleaning includes consistency inspection and treatment of missing responses. Missing responses represent values of a variable that are unknown, either because respondents provided ambiguous answers or their answers were not properly recorded. An examination of basic descriptive statistics and frequency distributions were conducted to screen the data set. First of all, the case with the same response number selected (e.g., all the questions were answered with number “5”) were removed from the sample since it meant that respondent did not answer the questions seriously. As a result, 4 cases with the problem of inconsistency were deleted from the original sample (984).

In addition, as suggested by Sekaran (2003), the questionnaire should be discarded if 25% of the items in the survey have been left unanswered. Thus, of the 980 completed surveys, 18 cases were deleted due to the omission of more than 25% of the responses, resulting in a total of 962 responses being used for the data analysis. Nevertheless, of the remaining 962 cases, 21 cases contained a small number of missing responses randomly distributed throughout the surveys. According to the recommendation by Hairs et al. (1998), these cases were examined to determine if patterns existed in the missing data. As there were no apparent patterns in the missing data, an imputation method commonly used within survey research (Kamakura and

Wedel 2000, Myrtveit and Stensrud 2001) whereby the missing value is estimated based on values of other variables, was the remedy chosen to handling missing data, i.e., missing values were replaced via linear interpolation using SPSS.

5.3 PROFILE OF THE SAMPLE

The entire sample (n=962) characteristics are presented in Table 5.1. The number of responses gathered across the two different product types was 455 responses for purchasing search products (e.g., books, CDs and airline tickets), and 507 responses for buying experience products (e.g., shoes and clothes). In the entire sample, 49.2% of respondents were males, and 50.8% were females. Respondent groups aged between 18 and 25 years old and aged between 26 and 33 years old accounted for 23.6% and 33.2% of the sample, respectively, followed by the age groups of 34-41 years old at 23.1%. These three groups collectively contributed approximately 8% to the overall sample in terms of age. Furthermore, with regard to the highest level of education achieved by respondents, 7.1% were junior high school qualified, 26.3% senior high school qualified, 20.5% completed college, 30.5% had university degree, and 10.6% held Master or PhD degree. The household income levels varied with 7.6% of the sample earning under ¥10,000, 37.7% earning between ¥10,000 and ¥59,999, 25.5% earning between ¥60,000 and ¥109,999, 15.9% earning between ¥110,000 and ¥159,999 and 13.3% having ¥160,000 or above per annum.

In order to assess the representativeness of the sample, the demographic profile of 962 respondents was compared with the online shopper demographics (2012-2013) reported by iResearch (2013). The comparison showed a close match between the two samples. Thus, the sample (962 observations) of this study was representative of Chinese online shoppers.

Table 5.1 Demographic Profile of the Respondents (N=962)

Variable	Category	Sample Percentage
Product Category	Search Products	47.3 (455)
	Experience Products	52.7 (507)
Gender	Male	49.2
	Female	50.8
Age (in Years)	18-25	23.6
	26-33	33.2
	34-41	23.1
	42-49	14.1
	50-57	5.3
	58-65	0.6
	>65	0.1
Education	Junior high school	7.1
	Senior high school	26.3
	College	20.5
	University	30.5
	Mater	8.3
	Ph.D.	2.3
	Other	5.1
Annual Household Income	< ¥10,000	7.6
	¥10,000 - ¥59,999	37.7
	¥60,000 - ¥109,999	25.5
	¥110,000 - ¥159,999	15.9
	¥160,000 - ¥209,999	8.3
	¥210,000 - ¥259,999	2.9
	>¥260,000	2.1

5.4 PRELIMINARY METHOD OF DATA ANALYSIS

This section presents the preliminary evaluation of the data via correlation analysis, EFA, CFA and reliability estimates.

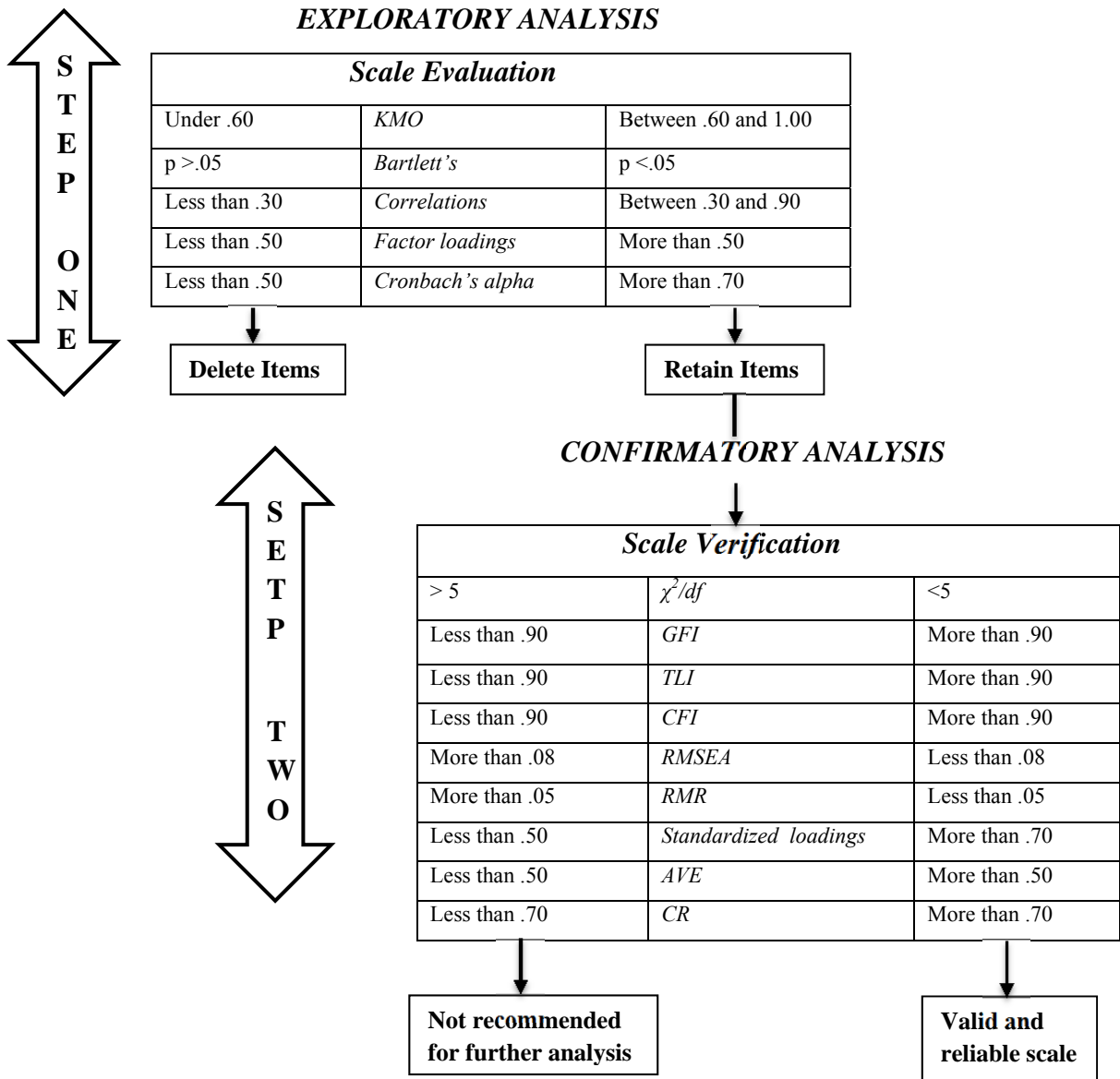
Each variable was visually inspected for normality, skew (the degree of symmetry about the mean) and kurtosis (the degree of flatness or peakness of a distribution), and the presence of outliers. Histograms were deemed appropriate at this stage to provide the best “overall” picture of each variable across a small range of scores (1 to 7). In addition to visual inspection, each variable was analysed via test of skewness and kurtosis. Overall the data did not appear to be problematic, with all statistics falling within acceptable ranges. For example, skew and kurtosis values were between -2 and +2, indicating that the frequency distributions were considered normal (Pallant 2010). Similarly, the data was inspected for the presence of outliers and none were detected. For example, scores did not fall outside the range of 3 to 4 standard deviations which is the recommended criteria for detecting outliers for large samples (Hairs *et al.* 1998). The means, standard deviations, skew and kurtosis values for each of the variables appear in Appendix D.

Having inspecting the data for anomalies in normality, the next step was to analyse the data to access the factor structures and internal consistency of the items. Two factor analysis techniques were identified as being appropriate for data analysis at this stage (e.g., EFA and CFA). Firstly, EFA is designed for the situation where the relationships between the observed and latent variables are not predetermined, thus warranting an exploratory approach to data analysis in order to discover the underlying factors. While EFA is the most conventional approach evident by its extensive use in marketing and consumer behaviour research (Liang and Huang 1998, McColl-Kennedy and Fetter Jr 1999, Chenet *et al.* 2000, Grace and O’Cass 2001), this approach has certain limitations.

Firstly, and most importantly, EFA assigns items to factors purely on the basis of which factor they load substantially, therefore, it is possible for an item to have a significant loading on more than one factor which, in turn, effects the identity or distinctiveness of the factor (Sureshchandar *et al.* 2001). Furthermore, EFA items load onto factors on a purely statistical, rather than theoretical, basis thereby affecting the valid identity of the factors. Secondly, as noted by Chandon *et al.* (1997), an explicit test of unidimensionality is not provided by EFA as each factor is defined as a weighted sum of all the available items in that dimension.

CFA, on the other hand, overcomes the abovementioned limitations in that the researcher specifies a model a priori, and tests the hypothesis that a relationship between the observed and latent variables does exist. This is extremely robust test when the researcher can postulate a model that draws its logic from research outputs in which reliable indicators of factors have previously been determined (Deeter-Schmelz *et al.* 2000, Sureshchandar *et al.* 2001). Furthermore, CFA offers a rigorous evaluation of dimensionality and internal consistency as each factor is related to only a subset of indicators (Chandon *et al.* 1997, McGee and Peterson 2000). This being the case, and due to this study using both pre-existing measures and measures developed specifically for this study (e.g., items pertaining to constructs, such as Internet access availability and environmental uncertainty, e-service quality were adapted from existing measures), a two-step approach, which includes both EFA and CFA, was deemed appropriate. A similar procedure was adopted by Chandon *et al.* (1997) and Shi and Wright (2001) and follows two distinct steps, as shown in Figure 5.1. The following discussion describes the two-step process (shown in Figure 5.1) prior to the presentation of results.

Figure 5.1 Two-Step Preliminary Analyses



5.4.1 Description of Step One

Step One (refer Figure 5.1) of the two-step preliminary analysis is referred to here as scale evaluation, in that the data underwent a number of evaluation procedures, such as correlation analysis, EFA and reliability analysis, before being retained for CFA. As recommended by Comrey (1978), pre-analysis of the suitability of the data for factor analysis is essential, in that the data matrix must be inspected to ensure that a sufficient number of significant correlations exist. Hair et al. (2006) points out that the data matrix can be initially tested via measures such as the Kaiser-Meyer Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity. KMO compares the size of the observed correlation coefficients with the magnitude of the partial correlation coefficients and is calculated as a value between 0 and 1. A value close to 1 indicates a large number of interrelations among the variables. Similarly, the Bartlett's Test for Sphericity was used to test for statistical probability that the correlation matrix had significant correlations among at least some of the variables computed and was indicated by a significance level less than .05 (Hair *et al.* 2006).

The next stage of Step One (refer Figure 5.1) involved a closer inspection of the bivariate correlations contained within the matrix. At this point, as indicated by Hair et al. (2006), items not exhibiting a substantial number of correlations greater than .30 were removed as they were not considered strong enough to be appropriate for factor analysis. Similarly, items correlating at above .90 were also deleted so that overfitting of the data did not occur (Tabachnick and Fidell 1996), as is often the case when items are measuring the same thing. Having retained only those items with correlations between .30 and .90, the data was then considered sufficiently robust for conducting EFA.

Following data verification for EFA, the next stage of Step One (refer Figure 5.1) involved conducting EFA to determine the factor structures of the data and loadings of items. In this regard, the empirical assessment of construct validity was evaluated using contemporary analytical guidelines recommended by Anderson and Gerbing (1988), Hair et al. (2006), and O’Leary-Kelly and Vokurka (1998) through the examination of factor structures, unidimensionality and internal consistency. EFA was conducted via principal-components factor analysis using varimax rotation, chosen on the basis that all factors were expected to be unidimensional. At this point, a similar procedure to Shi and Wright (2001) was followed whereby factors with eigenvalues greater than 1 were identified and items with factor loadings less than .50 were deleted. In addition, any items exhibiting cross-loadings greater than .04 were also removed from the analysis (O’cass and Fenech 2003). The data was then ready for the final issue addressed in Step One of Figure 5.1, that being reliability analysis.

The final stage of Step One (refer Figure 5.1) involved conducting reliability analysis to determine if the scale has ability to provide consistent results. Reliability tests include test-retest method, equivalent forms, split-halves method and internal consistency method. Of these methods, the internal consistency method requires only one administration of the instrument and is operationalized as the degree of inter-correlations among the items that constitute a scale (Nunnally 1978), estimated via Cronbach’s alpha. While Sureshchandar et al. (2001) argue that internal consistency is established if the alpha value is greater than .70. Some advocate that the alpha value greater than .60 may be sufficient depending on the number of the items in the scale or in the case of exploratory research (Hair *et al.* 2006). Therefore, at this stage, all scales were tested using Cronbach’s alpha in order to determine if they were, in fact, reliable measures of the constructs. Items meeting the alpha criteria of .70

(Sureshchandar *et al.* 2001) were, at this point, considered reliable indicators of the constructs and further analysis, as shown in Step Two of Figure 5.1, was initiated.

5.4.2 Description of Step Two

Step Two of Figure 5.1 is referred to as scale verification and involved conducting scale by scale CFAs in order to determine if the dimensions, as measured by the items selected in Step One, were truly convergent and unidimensional, and to examine if individual measurement model provided a good fit to the data. At this point, the empirical assessment of convergent validity of the scale was assessed using guidelines recommended by Hair *et al.* (2006). As they advocated, the guidelines are: all standardized loadings for a construct should be at least 0.50, and preferably 0.70; the threshold for composite reliability (CR) is considered to be 0.70; and average variance extracted (AVE) should equal or exceed 50 % (Hair *et al.* 2006). Therefore, the standardized factor loadings, CR, and AVE related to each construct were examined to determine convergent validity.

When examining the results of the CFA for each construct, the model fit statistics also need to be checked, as recommended by Holmes-Smith and Coote (2012). As outlined in Chapter 4, this study reported the GFI, TLI, CFI, RMSEA and RMR in combination with reporting the χ^2 /df. The benchmark for GFI, TLI and CFI is 0.90. Their value should be more than 0.90. For RMSEA and RMR, their value should be less than 0.08 and 0.05, respectively. For χ^2 /df, the value should be less than 5. Cut-off scores are also shown in Step Two in Figure 5.1. Those scales that produced acceptable fit statistics through CFA (obtained using AMOS 21.0 with fit being assessed via maximum likelihood) were then deemed to be both reliable and valid indicators of the measured constructs.

The two-step process of preliminary data analysis shown in Figure 5.1 provided a framework which involved the sequential examination of the data in order to produce both valid and reliable factor structures upon which composite measures were computed and used in structural equation modelling. The preceding discussion of the two-step model in Figure 5.1 provides a detailed description of the preliminary data analysis undertaken and is the basis upon which the ensuing preliminary results are presented.

5.5 PRELIMINARY RESULTS

The proposed research model (refer Figure 3.1) depicts a total of 16 constructs to be measured within the model. Among these 16 constructs, 14 constructs (except online buying frequency and online purchase behaviour) were measured by multiple items. The ensuing preliminary analysis follows the procedure as set out in Figure 5.1 to individually examine the psychometric properties of each of these 14 constructs' scales.

5.5.1 Preliminary Analysis –Internet Access Availability

Four items (IAA1 to IAA4) were used to measure Internet access availability construct. These were subjected to the two-step preliminary data analysis process shown in Figure 5.1, the results of which appear in Table 5.2. Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.787) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .78 to .88 and the variance explained was 70.29%.

Cronbach's alpha of .86 was computed indicating good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

The four items (retained from Step One) measuring Internet access availability were subjected to CFA in Step Two (refer Figure 5.1) of the preliminary analysis. The model fit indices indicated that this measurement model did not fit quite well to the data ($\chi^2/df = 29.08 > 5$, RMSEA = .171 < .08, and RMR = .066 > .05). The poor fit of the model was then revised by investigating modification indices and the standard residuals (Hair *et al.* 2006). Specifically, indicators which were related to larger reductions of chi-square or problematic standard residuals (2.5 as cut-off) (Anderson and Gerbing 1988) were identified and eliminated one by one. After removing item IAA4, an acceptable model was achieved. All overall goodness-of-fit statistics were within acceptable ranges. For example, χ^2/df (.023) was less than 5, GFI (0.986), TLI (0.992) and CFI (0.983) were above .90, RMSEA (.002) was less than .08 and RMR (.002) was less than .05. As displayed in Table 5.2, the standardized factor loadings of the remaining three items ranged from .68 to .85. All exceeded the minimum standardized loading .50 with two of them above the ideal criterion of .70 (Hair *et al.* 2006). The AVE was .63, exceeding the recommended criterion of .50 (Hair *et al.* 2006). The CR of this construct was .834, exceeding the threshold of .70 (Nunnally 1978). As a result, items IAA1, IAA2 and IAA3 were considered to constitute a reliable and valid measurement scale for Internet access availability. These three items were retained for constructing the overall measurement model.

Table 5.2 Preliminary Data Analysis- Internet Access Availability (IAA)

<i>Step One - Exploratory</i>						
Wording	EFA Loadings		IAA1	IAA2	IAA3	IAA4
Can easily find Internet	.82	IAA1	1.00			
PC can easily connect to the Internet	.88	IAA2	.676	1.00		
Easily access to Internet in study/work place	.87	IAA3	.572	.709	1.00	
Access to the Internet at anytime/ anywhere	.78	IAA4	.501	.536	.618	1.00
Reliability	0.86	KMO				.787
Variance Explained	70.29	Bartlett's				.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
IAA1	.68	--	--	.63	.834
IAA2	.85	.031	40.51*		
IAA3	.84	.031	40.51*		
IAA4	n/a	n/a	n/a		
Model Fit	Statistic	Model Fit		Statistic	
χ^2	.046	TLI		0.992	
df	2	CFI		0.983	
P	.965	RMSEA		.002	
GFI	0.986	RMR		.002	

* $p < .001$

5.5.2 Preliminary Analysis - Perceived Internet Expertise

The perceived Internet expertise construct was measured using four items (EXP1 to EXP4). The two-step preliminary data analysis process shown in Figure 5.1 was employed as a screening mechanism for data measured by these item (refer Table 5.3 for results). Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.825) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .84 to .93 and the variance explained was 78.52%. Cronbach's alpha of .91 was computed indicating good

reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the four items retained from Step One which resulted in all computed statistics indicating a good fit for the measurement model. For example, χ^2/df (.066) was less than 5, GFI (0.979), TLI (0.988) and CFI (0.985) were above .90, RMSEA (.002) was less than .08 and RMR (.001) was less than .05. Moreover, Table 5.3 shows that the standardized factor loadings of the four items ranged from .71 to .90, all exceeding the preferable criterion of .70 (Hair *et al.* 2006). The AVE was .70, which exceeded the recommended level of .50 (Hair *et al.* 2006). The CR of this construct was .902, exceeding the recommended benchmark of .70 (Nunnally 1978). Taken together, items EXP1 to EXP4 were considered to provide a reliable and valid measurement scale for the construct, perceived Internet expertise. Thus, all four items were retained for the overall measurement model.

Table 5.3 Preliminary Data Analysis- Perceived Internet Expertise (EXP)

<i>Step One - Exploratory</i>						
Wording	EFA Loadings		EXP1	EXP2	EXP3	EXP4
Easily use the Web to find product information	.84	EXP1	1.00			
Get to a specific Website with a browser	.89	EXP2	.614	1.00		
Feel comfortable searching the World Wide Web	.90	EXP3	.639	.776	1.00	
Be able to use Web to locate retail sites	.92	EXP4	.737	.741	.768	1.00
Reliability	0.91	KMO				.825
Variance Explained	78.52	Bartlett's				.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
EXP1	.71	--	--	.70	.902
EXP2	.86	.046	24.78*		
EXP3	.90	.047	25.29*		
EXP4	.86	.038	30.27*		
Model Fit	Statistic	Model Fit		Statistic	
χ^2	.131	TLI		0.988	
df	2	CFI		0.985	
P	.860	RMSEA		.002	
GFI	0.979	RMR		.001	

* $p < .001$

5.5.3 Preliminary Analysis – Product Quality Concern

The product quality concern construct was measured using five items (PQC1 to PQC5). The two-step preliminary data analysis process shown in Figure 5.1 was employed as a screening mechanism for data measured by these items (refer Table 5.4 for results). Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.874) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .86 to .93 and the variance explained was 81.07%. Cronbach's alpha of .49 was computed indicating good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

The five items (retained from Step One) measuring product quality concern were subjected to CFA in Step Two (refer Figure 5.1) of the preliminary analysis. The results indicated a good fit for the measurement model. For example, χ^2/df (1.451) was less than 5, GFI (.995), TLI (.996) and CFI (0.996) were above .90, RMSEA (.022) was less than .08 and RMR (.010) was less than .05. In addition, as displayed in Table 5.4, the standardized factor loadings of the four items ranged from .80 to .96, all exceeding the preferable criterion of .70 (Hair *et al.* 2006). The AVE was .75, exceeding the recommended criterion of .50 (Hair *et al.* 2006). The CR was .937, exceeding the threshold of .70 (Nunnally 1978). Taken together, items PQC1 to PQC5 were considered to constitute a reliable and valid measurement scale for this construct. As a result, all four items were retained for the overall measurement model.

Table 5.4 Preliminary Data Analysis- Product Quality Concern (PQC)

<i>Step One - Exploratory</i>							
Wording	EFA Loadings		PQC1	PQC2	PQC3	PQC4	PQC5
Difficult to be assured that the product will perform as well as it is supposed to	.86	PQC1	1.00				
Difficult to be assured that the product is reliable	.91	PQC2	.782	1.00			
Worried that the product received cannot represent accurately	.93	PQC3	.725	.825	1.00		
Worried that the performance of the product cannot live up to what is promised	.92	PQC4	.703	.772	.852	1.00	
Worried that the quality of the product	.88	PQC5	.680	.710	.756	.822	1.00
Reliability	0.94	KMO					.874
Variance Explained	81.07	Bartlett's					.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
PQC1	.81	--	--	.75	.937
PQC2	.80	.033	32.80*		
PQC3	.89	.040	31.15*		
PQC4	.96	.045	32.17*		
PQC5	.85	.043	29.62*		
Model Fit	Statistic	Model Fit	Statistic		
χ^2	1.452	TLI	.996		
df	1	CFI	.996		
P	.228	RMSEA	.022		
GFI	.995	RMR	.010		

* $p < .001$

5.5.4 Preliminary Analysis – Site Design

Eight items (DES1 to DES8) were used to measure the site design construct. The two-step preliminary data analysis process shown in Figure 5.1 was employed as a screening mechanism for data measured by these items (refer Table 5.5 for results). Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.901) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced

a single factor structure with strong item loading ranging from .78 to .85 and the variance explained was 69.08%. Cronbach's alpha of .94 indicated good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the eight items retained from Step One. The model fit indices indicated that this measurement model poorly fitted the data ($\chi^2/df = 46.23 > 5$, GFI = .787 < .90, TLI = .799 < .90, CFI = .857 < .90, RMSEA = .217 < .08, and RMR = .143 > .05). After the initial model assessment, the model was modified according to the modification indices to improve model fit (Hair et al., 1995). Indicators which were related to larger reductions of chi-square were identified and eliminated one by one. After deleting item DES2 and DES7, an acceptable model was achieved. For example, χ^2/df (1.382) was less than 5, GFI (.998), TLI (.999) and CFI (0.998) were above .90, RMSEA (.020) was less than .08 and RMR (.015) was less than .05. The results indicated that the modified measurement model can be assessed as being adequate, and suggested that the modified model fitted the data better than the initial model. As displayed in Table 5.5, the standardized factor loadings of the remaining six items ranged from .77 to .81. All exceeded the ideal criterion of .70 (Hair et al. 2006). The AVE for this construct was .64, exceeding the recommended level of .50 (Hair et al. 2006). The CR was .914, exceeding the recommended criterion of .70 (Nunnally 1978). As a result, items DES1, DES3, DES4, DES5, DES6, and DES8 were considered to provide a reliable and valid measurement scale for site design. Moreover, these six items were retained for the overall measurement model.

Table 5.5 Preliminary Data Analysis- Site Design (DES)

<i>Step One - Exploratory</i>								
Indicators	Wording						EFA Loadings	
DES1	This site is visually attractive						.78	
DES2	This site is easy to use						.85	
DES3	This site is easy to navigate						.86	
DES4	This site quickly loads all the text and graphics						.84	
DES5	This site provides me with sufficient information						.84	
DES6	This site provides me with accurate information						.85	
DES7	This site provides me with up-to-date information						.83	
DES8	This site is quick and easy to complete a transaction						.80	
Reliability	0.94						KMO .901	
Variance Explained	69.08						Bartlett's .000	
	DES1	DES2	DES3	DES4	DES5	DES6	DES7	DES8
DES1	1.00							
DES2	.767	1.00						
DES3	.680	.813	1.00					
DES4	.551	.662	.739	1.00				
DES5	.547	.593	.645	.750	1.00			
DES6	.571	.607	.625	.662	.767	1.00		
DES7	.566	.601	.627	.595	.664	.735	1.00	
DES8	.544	.587	.594	.590	.603	.641	.760	1.00
<i>Step Two – Confirmatory</i>								
Indicators	CFA Stand. Loadings		Stand. Error	Critical Ratio	AVE	CR		
DES1	.81		--	--	.64	.914		
DES2	n/a		n/a	n/a				
DES3	.77		.049	25.21*				
DES4	.80		.060	21.95*				
DES5	.93		.066	22.95*				
DES6	.82		.059	22.57*				
DES7	n/a		n/a	n/a				
DES8	.77		.061	20.90*				
Model Fit	Statistic		Model Fit		Statistic			
Chi-square	5.527		TLI		.999			
df	4		CFI		.998			
P	.237		RMSEA		.020			
GFI	.998		RMR		.015			

* $p < .001$

5.5.5 Preliminary Analysis – E- Service Quality

The e-service quality construct was measured using twelve items. These were subjected to the two-step preliminary data analysis process shown in Figure 5.1, the results of which are displayed in Table 5.6. Evaluation of the correlation matrix through the KMO and Bartlett's

Test results in a high KMO statistic (.918) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which indicated that REL1 had a cross-loading problem. After eliminating this item, EFA produced a three-factor structure for the eleven remaining items used to measure e-service quality. The factor loadings ranged from .70 to .88 and the cumulative variance explained by three factors was 79.59%, exceeding the recommended criterion of 60% (Hair *et al.* 2006). Cronbach's alpha of .93 was then computed indicating good reliability of the scale.

The first factor, composed of four items, accounted for 28.30% of the variance explained. The four items loading on this factor reflected reliability with item loadings ranging from .85 to .92. Cronbach's alpha for Factor 1 was .92, indicating good reliability of the scale. Accounting for 27.78% of the variance explained, Factor 2 included four items related to responsiveness. Factor loadings of these four items ranged from .85 to .90 and Cronbach's alpha of .89 indicated an internal reliability. The three items loading on Factor 3 were related to personalization. The variance explained by this factor was 23.51% with strong item loading ranging from .89 to .93, and Cronbach's alpha was .90, exceeding the threshold of .70 (Nunnally 1978). At this point, as all the remaining eleven items met the criteria of Step One, they were retained for CFA analysis in Step Two.

The eleven items (retained from Step One) measuring e-service quality were subjected to CFA in Step Two (refer Figure 5.1) of the preliminary analysis. The model fit indices indicated that this measurement model did not fit quite well to the data ($\chi^2/df = 9.763 > 5$,

RMSEA = .095 > .08, and RMR = .101 > .05). In order to improve the model, indicators which were related to larger reductions of chi-square or problematic standard residuals (2.5 as cut-off) (Anderson and Gerbing 1988) were identified and eliminated one by one. After removing item REL5 and item RESP4, an acceptable model was achieved. All overall goodness-of-fit statistics were within acceptable ranges. For example, χ^2/df (2.183) was less than 5, GFI (.989), TLI (.993) and CFI (.996) were above .90, RMSEA (.035) was less than .08 and RMR (.044) was less than .05. Parameter estimates of the final measurement model were inspected and no problems were found. Table 5.6 presents the second-order measurement model in which e-service quality was the second-order construct with three first-order constructs (reliability, responsiveness, personalization) as indicators. The standardized factor loadings of the three first-order constructs used to measure the second-order construct (e-service quality) ranged from .75 to .83, all exceeding the preferable criterion of .70 (Hair et al., 1995). The AVE for the second-order construct was .64, exceeding the recommended level of .50 (Hair *et al.* 2006). The CR of the second-order construct was .840, exceeding the threshold of .70 (Nunnally 1978). More specifically, by examining each first-order construct and its corresponding indicators, it can be found that the standardized factor loadings of all items were relatively high and significant, ranging from .82 to .91, and the AVE for all first-order constructs exceeded the recommended criterion of .50, ranging from .73 (responsiveness) to .80 (reliability). CR of all first-order constructs exceeded the recommended benchmark of .70, ranging from .891 (responsiveness) to .924 (reliability). Therefore, items REL2, REL3, REL4, RESP1, RESP2, RESP3, PERS1, PERS2, and PERS3 were considered to constitute a reliable and valid first-order measurement scale. Taken together, this three-factor model structure was retained for constructing the overall measurement model.

Table 5.6 Preliminary Data Analysis- E- Service Quality (ESQ)

<i>Step One - Exploratory</i>												
Constructs/Indicators	Wording										EFA Loadings	
Factor 1 (Reliability)												
REL1	Delivers on its undertaking to do certain things										n/a (cross-loading)	
REL2	Transactions are error-free										.78	
REL3	Product is delivered by the time promised										.85	
REL4	Show a sincere interest in solving problems										.86	
REL5	Performance is as desired										.70	
Factor 2 (Responsiveness)												
RESP1	This online store is always willing to help me										.74	
RESP2	Never too busy to respond to customer requests										.84	
RESP3	Easy to get in contact with this online store										.82	
RESP4	Prompt in replying to queries										.76	
Factor 3 (Personalization)												
PERS1	Provides information according to my preferences										.78	
PERS2	Gives me individual attention										.88	
PERS3	Understand my specific needs										.85	
Reliability	0.93										KMO	.918
Variance Explained	79.59										Bartlett's	.000
	REL1	REL2	REL3	REL4	REL5	RESP1	RESP2	RESP3	RESP4	PERS1	PERS2	PERS3
REL1	1.00											
REL2	.784	1.00										
REL3	.681	.805	1.00									
REL4	.629	.723	.811	1.00								
REL5	.596	.629	.667	.749	1.00							
RESP1	.552	.539	.539	.506	.549	1.00						
RESP2	.560	.549	.534	.503	.534	.754	1.00					
RESP3	.534	.503	.508	.475	.516	.611	.714	1.00				
RESP4	.639	.575	.530	.519	.540	.610	.674	.714	1.00			
PERS1	.528	.538	.527	.524	.539	.489	.469	.449	.495	1.00		
PERS2	.484	.468	.471	.460	.498	.489	.444	.450	.478	.744	1.00	
PERS3	.497	.481	.486	.482	.519	.495	.448	.420	.455	.684	.797	1.00

<i>Step Two – Confirmatory</i>					
Constructs/Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
ESQ – Second-order construct					
REL	.83	--	--	.64	.840
RESP	.81	.048	18.76*		
PERS	.75	.047	18.30*		
REL – first-order construct					
REL2	.89	--	--	.80	.924
REL3	.91	.029	34.69*		
REL4	.89	.029	34.23*		
REL5	n/a	n/a	n/a		
RESP – first-order construct					
RESP1	.88	--	--	.73	.891
RESP2	.86	.035	28.80*		
RESP3	.82	.038	26.57*		
RESP4	n/a	n/a	n/a		
PERS – first-order construct					
PERS1	.88	--	--	.78	.915
PERS2	.86	.036	27.94*		
PERS3	.91	.035	30.91*		
Model Fit	Statistic	Model Fit		Statistic	
χ^2	45.844	TLI		.993	
df	21	CFI		.996	
P	.001	RMSEA		.035	
GFI	.989	RMR		.044	

* $p < .001$

5.5.6 Preliminary Analysis – Reputation of Online Store

Four items (REP1 to REP4) were used to measure the reputation of online store construct. The two-step preliminary data analysis process shown in Figure 5.1 was employed as a screening mechanism for data measured by these items (refer Table 5.7 for results). Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.810) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .85 to .90 and the variance explained was 76.41%. Cronbach's alpha of .90 was computed indicating good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the four items retained from Step One which resulted in all computed statistics indicating a good fit for the measurement model. For example, χ^2/df (0.037) was less than 5, GFI (0.975), TLI (0.981) and CFI (0.972) were above .90, RMSEA (.002) was less than .08 and RMR (.003) was less than .05. Therefore, the CFA results indicated that this measurement model provided a good fit to the data. Furthermore, as displayed in Table 5.7, the standardized factor loadings of the four items ranged from .72 to .92, all exceeding the desirable level of .70 (Hair *et al.* 2006). The AVE was .66, exceeding the recommended criterion of .50 (Hair *et al.* 2006). The CR was .887, exceeding the recommended benchmark of .70 (Nunnally 1978). As a result, items REP1 to REP4 were considered to provide a reliable and valid measurement scale for this construct, and all four items were retained for the overall measurement model.

Table 5.7 Preliminary Data Analysis- Reputation of Online Store (REP)

<i>Step One - Exploratory</i>						
Wording	EFA		REP1	REP2	REP3	REP4
	Loadings					
Excellent public image	.85	REP1	1.00			
Extremely committed to customer satisfaction	.88	REP2	.728	1.00		
Is known to be concerned about customers	.90	REP3	.661	.716	1.00	
Has a good reputation compared to others	.86	REP4	.597	.644	.765	1.00
Reliability	0.90	KMO				.810
Variance Explained	76.41	Bartlett's				.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA	Stand.	Critical	AVE	CR
	Stand. Loadings	Error	Ratio		
REP1	.72	--	--	.66	.887
REP2	.78	.036	29.36*		
REP3	.92	.050	25.36*		
REP4	.83	.044	24.34*		
Model Fit	Statistic	Model Fit		Statistic	
χ^2	.111	TLI		0.981	
df	3	CFI		0.972	
P	.847	RMSEA		.002	
GFI	0.975	RMR		.003	

* $p < .001$

5.5.7 Preliminary Analysis – Perceived Convenience

The perceived convenience construct was measured using six items (CONV1 to CONV6). These were subjected to the two-step preliminary data analysis process shown in Figure 5.1, the results of which appear in Table 5.8. Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.838) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .77 to .87 and the variance explained was 65.60%.

Cronbach's alpha of .89 was computed indicating good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the six items retained from Step One. The results indicated that this measurement model poorly fit the data ($\chi^2/df = 57.72 > 5$, GFI = .836 < .90, TLI = .856 < .90, CFI = .856 < .90, RMSEA = .243 < .08, and RMR = .170 > .05). In order to improve the model, indicators which were related to larger reductions of chi-square or problematic standard residuals (2.5 as cut-off) (Anderson and Gerbing 1988) were identified and eliminated one by one. After removing item CONV5, an acceptable model was achieved. All overall goodness-of-fit statistics were within acceptable ranges. For example, χ^2/df (1.565) was less than 5, GFI (.999), TLI (.998) and CFI (.998) were above .90, RMSEA (.024) was less than .08 and RMR (.010) was less than .05. Parameter estimates of the final measurement model were inspected and no problematic occasions were found. Table 5.8 shows that the standardized factor loadings of the remaining five items ranged from .65 to .91. All exceeded the minimum standardized loading .50 with three of them above the ideal criterion of .70 (Hair *et al.* 2006). The AVE was .59, exceeding the recommended level of .50 (Hair *et al.* 2006). The CR was .878, exceeding the threshold of .70 (Nunnally 1978). Taken together, items CONV1, CONV2, CONV3, CONV4 and CONV6 were considered to constitute a reliable and valid measurement scale for perceived convenience, and these four items were retained for constructing the overall measurement model.

Table 5.8 Preliminary Data Analysis- Perceived Convenience (CONV)

<i>Step One - Exploratory</i>						
Indicators	Wording					EFA Loadings
CONV1	Save time by shopping on the Internet					.77
CONV2	Shop online where I can reduce my efforts					.84
CONV3	Convenient to search product information					.87
CONV4	Shop on the Internet at home					.81
CONV5	Buy things on the Internet at any time					.77
CONV6	Assess online shopping experience as convenience					.79
Reliability	0.89					KMO .838
Variance Explained	65.60					Bartlett's .000
	CONV1	CONV2	CONV3	CONV4	CONV5	CONV6
CONV1	1.00					
CONV2	.725	1.00				
CONV3	.624	.773	1.00			
CONV4	.484	.529	.665	1.00		
CONV5	.440	.457	.554	.693	1.00	
CONV6	.483	.561	.587	.575	.646	1.00
<i>Step Two – Confirmatory</i>						
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR	
CONV1	.68	--	--	.59	.878	
CONV2	.85	.045	27.97*			
CONV3	.91	.059	22.36*			
CONV4	.73	.058	19.78*			
CONV5	n/a	n/a	n/a			
CONV6	.65	.052	18.68*			
Model Fit	Statistic	Model Fit	Statistic			
χ^2	1.565	TLI	.998			
df	1	CFI	.998			
P	.211	RMSEA	.024			
GFI	.999	RMR	.010			

* $p < .001$

5.5.8 Preliminary Analysis – Privacy and Security Concerns

Five items (PSC1 to PSC5) were used to measure the privacy and security concerns construct. All of the items were included in the two-step preliminary data analysis process shown in Figure 5.1, the results of which are displayed in Table 5.9. Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.865) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed.

In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .85 to .93 and the variance explained was 79%. Cronbach's alpha of .93 was computed indicating good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the five items retained from Step One. Statistics indicating a good fit of the measurement model included χ^2/df (1.417) which was less than 5, GFI (.968), TLI (.975) and CFI (.971), which were above .90. RMSEA (.026) was less than .08 and RMR (.005) was less than .05. In addition, as shown in Table 5.9, the standardized factor loadings of the five items ranged from .73 to .96, all exceeding the preferable criterion of .70 (Hair *et al.* 2006). The AVE was .71, exceeding the recommended criterion of .50 (Hair *et al.* 2006). The CR was .922, exceeding the recommended benchmark of .70 (Nunnally 1978). Thus, items PSC1 to PSC5 were considered to provide a reliable and valid measurement scale for the construct, privacy and security concerns. All five items were retained for constructing the overall measurement model.

Table 5.9 Preliminary Data Analysis- Privacy and Security Concerns (PSC)

<i>Step One - Exploratory</i>							
Wording	EFA Loadings		PSC1	PSC2	PSC3	PSC4	PSC5
Concerned over the security of personal information exchange via the Internet	.85	PSC1	1.00				
Concerned that my personal information may be shared	.93	PSC2	.790	1.00			
Concerned that it may be read or stored by some other person/entity	.92	PSC3	.702	.853	1.00		
Worried about the security of financial transactions	.89	PSC4	.632	.760	.818	1.00	
Uncomfortable giving my credit card number via the Internet	.85	PSC5	.653	.705	.711	.738	1.00
Reliability	0.93	KMO					.865
Variance Explained	79.00	Bartlett's					.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
PSC1	.73	--	--	.71	.922
PSC2	.89	.035	35.81*		
PSC3	.96	.047	29.31*		
PSC4	.85	.046	26.91*		
PSC5	.74	.040	26.32*		

Model Fit	Statistic	Model Fit	Statistic
χ^2	4.251	TLI	.975
df	3	CFI	.971
P	.519	RMSEA	.026
GFI	.968	RMR	.005

* $p < .001$

5.5.9 Preliminary Analysis – Environmental Uncertainty

The environmental uncertainty construct was measured by seven items (EUN1 to EUN7). The two-step preliminary data analysis process shown in Figure 5.1 was employed as a screening mechanism for data measured by these items (refer Table 5.10 for results). Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.856) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which

produced a single factor structure with strong item loading ranging from .69 to .86 and the variance explained was 62.50%. Cronbach's alpha of .90 was computed indicating good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

The seven items (retained from Step One) measuring environmental uncertainty were subjected to CFA in Step Two (refer Figure 5.1) of the preliminary analysis. The model fit indices indicated that this measurement model poorly fit the data ($\chi^2/df = 50.468 > 5$, GFI = .812 < .90, TLI = .757 < .90, CFI = .838 < .90, RMSEA = .227 < .08, and RMR = .174 > .05). After the initial model assessment, the model was modified according to the modification indices to improve model fit (Hair *et al.* 2006). Indicators which were related to larger reductions of chi-square were identified and eliminated one by one. After removing three items (EUN5, EUN6, EUN7), the revised model of environmental uncertainty provided a better fit to the data than the initial model. For example, χ^2/df (1.729) was less than 5, GFI (.998), TLI (.998) and CFI (.997) were above .90, RMSEA (.028) was less than .08 and RMR (.009) was less than .05. As displayed in Table 5.10, the standardized factor loadings of the remaining four items ranged from .67 to .96. All exceeded the acceptable level of .50 with three of them above the preferable cutoff of .70 (Hair *et al.* 2006). The AVE for this construct was .67, exceeding the recommended level of .50 (Hair *et al.*, 1995). The CR was .889, exceeding the recommended benchmark of .70 (Nunnally 1978). Taken together, items EUN1 to EUN4 were considered to provide a reliable and valid measurement scale for environmental uncertainty. Therefore, these four items were retained for constructing the overall measurement model.

Table 5.10 Preliminary Data Analysis- Environmental Uncertainty (EUN)

<i>Step One - Exploratory</i>							
Indicators	Wording						EFA Loadings
EUN1	Difficult to be assured that the existing laws and regulations are good enough to protect me from problems on the Internet						.78
EUN2	Difficult to be assured that the existing laws and regulations are adequate for the protection of my interest						.84
EUN3	Difficult to determine whether the existing laws and regulations can well regularize the online vendors' behaviour						.86
EUN4	Difficult to determine whether media reports are credible and authentic						.85
EUN5	Difficult to be assured that media reports can well supervise online vendors						.69
EUN6	Difficult to be assured that online reviews are always authentic and credible						.78
EUN7	Difficult to determine whether online reviews provide facts in support of their position						.73
Reliability	0.90						KMO .856
Variance Explained	62.50						Bartlett's .000
	EUN1	EUN2	EUN3	EUN4	EUN5	EUN6	EUN7
EUN1	1.00						
EUN2	.761	1.00					
EUN3	.641	.775	1.00				
EUN4	.559	.655	.776	1.00			
EUN5	.403	.419	.444	.501	1.00		
EUN6	.483	.527	.558	.636	.510	1.00	
EUN7	.413	.432	.461	.519	.651	.619	1.00
<i>Step Two – Confirmatory</i>							
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR		
EUN1	.67	--	--	.67	.889		
EUN2	.81	.038	30.79*				
EUN3	.96	.058	23.99*				
EUN4	.81	.053	22.62*				
EUN5	n/a	n/a	n/a				
EUN6	n/a	n/a	n/a				
EUN7	n/a	n/a	n/a				
Model Fit	Statistic	Model Fit		Statistic			
χ^2	1.729	TLI		.998			
df	1	CFI		.997			
P	.189	RMSEA		.028			
GFI	.999	RMR		.009			

* $p < .001$

5.5.10 Preliminary Analysis – Perceived Consumer TCs

Seventeen items were used to measure the perceived consumer TCs construct. These items were subjected to the two-step preliminary data analysis process shown in Figure 5.1, the

results of which are displayed in Table 5.11. Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.937) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted and found that PRTC1, COTC4 and POTC1 loaded on two factors. After eliminating these three items, EFA then produced a three-factor solution for the fourteen remaining items explaining 76.95% of the variance, with factor loadings ranging between .63 and .87 and reliability of .93.

The first factor, composed of seven items, accounted for 35.04% of the variance explained. The seven items loading on this factor reflected post-TCs with item loadings ranging from .77 to .90. Cronbach's alpha for Factor 1 was .94, indicating good reliability of the scale. Accounting for 22.95% of the variance explained, Factor 2 included four items related to pre-TCs. Factor loadings of these four items ranged from .84 to .91 and Cronbach's alpha of .91 indicated an internal reliability. The three items loading on Factor 3 were related to contemporaneous TCs. The variance explained by this factor was 18.96% with strong item loading ranging from .86 to .93, and Cronbach's alpha was .88, exceeding the threshold of .70 (Nunnally 1978). At this point, as all the remaining fourteen items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the three-factor structure with fourteen items retained from Step One. The model fit indices indicated that this measurement model poorly fit the data ($\chi^2/df = 12.565 > 5$, GFI = .873 < .90, RMSEA = .110 > .08, and RMR = .155 > .05). It was apparent that some modification in specification was needed to

improve the model. By investigating modification indices, indicators which were related to larger reductions of chi-square (Anderson and Gerbing 1988) were identified and eliminated one by one. After removing four items (PRTC2, POTC2, POTC7 and POTC8), an acceptable model was achieved. All overall goodness-of-fit statistics were within acceptable ranges. For example, χ^2/df (3.73) was less than 5, GFI (.979), TLI (.984) and CFI (.990) were above .90, and RMSEA (.053) was less than .08. RMR, however, was computed at .075 and, although it was above the .05 cut-off, this statistic was considered acceptable given the large sample size (962). By looking at the CFA fit indices results as a whole, it indicated a reasonable fit for the modified measurement model. Table 5.11 shows the second-order measurement model in which perceived consumer TCs was the second-order construct with three first-order constructs (pre-TCs, contemporaneous TCs, post-TCs) as indicators. The standardized factor loadings of the three first-order constructs used to measure the second-order construct (perceived consumer TCs) ranged from .78 to .85, all exceeding the preferable criterion of .70 (Hair *et al.* 2006). The AVE for the second-order construct was .66, exceeding the recommended level of .50 (Hair *et al.* 2006). The CR of the second-order construct was .854, exceeding the threshold value of .70 (Nunnally 1978). More specifically, by inspecting each first-order construct and its corresponding indicators, it can be found that the standardized factor loadings of all items were relatively high and significant, ranging between .77 and .92, and the AVE for the all first-order constructs exceeded the recommended level of .70, ranging from .70 (pre-TCs) to .77 (contemporaneous TCs). CR of all first-order constructs exceeded the recommended benchmark of .70, ranging from .874 (pre-TCs) to .925 (post-TCs). Taken together, this three-factor model was considered to constitute a reliable and valid measurement scale for perceived consumer TCs, and it was retained for the overall measurement theory model.

Table 5.11 Preliminary Data Analysis- Perceived Consumer TCs (TCS)

<i>Step One - Exploratory</i>																
Constructs/Indicators	Wording											EFA Loadings				
Factor 2 (pre-TCs)																
PRTC1	Took time and effort to connect to the Internet											n/a (cross-loading problem)				
PRTC2	Took time and effort to navigate											.68				
PRTC3	Spent a lot of time and effort getting information											.87				
PRTC4	Spent a lot of time and effort searching											.86				
PRTC5	Spent a lot of time and effort getting familiar											.73				
Factor 3 (contemporaneous TCs)																
COTC1	Spent a lot of time and effort assessing the credibility											.76				
COTC2	Spent a lot of time and effort placing an order											.88				
COTC3	Took time and effort to complete the online payment											.80				
COTC4	Took time to wait for this product											n/a (cross-loading problem)				
Factor 1 (post-TCs)																
POTC1	Spent a lot of time and effort checking the status											n/a (cross-loading problem)				
POTC2	Spent a lot of time and effort contacting											.63				
POTC3	Spent a lot of time and effort monitoring											.75				
POTC4	Spent a lot of time and effort resolving problems											.84				
POTC5	Spent a lot of time and effort returning and replacing											.84				
POTC6	Took time and effort to deal with unpredictable events											.84				
POTC7	Took time and effort to make changes to orders											.79				
POTC8	Took time and effort to arrange another time											.77				
Reliability	0.93											KMO .937				
Variance Explained	76.95											Bartlett's .000				
	PRT C1	PRT C2	PRT C3	PRT C4	PRT C5	COT C1	COT C2	COT C3	POT C1	POT C2	POT C3	POT C4	POT C5	POT C6	POT C7	POT C8
PRT C1	1.00															
PRT C2	.739	1.00														
PRT C3	.586	.728	1.00													
PRT C4	.511	.628	.807	1.00												
PRT C5	.605	.645	.687	.752	1.00											
COT C1	.485	.535	.506	.507	.524	1.00										
COT C2	.558	.528	.445	.429	.527	.719	1.00									
COT C3	.569	.536	.475	.466	.547	.628	.798	1.00								
POT C1	.490	.531	.521	.509	.525	.490	.542	.588	1.00							
POT C2	.461	.528	.513	.514	.515	.459	.456	.505	.762	1.00						
POT C3	.529	.567	.498	.514	.571	.469	.491	.567	.697	.707	1.00					
POT C4	.489	.522	.472	.494	.545	.441	.469	.536	.627	.644	.803	1.00				
POT C5	.488	.539	.479	.495	.543	.432	.467	.530	.597	.587	.739	.819	1.00			
POT C6	.471	.538	.478	.490	.511	.428	.455	.511	.595	.578	.682	.760	.808	1.00		
POT C7	.497	.533	.493	.472	.525	.436	.497	.512	.583	.575	.640	.674	.715	.769	1.00	
POT C8	.452	.489	.445	.482	.488	.421	.438	.448	.541	.570	.599	.656	.661	.705	.747	1.00

Step Two – Confirmatory

Constructs/Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
TCS – Second-order construct					
PRTC	.85	--	--	.66	.854
COTC	.78	.059	16.87*		
POTC	.80	.059	17.08*		
PRTC – first-order construct					
PRTC2	n/a	n/a	n/a	.70	.874
PRTC3	.77	--	--		
PRTC4	.83	.030	36.49*		
PRTC5	.90	.044	25.40*		
COTC – first-order construct					
COTC1	.85	--	--	.77	.911
COTC2	.85	.038	26.83*		
COTC3	.94	.040	28.05*		
POTC – first-order construct					
POTC2	n/a	n/a	n/a	.76	.925
POTC3	.85	--	--		
POTC4	.92	.027	39.78*		
POTC5	.88	.036	29.73*		
POTC6	.82	.036	27.18*		
POTC7	n/a	n/a	n/a		
POTC8	n/a	n/a	n/a		
Model Fit	Statistic	Model Fit	Statistic		
χ^2	104.41	TLI	.984		
df	28	CFI	.990		
P	.000	RMSEA	.053		
GFI	.979	RMR	.075		

* $p < .001$

5.5.11 Preliminary Analysis – Customer Satisfaction

The customer satisfaction construct was measured by seven items (CSAT1 to CSAT3). The two-step preliminary data analysis process shown in Figure 5.1 was employed as a screening mechanism for data measured by these items (refer Table 5.12 for results). Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.916) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the

acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .91 to .92 and the variance explained was 85.40%. Cronbach's alpha of .91 was computed indicating good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the three items retained from Step One. Statistics indicating a good fit of the measurement model included χ^2/df (.622) which was less than 5, GFI (.974), TLI (.983) and CFI (.977), which were above .90. RMSEA (.004) was less than .08 and RMR (.028) was less than .05. As a result, the CFA results indicated that this measurement model provided a very good fit to the data. Moreover, table 5.12 lists that the standardized factor loadings of the three items ranged from .85 to .93, all exceeding the preferable cutoff of .70 (Hair *et al.* 2006). The AVE for this construct was .78, exceeding the recommended criterion of .50 (Hair *et al.* 2006). The CR was .916, exceeding the threshold of .70 (Nunnally 1978). Therefore, items CSAT1 to CSAT3 were considered to provide a reliable and valid measurement scale for the construct, customer satisfaction. All five items were retained for constructing the overall measurement model.

Table 5.12 Preliminary Data Analysis- Customer Satisfaction (CSAT)

<i>Step One - Exploratory</i>					
Wording	EFA Loadings		CSAT1	CSAT2	CSAT3
My choice was a wise one	.92	CSAT1	1.00		
Satisfied with the online store	.94	CSAT2	.818	1.00	
I did the right thing	.91	CSAT3	.740	.776	1.00
Reliability	0.91	KMO			.749
Variance Explained	85.40	Bartlett's			.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
CSAT1	.88	021	45.04*	.78	.916
CSAT2	.93	--	--		
CSAT3	.85	021	45.04*		
Model Fit	Statistic	Model Fit	Statistic		
χ^2	.622	TLI	.983		
df	1	CFI	.977		
P	.430	RMSEA	.004		
GFI	.974	RMR	.028		

* $p < .001$

5.5.12 Preliminary Analysis – Customer Loyalty

Five items (LOY1 to LOY5) were used to measure customer loyalty. These items were subjected to the two-step preliminary data analysis process shown in Figure 5.1, the results of which appear in Table 5.13. Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.867) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .84 to .91 and the variance explained was 78.63%. Cronbach's alpha of .93 was computed indicating good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the five items retained from Step One which resulted in all computed statistics indicating a good fit for the measurement model. For example, χ^2/df (4.227) was less than 5, GFI (.997), TLI (.992) and CFI (.998) were above .90, RMSEA (.058) was less than .08 and RMR (.019) was less than .05. Moreover, as shown in Table 5.13, the standardized factor loadings of the five items ranged from .70 to .94, all reaching the preferable level of .70 (Hair *et al.* 2006). The AVE for this construct was .70, exceeding the recommended cutoff of .50 (Hair *et al.* 2006). The CR was .920, exceeding the recommended benchmark of .70 (Nunnally 1978). Thus, items LOY1 to LOY5 were considered to constitute a reliable and valid measurement scale for customer loyalty, and all five items were retained for the overall measurement model.

Table 5.13 Preliminary Data Analysis- Customer Loyalty (LOY)

<i>Step One - Exploratory</i>							
Wording	EFA Loadings		LOY1	LOY2	LOY3	LOY4	LOY5
This online store is my first choice	.88	LOY1	1.00				
Recommend this online store	.91	LOY2	.820	1.00			
Encourage other friends	.91	LOY3	.753	.822	1.00		
I doubt that I would switch	.89	LOY4	.686	.718	.772	1.00	
This online store is the best one	.84	LOY5	.636	.653	.690	.773	1.00
Reliability	0.93		KMO				.867
Variance Explained	78.63		Bartlett's				.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
LOY1	.87	--	--	.70	.920
LOY2	.94	.026	41.23*		
LOY3	.87	.027	36.72*		
LOY4	.77	.034	25.55*		
LOY5	.70	.031	29.37*		
Model Fit	Statistic	Model Fit		Statistic	
χ^2	8.453	TLI		.992	
df	2	CFI		.998	
P	.015	RMSEA		.058	
GFI	.997	RMR		.019	

* $p < .001$

5.5.13 Preliminary Analysis – Consumer’s Risk-Bearing Propensity

The consumer’s risk-bearing propensity construct was measure by five items (RISK1 to RISK5). The two-step preliminary data analysis process shown in Figure 5.1 was employed as a screening mechanism for data measured by these items (refer Table 5.14 for results). Evaluation of the correlation matrix through the KMO and Bartlett’s Test results in a high KMO statistic (.812) and a significant probability level ($p < .001$) for the Bartlett’s test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item loading ranging from .71 to .87 and the variance explained was 62.28%. Cronbach’s alpha of .85 indicated good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

The five items (retained from Step One) measuring consumer’s risk-bearing propensity were subjected to CFA in Step Two (refer Figure 5.1) of the preliminary analysis. The results indicated a good fit of the measurement model, for example, χ^2/df (3.867) was less than 5, GFI (.997), TLI (.986) and CFI (.997) were greater than .90, RMSEA (.055) was less than .08 and RMR (.020) was less than .05. Moreover, Table 5.14 shows that the standardized factor loadings of the five items ranged from .55 to .87. All exceeded the minimum standardized loading of .50, with two of them exceeding the ideal criterion of .70 (Hair *et al.* 2006). The AVE was .51, exceeding the recommended level of .50 (Hair *et al.* 2006). The CR was .833, exceeding the recommended criterion of .70 (Nunnally 1978). As a result, items RISK1 to RISK5 were considered to provide a reliable and valid measurement scale for the construct,

consumer's risk-bearing propensity. All five items were retained for the overall measurement model.

Table 5.14 Preliminary Data Analysis- Consumer's Risk-Bearing Propensity (RISK)

<i>Step One - Exploratory</i>							
Wording	EFA Loadings		RISK 1	RISK 2	RISK 3	RISK 4	RISK 5
I am usually among the first to try	.71	RISK1	1.00				
I like to buy newer and different things	.84	RISK2	.533	1.00			
I like to try new and different places	.87	RISK3	.477	.713	1.00		
I would not mind taking a risk	.73	RISK4	.355	.468	.643	1.00	
I enjoy buying unfamiliar brands	.77	RISK5	.495	.561	.555	.445	1.00
Reliability	0.85	KMO					.812
Variance Explained	62.28	Bartlett's					.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
RISK1	.60	--	--	.51	.833
RISK2	.87	.076	18.39*		
RISK3	.82	.072	18.32*		
RISK4	.55	.061	17.64*		
RISK5	.66	.068	13.67*		

Model Fit	Statistic	Model Fit	Statistic
χ^2	7.735	TLI	.986
df	2	CFI	.997
P	.021	RMSEA	.055
GFI	.997	RMR	.020

* $p < .001$

5.5.14 Preliminary Analysis – Perceived Enjoyment

The perceived enjoyment was measured using five items (ENJ1 to ENJ5). These were subjected to the two-step preliminary data analysis process shown in Figure 5.1, the results of which are presented in Table 5.13. Evaluation of the correlation matrix through the KMO and Bartlett's Test results in a high KMO statistic (.857) and a significant probability level ($p < .001$) for the Bartlett's test. These results indicate that sufficient correlations were found within the correlation matrix for factor analysis to proceed. In addition, bivariate correlations were inspected and all coefficients fell within the acceptable range for factor analysis of .30 and .90. EFA was then conducted which produced a single factor structure with strong item

loading ranging from .80 to .90 and the variance explained was 75.12%. Cronbach's alpha of .92 indicated good reliability of the scale. At this point, as all the items met the criteria of Step One, they were retained for CFA analysis in Step Two.

In Step Two (refer Figure 5.1), CFA was conducted on the five items retained from Step One which resulted in all computed statistics indicating a very good fit of the measurement model. For instance, χ^2/df (1.188) was less than 5, GFI (.996), TLI (.998) and CFI (.997) were above .90, RMSEA (.014) was less than .08 and RMR (.008) was less than .05. In addition, as shown in Table 5.15, the standardized factor loadings of the five items ranged from .73 to .96, all exceeding the preferable criterion of .70 (Hair *et al.* 2006). The AVE for this construct was .66, exceeding the recommended level of .50 (Hair *et al.* 2006). The CR was .907, exceeding the threshold of .70 (Nunnally 1978). Thus, items ENJ1 to ENJ5 were considered to provide a reliable and valid measurement scale for perceived enjoyment, and all five items were retained for constructing the overall measurement model.

Having followed the sequential process of scale evaluation and scale verification as shown in Figure 5.1, all scale items retained for further analysis are argued to be both valid and reliable measures. The next analysis via AMOS 21.0 is to examine the overall measurement model which provides the basis for the hypotheses testing posed in this study.

Table 5.15 Preliminary Data Analysis- Perceived Enjoyment (ENJ)

<i>Step One - Exploratory</i>							
Wording	EFA		ENJ1	ENJ2	ENJ3	ENJ4	ENJ5
	Loadings						
My favourite leisure activities	.80	ENJ1	1.00				
When shopping online, I feel playful	.89	ENJ2	.722	1.00			
Assess online shopping as enjoyment	.90	ENJ3	.623	.769	1.00		
Enjoy shopping on the Internet	.90	ENJ4	.589	.714	.784	1.00	
Online shopping brings me happiness	.85	ENJ5	.567	.646	.689	.782	1.00
Reliability	0.92	KMO					.857
Variance Explained	75.12	Bartlett's					.000

<i>Step Two – Confirmatory</i>					
Indicators	CFA	Stand.	Critical	AVE	CR
	Stand. Loadings	Error	Ratio		
ENJ1	.68	--	--	.66	.907
ENJ2	.84	.042	28.61*		
ENJ3	.91	.053	24.41*		
ENJ4	.86	.054	23.52*		
ENJ5	.76	.050	22.04*		
Model Fit	Statistic	Model Fit		Statistic	
χ^2	2.375	TLI		.998	
df	2	CFI		.997	
P	.305	RMSEA		.014	
GFI	.996	RMR		.008	

* $p < .001$

5.6 OVERALL MEASUREMENT MODEL

The results of the scale by scale CFAs were used as the basis for constructing the overall measurement model. Specifically, the items retained from scale by scale CFAs (refer Step Two in Figure 5.1) in relation to nine antecedent variables, consumer TCs, customer satisfaction, customer loyalty, risk-bearing propensity and perceived enjoyment were used to construct the overall measurement model. The overall measurement model was established by performing a CFA via AMOS 21.0 using the maximum likelihood method (Byrne 2009). According to the two-stage model-building approach proposed by Anderson and Gerbing (1988), the researcher first tested the model fit, convergent validity and discriminant validity

of the measurement model as well as the common method variance in this section, then examined the research hypotheses and structural model framework in the next section. The statistical results of the overall measurement model are presented in Table 5.16, which includes the standardized factor loadings, their associated standard errors and critical ratio, the AVE for each construct, CR, and the key overall model fit statistics. Next, the results of testing the overall measurement model were reported.

Table 5.16 Results of the Measurement Model of Latent Variables

Construct/Indicator	Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
Internet Access Availability (IAA)				.65	.849
IAA1	.76	--	--		
IAA2	.86	.044	26.36*		
IAA3	.80	.054	20.38*		
Perceived Internet Expertise (EXP)				.71	.906
EXP1	.74	--	--		
EXP2	.87	.041	26.73*		
EXP3	.88	.041	27.13*		
EXP4	.87	.035	31.59*		
Product Quality Concern (PQC)				.75	.938
PQC1	.80	--	--		
PQC2	.83	.032	34.93*		
PQC3	.90	.039	32.71*		
PQC4	.94	.043	32.71*		
PQC5	.87	.042	31.05*		
Site Design (DES)				.65	.916
DES1	.71	--	--		
DES3	.79	.046	27.21*		
DES4	.81	.055	23.67*		
DES5	.88	.060	23.56*		
DES6	.83	.055	24.38*		
DES8	.80	.056	23.30*		
E-Service Quality (ESQ)				.63	.838
REL	.81	--	--		
RESP	.79	.043	21.46*		
PERS	.78	.041	23.41*		
Reputation of Online Store (REP)				.66	.886
REP1	.80	--	--		
REP2	.82	.032	31.40*		
REP3	.84	.038	27.28*		
REP4	.80	.037	25.53*		
Perceived Convenience (CONV)				.61	.887
CONV1	.73	--	--		
CONV2	.86	.041	29.46*		
CONV3	.88	.047	25.73*		
CONV4	.73	.051	21.43*		
CONV6	.69	.047	20.44*		
Privacy and Security Concerns (PSC)				.73	.931
PSC1	.77	--	--		
PSC2	.91	.033	37.21*		
PSC3	.93	.040	31.68*		
PSC4	.87	.041	29.22*		
PSC5	.79	.038	27.94*		
Environmental Uncertainty (EUN)				.66	.884
EUN1	.70	--	--		
EUN2	.78	.036	29.53*		
EUN3	.88	.050	24.52*		
EUN4	.88	.051	24.54*		
Perceived Consumer TCs (TCS)				.67	.856
PRTC	.86	--	--		
COTC	.78	.047	19.91*		

POTC	.80	.047	20.14*		
Customer Satisfaction (CSAT)				.78	.916
CSAT1	.89	--	--		
CSAT2	.91	.024	42.86*		
CSAT3	.86	.026	37.87*		
Customer Loyalty (LOY)				.71	.923
LOY1	.83	--	--		
LOY2	.85	.025	40.97*		
LOY3	.86	.031	33.40*		
LOY4	.85	.033	32.46*		
LOY5	.80	.035	29.82*		
Risk-Bearing Propensity (RISK)				.52	.843
RISK1	.75	--	--		
RISK2	.78	.043	23.12*		
RISK3	.76	.043	22.54*		
RISK4	.61	.049	16.72*		
RISK5	.71	.045	20.52*		
Perceived Enjoyment (ENJ)				.67	.910
ENJ1	.71	--	--		
ENJ2	.81	.039	28.43*		
ENJ3	.86	.048	24.75*		
ENJ4	.88	.051	25.07*		
ENJ5	.83	.050	23.48*		
Model Fit					
χ^2	5609.781	TLI		.946	
df	2415	CFI		.950	
P	.000	RMSEA		.037	
GFI	.914	RMR		.116	

* $p < .001$

5.6.1 Overall Model Fit

The key overall model fit statistics were: $\chi^2=5609.781$ with 2415 degrees of freedom ($p = 0.000$). The χ^2/df (1.081) was less than 5. As suggested by Hair et al. (2006), the model fit should rely on at least one absolute fit index and one incremental fit index, in addition to the χ^2 goodness-of-fit test statistic. The value for RMSEA, an absolute fit index, was .035 which fell into acceptable value range ($< .08$) (Hair et al. 2006). CFI, an incremental fit index, was .950 which exceeded the CFI guideline of .90 for a model of this complexity and sample size (Hair et al. 2006). Thus, the results indicate a good fit for the overall measurement model. Further, using the RMSEA and CFI satisfied the “rule of thumb” of Hair et al. (2006) that both a badness-of-fit index and a goodness-of-fit index be evaluated. In addition, the other index values were also supportive. For example, the GFI was .914, the TLI was .946, exceeding the fit criteria of .90 (Hair et al. 2006).

5.6.2 Convergent Validity

Convergent validity detects whether the measures of a construct are more correlated with one another than with measures of other constructs (Balabanis *et al.* 2006). It can be evaluated in three ways i.e., by inspecting the AVE for each construct, by evaluating the strength and significance of the factor loadings, and by examining the CRs.

As suggested by Fornell and Larcker (1981), convergent validity is achieved if the AVE in items by their respective construct is greater than the variance unexplained ($AVE > .50$). The results in the table 5.16 indicated that the AVEs for all constructs exceeded .50. Specifically, the AVE for these constructs are as follows -- Internet access availability (.65), perceived Internet expertise (.70), product quality concern (.75), site design (.65), e-service quality (.63), reputation of online store (.66), perceived convenience (.61), privacy and security concerns (.73), environmental uncertainty (.66), consumer TCs (.67), customer satisfaction (.78), customer loyalty (.71), risk-bearing propensity (.52) and perceived enjoyment (.67).

In addition, convergent validity can also be assessed by factor loadings. Following the recommendations of Hair *et al.* (2006), factor loadings should be greater than .50 and critical ratios should be greater than 1.96. As shown in the table 5.16, all of the standardized item loadings were larger than 0.5 and critical ratio values exceeded 1.96, indicating that all loadings are significant at 0.001. Therefore the results provided another support for a high degree of convergence.

The reliability of the constructs was estimated by CR. The CRs for all constructs in table 5.16 was above the recommended .70 level (Bagozzi *et al.* 1991). Thus, the reliability was confirmed for these constructs. The CR of each of the constructs is as follows -- Internet

access availability (.849), perceived Internet expertise (.906), product quality concern (.938), site design (.916), e-service quality (.838), reputation of online store (.886), perceived convenience (.887), privacy and security concerns (.931), environmental uncertainty (.884), consumer TCs (.856), customer satisfaction (.916), customer loyalty (.923), consumer's risk-bearing propensity (.843) and perceived enjoyment (.910). In summary, the reliability and convergent validity of the constructs were satisfactory.

5.6.3 Discriminant Validity

Discriminant validity refers to the degree to which a construct differs from other constructs (Hair *et al.* 2006). An approach for establishing discriminant validity is to compare the χ^2 difference which involved 91 comparisons of the constrained and unconstrained measurement models of all construct pairs. For example, the phi value for each pair of the fourteen latent variables in the unconstrained measurement models were constrained to 1, one at a time, and then χ^2 difference was calculated for each pair of unconstrained and constrained models (Li and Dant 1997). The results of these comparisons appear in Table 5.17. Of the 91 comparisons conducted, 5 comparisons did not pass the χ^2 difference test (i.e., $\Delta\chi^2 > 3.841$, $p > .01$), thus indicating that the constructs did not discriminate. It can be found that all of the five failed comparisons (EXP-DES, DES-ESQ, DES-LOY, PSC-EUN, and EUN-TCS) involved the site design (DES) and environmental uncertainty (EUN) constructs, clearly indicating that these two measures were problematic. On this basis, site design (DES) and environmental uncertainty (EUN) were eliminated from all further analyses.

Table 5.17 Results of Discriminant Analysis

Comparisons		Constrained model		Unconstrained model		Chi-square difference		Discriminant validity	
		χ^2	<i>df</i>	χ^2	<i>df</i>	$\Delta\chi^2$	Δdf		
EXP	IAA	90.63	14	47.11	13	43.52	1	Yes	
	PQC	614.17	23	141.60	22	472.57	1	Yes	
	DES	151.52	29	149.14	28	2.38	1	No	
	ESQ	169.10	58	157.59	57	11.51	1	Yes	
	REP	60.11	18	47.12	17	12.99	1	Yes	
	CONV	126.59	22	113.98	21	12.61	1	Yes	
	PSC	771.83	22	81.28	21	690.55	1	Yes	
	EUN	633.46	18	61.85	17	571.61	1	Yes	
	TCS	1130.27	69	287.11	68	843.16	1	Yes	
	CSAT	76.59	14	71.89	13	4.70	1	Yes	
	LOY	74.21	23	68.35	22	5.86	1	Yes	
	RISK	336.07	23	254.34	22	81.73	1	Yes	
	ENJ	138.96	23	110.39	22	28.57	1	Yes	
	IAA	PQC	700.81	17	68.67	16	632.14	1	Yes
DES		204.16	23	95.18	22	108.98	1	Yes	
ESQ		112.69	48	100.75	47	11.94	1	Yes	
REP		115.82	14	45.45	13	70.37	1	Yes	
CONV		183.24	17	97.61	16	85.63	1	Yes	
PSC		896.16	17	79.39	16	816.77	1	Yes	
EUN		858.35	14	69.35	13	789	1	Yes	
TCS		997.29	58	175.39	57	821.90	1	Yes	
CSAT		136.77	12	108.65	11	28.12	1	Yes	
LOY		81.89	18	61.87	17	20.02	1	Yes	
RISK		325.38	18	132.72	17	192.66	1	Yes	
ENJ		218.11	18	107.28	17	110.83	1	Yes	
PQC		DES	1651.52	35	145.22	34	1506.30	1	Yes
		ESQ	1188.28	67	138.26	66	1050.02	1	Yes
	REP	884.35	22	99.91	21	784.44	1	Yes	
	CONV	667.03	27	97.44	26	569.59	1	Yes	
	PSC	181.04	27	171.78	26	9.26	1	Yes	
	EUN	106.49	22	87.01	21	19.48	1	Yes	
	TCS	300.54	79	294.48	78	6.06	1	Yes	
	CSAT	949.54	17	49.47	16	900.07	1	Yes	
	LOY	1006.02	28	187.82	27	818.20	1	Yes	
	RISK	1048.82	28	132.46	27	916.36	1	Yes	
	ENJ	802.52	28	72.97	27	729.55	1	Yes	
	DES	ESQ	296.82	79	296.43	78	0.39	1	No
		REP	175.11	29	167.92	28	7.19	1	Yes
		CONV	194.26	35	168.09	34	26.17	1	Yes
PSC		1481.24	35	162.03	34	1319.21	1	Yes	
EUN		1013.75	29	96.03	28	917.72	1	Yes	
TCS		1555.67	92	312.36	91	1243.31	1	Yes	
CSAT		125.48	23	117.98	22	7.50	1	Yes	
LOY		225.15	36	224.11	35	1.04	1	No	
RISK		334.40	36	283.37	35	51.03	1	Yes	
ENJ		180.10	36	143.60	35	36.50	1	Yes	

ESQ	REP	340.64	58	335.20	57	5.44	1	Yes	
	CONV	204.68	67	199.62	66	5.06	1	Yes	
	PSC	1435.61	67	179.08	66	1256.53	1	Yes	
	EUN	996.49	58	158.14	57	838.35	1	Yes	
	TCS	1646.66	139	348.78	138	1297.88	1	Yes	
	CSAT	173.44	49	99.01	48	74.43	1	Yes	
	LOY	276.68	68	231.69	67	44.99	1	Yes	
	RISK	311.20	68	302.06	67	9.14	1	Yes	
	ENJ	194.45	68	189.04	67	5.41	1	Yes	
REP	CONV	136.78	22	115.31	21	21.47	1	Yes	
	PSC	1129.43	22	102.80	21	1026.63	1	Yes	
	EUN	813.93	18	96.81	17	717.12	1	Yes	
	TCS	1259.91	69	202.48	68	1057.43	1	Yes	
	CSAT	83.91	14	59.44	13	24.47	1	Yes	
	LOY	165.29	23	156.98	22	8.31	1	Yes	
	RISK	241.09	23	199.05	22	42.04	1	Yes	
	ENJ	123.50	23	100.96	22	22.54	1	Yes	
	CONV	PSC	940.32	27	100.49	26	839.83	1	Yes
EUN		945.67	22	262.09	21	683.58	1	Yes	
TCS		1263.51	79	272.07	78	991.44	1	Yes	
CSAT		120.48	17	115.86	16	4.62	1	Yes	
LOY		115.80	28	111.69	27	4.11	1	Yes	
RISK		345.74	28	272.65	27	73.09	1	Yes	
ENJ		322.86	28	299.08	27	23.78	1	Yes	
PSC		EUN	139.47	22	136.01	21	3.46	1	No
		TCS	287.98	79	283.94	78	4.04	1	Yes
	CSAT	1205.44	17	83.02	16	1122.42	1	Yes	
	LOY	1307.47	28	151.68	27	1155.79	1	Yes	
	RISK	1178.15	28	207.34	27	970.81	1	Yes	
EUN	ENJ	1034.89	28	131.95	27	902.94	1	Yes	
	TCS	249.75	69	246.91	68	2.84	1	No	
	CSAT	1431.70	14	442.92	13	988.78	1	Yes	
	LOY	826.84	23	127.28	22	699.56	1	Yes	
	RISK	1565.81	23	460.46	22	1105.35	1	Yes	
TCS	ENJ	941.32	23	116.25	22	825.07	1	Yes	
	CSAT	1448.55	59	174.66	58	1273.89	1	Yes	
	LOY	1498.68	80	267.80	79	1230.88	1	Yes	
	RISK	1340.42	80	446.54	79	893.88	1	Yes	
	ENJ	1206.74	80	220.67	79	986.07	1	Yes	
CSAT	LOY	357.56	18	217.95	17	139.61	1	Yes	
	RISK	186.71	18	181.75	17	4.96	1	Yes	
	ENJ	92.64	18	86.25	17	6.39	1	Yes	
LOY	RISK	262.37	29	248.79	28	13.58	1	Yes	
	ENJ	156.14	29	151.40	28	4.74	1	Yes	
RISK	ENJ	247.89	29	190.12	28	57.77	1	Yes	

5.6.4 Model Fit for New Measurement Model

Due to unsatisfactory discriminant validity, DES and EUN were removed from the initial overall measurement model. The modified overall measurement model consisted of twelve constructs. Re-estimation of the model was conducted to check whether the new measurement model provides a good fit to the data and the measures have sufficient convergent and discriminant validity.

As shown in Table 5.18, the key overall model fit statistics were: $\chi^2=3839.698$ with 1779 degrees of freedom ($p<0.001$). The χ^2/df (2.158) falls within the suggested value of 5 or below. In addition, the other indices satisfied the recommended value (CFI= 0.932, GFI = 0.963, TLI = 0.959, RMSEA = 0.035). Therefore, there was a reasonable overall fit between the model and the observed data.

Table 5.18 Results of the New Measurement Model of Latent Variables

Construct/Indicator	Stand. Loadings	Stand. Error	Critical Ratio	AVE	CR
Internet Access Availability (IAA)				.65	.848
IAA1	.76	--	--		
IAA2	.86	.044	26.27*		
IAA3	.81	.054	20.31*		
Perceived Internet Expertise (EXP)				.71	.906
EXP1	.74	--	--		
EXP2	.87	.041	26.71*		
EXP3	.88	.041	27.14*		
EXP4	.87	.035	31.57*		
Product Quality Concern (PQC)				.75	.938
PQC1	.80	--	--		
PQC2	.83	.032	34.89*		
PQC3	.90	.039	32.67*		
PQC4	.94	.043	32.69*		
PQC5	.87	.042	31.03*		
E-Service Quality (ESQ)				.64	.839
REL	.81	--	--		
RESP	.79	.043	21.30*		
PERS	.79	.041	23.16*		
Reputation of Online Store (REP)				.66	.886
REP1	.80	--	--		
REP2	.82	.032	31.38*		
REP3	.84	.038	27.25*		
REP4	.80	.037	25.50*		
Perceived Convenience (CONV)				.59	.876
CONV1	.75	--	--		
CONV2	.78	.038	27.51*		
CONV3	.82	.044	24.58*		
CONV4	.72	.049	21.56*		
CONV6	.75	.048	20.99*		
Privacy and Security Concerns (PSC)				.73	.930
PSC1	.77	--	--		
PSC2	.91	.033	37.15*		
PSC3	.93	.041	31.61*		
PSC4	.87	.041	29.13*		
PSC5	.79	.038	27.87*		
Perceived Consumer Transaction Costs (TCS)				.67	.856
PRTC	.86	--	--		
COTC	.78	.047	19.93*		
POTC	.80	.047	20.15*		
Customer Satisfaction (CSAT)				.78	.916
CSAT1	.89	--	--		
CSAT2	.91	.024	42.84*		
CSAT3	.86	.026	37.83*		
Customer Loyalty (LOY)				.71	.923
LOY1	.83	--	--		
LOY2	.85	.025	40.88*		
LOY3	.86	.031	33.28*		
LOY4	.85	.033	32.46*		
LOY5	.81	.035	29.81*		
Risk-Bearing Propensity (RISK)				.51	.839
RISK1	.73	--	--		
RISK2	.73	.050	19.35*		
RISK3	.71	.050	18.72*		
RISK4	.69	.057	16.74*		
RISK5	.73	.051	19.50*		
Perceived Enjoyment (ENJ)				.66	.906
ENJ1	.73	--	--		
ENJ2	.81	.039	28.24*		
ENJ3	.83	.046	23.98*		
ENJ4	.85	.049	24.17*		
ENJ5	.84	.048	23.85*		
Model Fit					
χ^2	3839.698	TLI		.959	
df	1779	CFI		.963	
P	.000	RMSEA		.035	
GFI	.932	RMR		.102	

* $p < .001$

5.6.5 Construct Validity for New Model

Convergent validity of the new overall measurement model was rechecked. Similarly, the standardized factor loadings, AVE, and CR related to each construct were examined. As shown in Table 5.18, all estimated factor loadings were highly significant ($p < 0.001$ by inspecting the critical ratios) as required for convergent validity. All the factor loadings were relatively high and greater than the recommended 0.5, which indicated that convergent validity was supported (Bagozzi *et al.* 1991). Specifically, the lowest loading obtained was .69 linking item4 of risk-bearing propensity, and highest loading was .94 linking item4 of product quality concern. Moreover, the AVE for all constructs exceeded the recommended level of .50, ranging from .51 (risk-bearing propensity) to .78 (customer satisfaction) providing another support for convergent validity (Bagozzi *et al.* 1991). CRs of all constructs, ranging from .839 (e-service quality and risk-bearing propensity) to .938 (product quality concern), exceeded the recommended benchmark of .70, which also demonstrated the reliability of the proposed measures.

Discriminant validity was assessed in two ways. Firstly, following the method adopted by Fornell and Larcker (1981), discriminant validity is achieved if the square root of the AVE is higher than the correlations between two composite constructs. As indicated in Table 5.19, the constructs' square roots of AVE are consistently greater than the off-diagonal correlations. Secondly, based on the work of O'Cass and Ngo (2007), it is suggested that discriminant validity is exhibited when the corresponding correlation (the off-diagonal entries) is not greater than two constructs' respective reliability value. The results presented in Table 5.19 show that all individual correlations were lower than their respective reliabilities, which shows that discriminant validity is supported.

Table 5.19 Discriminant Validity (N=962)

	Internal Consistency	IAA	EXP	PQC	ESQ	REP	CONV	PSC	TCS	CSAT	LOY	RISK	ENJ
IAA	.848	.807											
EXP	.906	.623	.841										
PQC	.938	-.353	-.313	.868									
ESQ	.839	.599	.646	-.753	.797								
REP	.886	.585	.614	-.604	.591	.812							
CONV	.876	.622	.682	-.443	.674	.684	.765						
PSC	.930	-.496	-.505	.766	-.542	-.723	-.623	.853					
TCS	.856	-.642	-.645	.748	.639	-.783	-.559	.682	.816				
CSAT	.916	.582	.651	-.669	.637	.730	.539	-.668	-.566	.885			
LOY	.923	.595	.679	-.668	.639	.643	.552	-.699	-.570	.558	.840		
RISK	.839	.479	.485	-.649	.692	.662	.539	-.601	-.639	.514	.605	.715	
ENJ	.906	.552	.589	-.536	.647	.666	.553	-.656	-.641	.716	.736	.658	.812

Note: IAA=Internet Access Availability; EXP= Perceived Internet Expertise; PQC=Product Quality Concern; ESQ=E-Service Quality; REP= Reputation of Online Store; CONV=Perceived Convenience; PSC= Privacy and Security Concerns; TCS=Perceived Consumer Transaction Costs; CSAT=Customer Satisfaction; LOY= Customer Loyalty; RISK= Risk-bearing Propensity; ENJ=Perceived Enjoyment.

The bold numbers in the diagonal row are square roots of the AVE.

5.6.6 Common Method Variance

As single sources of information can introduce spurious relationships among the variables, and as this study collected data via the same method (self-report scales), the need to test for common method variance was warranted. The Harman's one-factor test through EFA and CFA was performed to assess the severity of common method variance.

Firstly, through EFA, all items, presumably measuring a variety of different constructs, were subjected to a single factor analysis. Using this approach, sixteen factors were extracted with eigenvalues greater than 1 and the variance explained was 78.17 per cent. The first factor accounted for 35.53 per cent of the variance with the second factor accounting for 8.79 per cent and the remaining fourteen factors sharing 33.85 per cent of the variance. As there was not one factor (or a common factor underlying the data) and as the majority of the variance was not accounted for by one general factor, a substantial amount of common method variance was not evident.

Secondly, the study conducted a CFA to assess the fit of a single factor model (all items loading on one factor). The single-factor model showed very poor fit ($\chi^2/df = 16.38$; GFI= 0.67; CFI= 0.51; CFI = 0.44; TLI= 0.57; RMSEA=0.18; RMR=0.36). The original twelve factor model provided a significantly better fit to the data than a single-factor model (see table 5.20). With both tests, it can be concluded that the problem of common method bias was not evident in this research.

The re-verification of convergent and discriminant validity and a test for common method variance completed the final phase of the overall measurement model analysis. The next

section is dedicated to describing the basic structural model that was established upon the new overall measurement model.

Table 5.20 Results of Harman’s Single Factor Test

Model	χ^2 (<i>p</i> -value)	df	GFI	CFI	TLI	RMSEA	RMR	$\Delta\chi^2$	Δdf
Original	3839.698	1779	.932	.963	.959	.035	.102		
twelve-factor model	(<0.001)								
Single-factor model	5378.572 (<0.001)	2121	.795	.823	.835	.289	0.386	1538.874*	342

5.7 STRUCTURAL MODEL

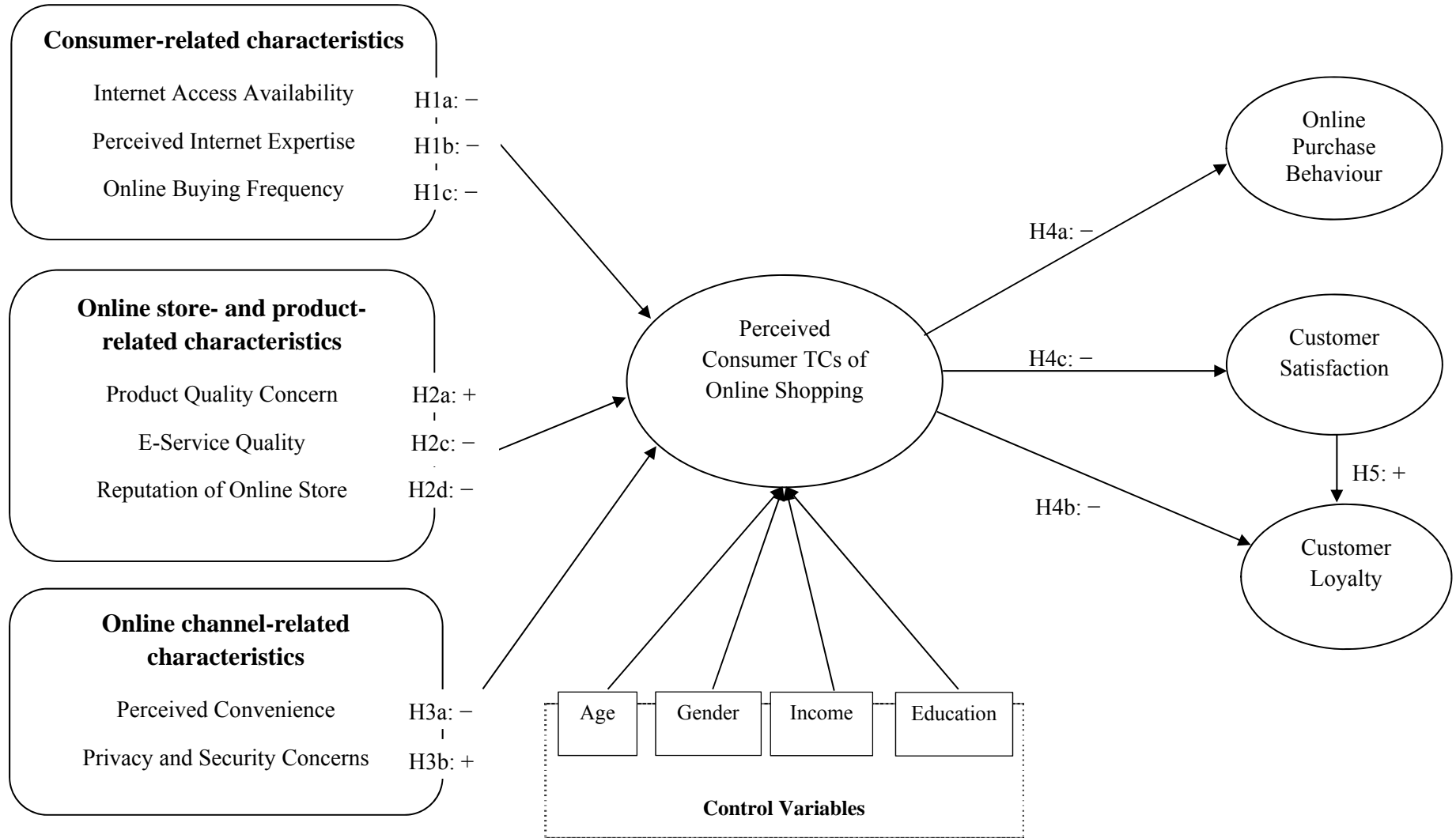
After testing the new overall measurement model by conducting a CFA, an adequate fit and satisfactory construct validity were achieved, which enabled an examination of relationship among sixteen important constructs. In this section, the structural model of this study was tested using SEM (Anderson and Gerbing 1988). SEM was particularly appropriate for the study of multiple dependence relationships such as those investigated in this study.

The software package utilized for SEM in this study is the AMOS 21.0 statistical package due to its user friendliness. AMOS can link data directly to SPSS and provides a graphical user interface that allows configuring path diagrams, calculating model fit, and estimating parameters. For these reasons, and due to its increasing acceptance within the marketing domain, AMOS 21.0 was the chosen analytical tool to obtain the results which address the hypotheses of this study. As presented in Chapter 4, the five basic-building blocks in SEM suggested by Schumacker and Lomax (2004) were used to test the proposed models in this

study, which included: specifying the model, assessing the identification of the model equations, estimating the proposed model, evaluating the results for goodness-of-fit, and interpreting and modifying the model.

The structural model is represented by Figure 5.2, which included the twelve major constructs. Compared to the research model shown in Figure 3.1, the structural model excludes the two antecedent variables (i.e., site design and environmental uncertainty) and the two moderators (i.e., consumer's risk-bearing propensity and perceive enjoyment of online shopping). The structural model is used to test the causal research hypotheses (H1a, H1b, H1c, H2a, H2c, H2d, H3a, H3b, H4a, H4b, H4c and H5) of this study (H2b and H3c were not tested due to unsatisfactory discriminant validity of site design and environmental uncertainty). Tests of the partial mediation, moderators and difference across product categories will be discussed in the next sections.

Figure 5.2 The Structural Model (Used for Testing of H1a-5)



5.7.1 Validity of the Structural Model

To assess the validity of the structural model for controlling for age, gender, income and education level, SEM model fit and structural parameter estimates were examined. The results indicated a moderate fit for this structural model consisting of composite measures. Some indices met the recommended threshold level. For example, χ^2/df (4.189) was less than 5, GFI (.959), TLI (.953) and CFI (.976) were above .90, and RMSEA (.058) was less than .08.

Nevertheless, since RMR (.052) was not within the acceptable fit criterion, it was apparent that some modification in specification was needed to determine the structural model that better represented the sample data. Therefore, both the modification indices suggested by the data analysis output and theoretical foundation about the proposed model were taken into account when modifications were conducted. Any modification should be substantively meaningful in improving model fit. It was found that seven path related modification indices were approximately 4 or greater (Hair *et al.* 2006). Of the seven corresponding paths, two were not justified by theory (path from reputation of online store to online purchase behaviour, and path from online buying frequency to online purchase behaviour). The other five paths, which were justified by theory, were freed one at a time. The modified models were then tested using SEM. However, no SEM results indicated that the model fit was improved significantly by freeing any path. Thus, no change was made for the structural model.

Table 5.21 refers to H1a, H1b, H1c, H2a, H2c, H2d, H3a, H3b, H4a, H4b, H4c and H5 when controlling for age, gender, income and education level of online shoppers, and shows the path coefficients between the exogenous and endogenous variables, average variance

accounted (AVA) for, T value and R^2 . The AVA for the endogenous variables was .80 and the individual R^2 were greater than the recommended .10 (Falk and Miller 1992) for all of the predicted variables. As all of these R^2 were larger than the recommended levels, an examination of the paths' significance associated with the variables was undertaken. As shown in Table 5.21, all but one structural path estimates were significant in the expected direction. Specifically, eight paths were significant at the .001 level, two were significant at the .01 level, one was significant at the .05 level and one was not significant. In the next section, the causal research hypotheses (i.e., H1a to H5) with control variables were each tested in turn.

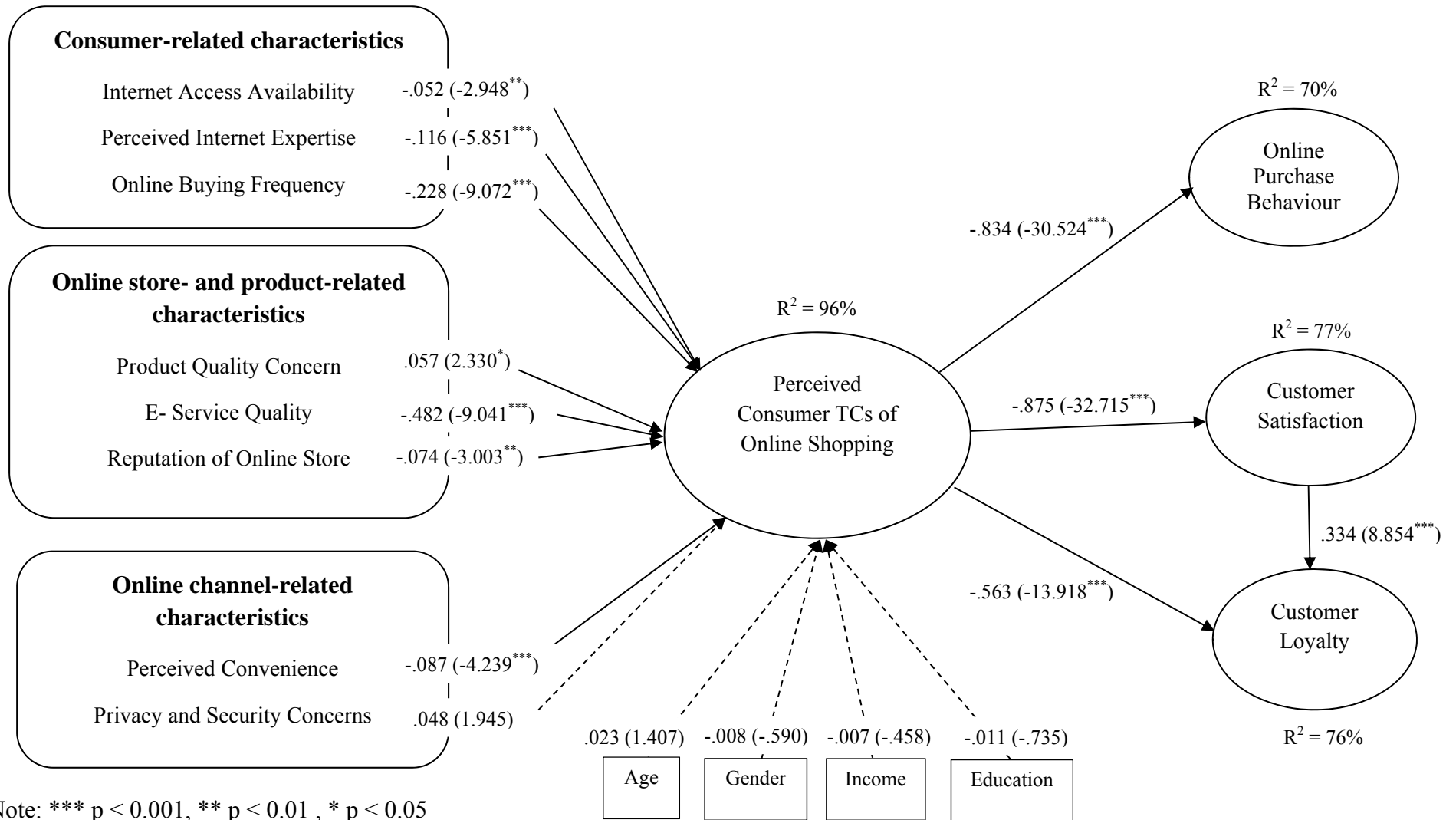
Table 5.21 Results of Structural Model When Controlling for Age, Gender, Income and Education Level

Equation	Predicted Variables	Predictor Variables	Hypothesis	Beta weight	T value	R ²
1	Perceived Consumer TCs	Internet Access Availability	H1a	-.052	-2.948**	.96
		Perceived Internet Expertise	H1b	-.116	-5.851***	
		Online Buying Frequency	H1c	-.228	-9.072***	
		Product Quality Concern	H2a	.057	2.330*	
		E- Service Quality	H2c	-.482	-9.041***	
		Reputation of Online Store	H2d	-.074	-3.003**	
		Perceived Convenience	H3a	-.087	-4.239***	
		Privacy and Security Concerns	H3b	.048	1.945 (n.s.)	
		Age		.023	1.407 (n.s.)	
		Gender		-.008	-.590 (n.s.)	
		Income		-.007	-.458 (n.s.)	
Education Level		-.011	-.735 (n.s.)			
2	Online Purchase Behaviour	Perceived Consumer TCs	H4a	-.834	-30.524***	.70
3	Customer Loyalty	Perceived Consumer TCs	H4b	-.563	13.918***	.76
		Customer Satisfaction	H5	.334	8.854***	
4	Customer Satisfaction	Perceived Consumer TCs	H4c	-.875	-32.715***	.77
AVA						.80

Note: AVA: Average Variance Accounted for.

*** p < 0.001, ** p < 0.01 , * p < 0.05, n.s. p > .05

Figure 5.3 Structural Model with Control Variables Showing Results of Analysis



5.7.2 Test of Causal Research Hypotheses

When controlling for age, gender, income and education level of online shoppers in predicting consumer TCs, the results in Table 5.21 indicated that Internet access available (H1a) significantly affected consumer TCs ($\beta = -.052$, $t = -2.948$), thereby supporting H1a. Hypothesis 1b explicated the negative impact of perceived Internet expertise on consumer TCs. The results showed that consumer transaction costs was significantly influenced by perceived Internet expertise ($\beta = -.116$, $t = -5.851$). Thus, H1b was supported. Hypothesis 1c postulated the negative association between online buying frequency and consumer TCs. Results indicated that online buying frequency significantly affected consumer TCs ($\beta = -.228$, $t = -9.072$), thus confirming H1c. H2a predicted a positive relationship between product quality concern and consumer TCs – this was supported ($\beta = .057$, $t = 2.330$). Also, as expected, e-service quality had a significant and negative impact on consumer TCs ($\beta = -.482$, $t = -9.041$), thus supporting H2c. As predicted in H2d, reputation of online store had a significant and negative influence on consumer TCs ($\beta = -.074$, $t = -3.003$), providing support for H2d. The results also show that perceived convenience significantly negatively influenced consumer TCs ($\beta = -.087$, $t = -4.239$), supporting H3a. Surprisingly, the researcher did not find the significant effect of privacy and security concerns on consumer TCs ($\beta = .048$, $t = 1.945$), thus H3b was not supported.

As presented in Table 5.21, when controlling for age, gender, income and education level in predicting consumer TCs, the results indicated that a negative and significant effect of consumer TCs on online purchase behaviour ($\beta = -.834$, $t = -30.524$), supporting H4a. Similarly, the predicted negative relationship between consumer TCs and customer loyalty (H4b) was supported by the significant path with $\beta = -.563$ ($t = 13.918$). H4c, which predicted a negative and significant effect of consumer TCs on customer satisfaction, was

also supported ($\beta = -.875$, $t = -32.715$). Table 5.21 revealed that the relationship between customer satisfaction and customer loyalty was positive and significant with a standardized path estimate of $\beta = .334$ ($t = 8.854$) and as such H5 was supported.

Furthermore, the results shown in Table 5.21 indicate that the effects of the control variables on consumer TCs are all insignificant ($t < 1.96$, $p > .05$), which means that age, gender, income and education do not confound the relationships that have been specified in the structural model. Overall, one out of twelve estimates were consistent with the hypotheses, the results supported the theoretical model for controlling for demographic variables with a caveat for the path from privacy and security concerns to consumer TCs that was rejected.

5.7.3 Variances in Endogenous Constructs Explained

Table 5.21 shows the variances in endogenous constructs explained in the structural model, which were indicated by R^2 value. Specifically, eight antecedent variables explained 96 per cent of the variance in consumer TCs, which, in turn, explained 70 per cent of the variance in online purchase behaviour. In addition, 76 per cent of the variance in customer loyalty was explained by consumer TCs and consumer satisfaction. Consumer TCs accounted for 77 per cent of the variance in customer satisfaction. The R^2 value for endogenous variables and path coefficients of the structural model were also presented in Figure 5.3.

5.7.4 Direct and Indirect, and Total Effects

The standardized direct, indirect and total effects demonstrated by the structural model for controlling for age, gender, income and education level are provided in Table 5.22. The results revealed that all of the eight antecedent variables have indirect effect on online purchase behaviour, customer loyalty and customer satisfaction through consumer TCs, when

controlling for age, gender, income, and education level. Consumer TCs also have an indirect negative effect on customer loyalty through customer satisfaction.

The strongest direct effect (-.875) in the model was the relationship between consumer TCs and customer satisfaction, and the strongest indirect effect was the influence of e-service quality on customer satisfaction. The size of this indirect effect was .421, which was calculated by multiplying the standardized path estimate from e-service quality to consumer TCs by the standardized path estimate from consumer TCs to customer satisfaction. The size of the total effect of consumer TCs on loyalty was -.855, which was calculated by summing the direct and indirect effects of consumer TCs on loyalty.

Table 5.22 Direct, Indirect and Total Effects

	Availability of Internet Access	Perceived Internet Expertise	Online Buying frequency	Product Quality Concerns	E-Service Quality	Reputation of Online Store	Perceived Convenience	Privacy/ Security Concerns	Age	Gender	Income	Education Level	Consumer TCs	Customer Satisfaction
Standardized Direct Effects														
Consumer TCs	-.052	-.116	-.228	.057	-.482	-.074	-.087	.048	.023	-.008	-.007	-.011		
Customer Satisfaction														-.875
Online Purchase Behaviour														-.834
Customer Loyalty													-.563	.334
Standardized Indirect Effects														
Consumer TCs														
Customer Satisfaction	.045	.102	.199	-.050	.421	.065	.076	-.042	-.020	.007	.006	.009		
Online Purchase Behaviour	.043	.097	.190	-.048	.402	.062	.073	-.040	-.019	.007	.006	.009		
Customer Loyalty	.044	.099	.195	-.049	.412	.063	.074	-.041	-.019	.007	.006	.009	-.292	
Standardized Total Effects														
Consumer TCs	-.052	-.116	-.228	.057	-.482	-.074	-.087	.048	.023	-.008	-.007	-.011		
Customer Satisfaction	.045	.102	.199	-.050	.421	.065	.076	-.042	-.020	.007	.006	.009	-.875	
Online Purchase Behaviour	.043	.097	.190	-.048	.402	.062	.073	-.040	-.019	.007	.006	.009	-.834	
Customer Loyalty	.044	.099	.195	-.049	.412	.063	.074	-.041	-.019	.007	.006	.009	-.855	.334

5.7.5 Summary of Results – H1a to H5

The preceding analysis of the proposed model shown in Figure 5.2 provided support for most of the hypotheses. The results of hypotheses testing are summarised in Table 5.23.

Table 5.23 Results of Hypotheses Testing

No.	Hypothesis	Result
H1a	Internet access availability is negatively related to a customer's perceived TCs associated with online shopping.	Supported
H1b	A customer's perceived Internet expertise is negatively related to his/her perceived TCs associated with online shopping.	Supported
H1c	A customer's online buying frequency is negatively related to his/her perceived TCs associated with online shopping.	Supported
H2a	A customer's concern over the product quality in an online store is positively related to his/her perceived TCs associated with purchasing from the online store.	Supported
H2c	A customer's perception of the e-service quality of an online store is negatively related to his/her perceived TCs associated with purchasing from the online store.	Supported
H2d	A customer's perception of the reputation of an online store is negatively related to his/her perceived TCs associated with purchasing from the online store.	Supported
H3a	The perceived convenience of online shopping is negatively related to a customer's perception of TCs associated with online shopping.	Supported
H3b	A customer's privacy and security concerns over online shopping are positively related to his/her perceived TCs associated with online shopping.	Not supported
H4a	A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her actual online purchase behaviour at the online store.	Supported
H4b	A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her loyalty towards the online store.	Supported
H4c	A customer's perception of TCs associated with purchasing from an online store is negatively related to his/her satisfaction with the online store.	Supported
H5	A customer's satisfaction with an online store is positively related his/her loyalty towards the online store.	Supported

The analysis thus far has addressed hypotheses H1a to H5. The next hypothesis of this study (H6) postulates that customer satisfaction with the online vendor will partially mediate the effect of consumer TCs on loyalty. The ensuing analysis is presented to address this hypothesis.

5.8 TESTING FOR MEDIATION

H6, posited that customer satisfaction partially mediates the effect of consumer TCs on loyalty was tested in this section. The mediation testing was undertaken in terms of the guideline suggested by Baron and Kenny's (1986). To conduct such a test, three conditions must be met. First of all, it is important to determine if the independent variable (consumer TCs) significantly affects the dependent variable (customer loyalty). Secondly, the independent variable (consumer TCs) must significantly impact the mediator (customer satisfaction). The third condition is that the mediator (customer satisfaction) must significantly impact the dependent variable (customer loyalty).

To test these above three conditions and further examine the mediating role of customer satisfaction between consumer TCs and customer loyalty, Model 1 and Model 2 were developed. As shown in Table 5.24, consumer TCs negatively and significantly influenced customer loyalty (Model 1, $\beta = -.724$, $t = -32.552$) and customer satisfaction (Model 2, $\beta = -.749$, $t = -35.036$), which also positively influenced customer loyalty (Model 2, $\beta = 0.647$, $t = 24.610$), thus the three conditions were achieved. Comparing Model 1 and 2, it was found that the negative effect of consumer TCs on customer loyalty in Model 1 ($\beta = -.724$) had simply been reduced ($\beta = -.240$) in Model 2, but it was still significant ($t = -9.110$) in Model 2. The reason for the reduction in the path coefficient is due to the mediation variable (customer

satisfaction) explaining some of the variance in the dependent variable (customer loyalty) that was previously explained by consumer TCs, but it was more appropriate to be explained through the mediator (customer satisfaction). Therefore, customer satisfaction partially mediates the relationship between consumer TCs and loyalty, providing support for H6.

Table 5.24 Mediation Analysis Results

Exogenous variables	Model 1	Model 2	
	Customer Loyalty	Customer Satisfaction	Customer Loyalty
Consumer TCs	-.724 ^{***} (-32.552)	-.749 ^{***} (-35.036)	-.240 ^{***} (-9.110)
Customer Satisfaction			.647 ^{***} (24.610)
R²	.524	.561	.708

Note: ^{***} p < 0.001

5.9 MULTIPLE GROUP ANALYSES: TEST OF MODERATORS

Multigroup SEM was used to test the moderating effects of consumer's risk-bearing propensity and perceive enjoyment of online shopping (i.e., H7a to H8b). Specifically, the structural model (Figure 5.2) was used with both groups of consumer's risk-bearing propensity and of perceived enjoyment of online shopping for the entire sample (n = 962). The two groups of consumer's risk-bearing propensity represent two different levels of consumer's risk-bearing propensity on a specific retailer for securing a specific product: low-risk-bearing and high- risk-bearing. To divide the entire sample into a low-risk-bearing group and a high- risk-bearing group, the sum of the five items that was used to measure risk-bearing propensity was computed and then the mean of the sum was calculated. Observations with the sum of the five items lower than the mean were grouped into the low-risk-bearing group while observations with the sum higher than the mean were grouped into the high-risk-

bearing group. The same method was employed to divide the entire sample into a low enjoyment group and a high enjoyment group, which represent two different levels of enjoyment perceived by online shoppers. The multigroup SEM used to test each moderating effect is described in detail below.

5.9.1 Moderating Effect of Consumer’s Risk-bearing Propensity on Perceived TCs →

Online Purchase Behaviour

To test the moderating effect of consumer’s risk-bearing propensity on the relationship between perceived consumer TCs and online purchase behaviour (H7a), a two-group structural model using the two groups of consumer risk-bearing propensity was established (Hair *et al.* 2006). Initially, the two-group structural model was tested allowing all of the hypothesized relationships, including the path of perceived TCs → online purchase behaviour, to be estimated freely in both groups. Next, a second model was tested adding a constraint fixing the path of perceived TCs → online purchase behaviour to be equal in both groups. The multigroup SEM fit results for each model are shown in Table 5.25.

Table 5.25 Multigroup SEM Results of Testing the Effect of Consumer’s Risk-bearing Propensity on Perceived TCs → Online Purchase Behaviour

	Totally Free (TF)	TCs → Online Purchase Is Equal	$\Delta\chi^2$
χ^2	489.632	493.194	3.562
df	198	199	1
GFI	.952	.952	
CFI	.967	.967	
RMSEA	.039	.039	

The GFI and CFI were unchanged, and the RMSEA was the same for both models. However, the $\Delta\chi^2 = 3.562$ with 1 *df* was insignificant ($\Delta\chi^2 < 3.841$, $p > .10$). Since the $\Delta\chi^2$ was insignificant, constraining the TCs → online purchase behaviour to be equal between the two

risk-bearing propensities groups did not hurt the model fit. Therefore, the model with equality constraint was supported instead of the totally free (TF) model. This result showed that the moderating effect of consumer's risk-bearing propensity on the relationship between the TCs and online purchase behaviour was not supported. Thus, H7a was rejected. The conclusion is that the relationship between perceived TCs and online purchase behaviour was the same among either low risk-bearing propensity or high risk-bearing propensity online shoppers.

5.9.2 Moderating Effect of Consumer's Risk-bearing Propensity on Perceived TCs → Customer Loyalty

To test the moderating effect of consumer's risk-bearing propensity on the relationship between perceived TCs and customer loyalty (H7b), the totally free (TF) structural model first estimated the identical structural model in both groups simultaneously. Next, a second model was tested constraining the path from perceived TCs to customer loyalty to be equal in both groups. The multigroup SEM fit results for each model are shown in Table 5.26.

Table 5.26 Multigroup SEM Results of Testing the Effect of Consumer's Risk-bearing Propensity on Perceived TCs → Customer Loyalty

	Totally Free (TF)	TCs → Customer Loyalty Is Equal	$\Delta\chi^2$
χ^2	489.632	494.846	5.214
df	198	199	1
GFI	.952	.951	
CFI	.967	.966	
RMSEA	.039	.040	

The GFI, CFI and RMSEA of the totally free (TF) model were better than those of the constrained model. The $\Delta\chi^2 = 5.214$ with 1 *df* was significant ($\Delta\chi^2 > 3.841$, $p < .05$). Given model fit statistics and the significant $\Delta\chi^2$ value, the conclusion is that constraining the path of perceived TCs → customer loyalty to be equal between the two risk-bearing propensity

groups produced a worse fit. Therefore, the totally free (TF) model in which the perceived TCs → consumer loyalty relationship was freely estimated in both groups was supported. This result indicated that consumer's risk-bearing propensity moderated the relationship between TCs and consumer loyalty. Thus, H7b was supported.

Furthermore, by examining the unstandardized parameter estimates for the TF model results, it was found that the perceived TCs → customer loyalty relationship was significant in both groups ($p < .001$). Specifically, the relationship was greater for the low risk-bearing group with a completely standardized estimate of -.53 as compared to a completely standardized estimate of -.47 for the high risk-bearing group.

5.9.3 Moderating Effect of Perceived Enjoyment of Online Shopping on Perceived TCs → Online Purchase Behaviour

To test the moderating effect of perceived enjoyment of online shopping on the relationship between perceived TCs and online purchase behaviour (H8a), a two-group basic structural model was set up using the two groups of perceived enjoyment. Initially, the two-group basic structural model was tested allowing all the hypothesized relationships, including the path from TCs to online purchase behaviour, to be estimated freely in both groups. Next, a second model was tested adding a constraint fixing the path of TCs → online purchase behaviour to be equal in both groups. The fit results for each model are presented in Table 5.27.

The GFI, CFI and RMSEA of the totally free (TF) model were better than those of the constrained model. The $\Delta\chi^2 = 9.729$ with 1 *df* was significant ($\Delta\chi^2 > 3.841$, $p < .05$). Given model fit statistics and the significant $\Delta\chi^2$ value, the conclusion is that constraining the path of TCs → online purchase behaviour to be equal between the two enjoyment groups

produced a worse fit. Thus, the TF model in which the perceived TCs → online purchase behaviour relationship was freely estimated in both groups was supported. This result indicated that perceived enjoyment of online shopping moderated the relationship between TCs and actual online purchase. Therefore, H8a was supported.

The unstandardized parameter estimates for the TF model results were examined and it was found that the TCs → online purchase behaviour relationship was significant in both groups ($p < .001$). Specifically, the relationship was greater for the low enjoyment with a completely standardized estimate of $-.82$ as compared to a completely standardized estimate of $-.65$ for the high enjoyment group.

Table 5.27 Multigroup SEM Results of Testing the Effect of Perceived Enjoyment on Perceived TCs → Online Purchase Behaviour

	Totally Free (TF)	TCs → Online Purchase Is Equal	$\Delta\chi^2$
χ^2	508.525	518.254	9.729
df	198	199	1
GFI	.951	.950	
CFI	.964	.963	
RMSEA	.040	.041	

5.9.4 Moderating Effect of Perceived Enjoyment of Online Shopping on Perceived TCs → Customer Loyalty

To test the moderating effect of perceived enjoyment of online shopping on the relationship between perceived TCs and customer loyalty (H8b), the totally free (TF) structural model first estimated the identical structural model in both groups simultaneously. Next, a second model was tested constraining the path from perceived TCs to customer loyalty to be equal in both groups. The fit results for each model are shown in Table 5.28.

Table 5.28 Multigroup SEM Results of Testing the Effect of Perceived Enjoyment on Perceived TCs → Customer Loyalty

	Totally Free (TF)	TCs → Customer Loyalty Is Equal	$\Delta\chi^2$
χ^2	508.525	508.679	0.154
df	198	199	1
GFI	.951	.951	
CFI	.964	.964	
RMSEA	.040	.040	

The GFI, CFI and RMSEA were unchanged. However, the $\Delta\chi^2$ was not significant with the $\Delta\chi^2$ value of 0.154 ($\Delta\chi^2 < 3.841$, $p > .10$). Given the insignificant $\Delta\chi^2$ value, it indicated that the constrained model did not hurt the fit statistics when constraining the perceived TCs → customer loyalty to be equal between the two enjoyment groups. Therefore, the model with equality constraint was supported instead of the totally free (TF) model. This result demonstrated that the moderating effect of perceived enjoyment on the relationship between the perceived TCs and loyalty was not supported. Thus, H8b was rejected. The conclusion is that the relationship between perceived TCs and customer loyalty was the same among either low enjoyment perception or high enjoyment perception online shoppers.

5.10 TESTING FOR MODEL DIFFERENCES ACROSS PRODUCT CATEGORIES

In order to test the final hypotheses of this study (H9a and H9b) which postulate that the proposed model will differ across different product categories, the sample was split into two groups - data collected with reference to search products and data pertaining to experience products. This resulted in one sample containing 455 cases (search products) and the other sample containing 507 cases (experience products). Each sample was then analysed separately via AMOS 21.0 in the same fashion as the previous analysis for the overall model.

The results of individual SEM analysis are initially presented prior to making a comparative analysis.

5.13.1 Model Results --- Search Products

The model for search products exhibited a χ^2 of 273.820 with $df = 99$, $p < .01$; $\chi^2/df = 2.766 < 5$, $GFI = .943 > .90$; $CFI = .950 > .90$; $TLI = .904 > .90$; $RMSEA = .062 < .08$. All statistics for this model were at the appropriate levels, except the RMR, which was $.063 > .05$. Table 5.29 presents the results of testing the structural model (Figure 5.4) for the sample pertaining to search products by providing the path coefficients between the exogenous and endogenous variables, average variance accounted (AVA) for, T value and R^2 . All numbered hypotheses contain an additional “s” which denotes the use of the sample pertaining only to search products in this analysis.

The AVA for the endogenous variables was .65 and the individual R^2 were greater than the recommended .10 (Falk and Miller 1992) for all of the predicted variables. As all of these R^2 were larger than the recommended levels it was appropriate to examine the paths’ significance of the paths associated with these variables. The absolute value of the product of the path coefficient and T value were used to evaluate the significance of the individual paths (Falk and Miller 1992). As displayed in Table 5.29, nine out of twelve paths met the criterion of T value (greater than 1.96), which indicated that the nine paths had significant effects. Further examination of the standardized path coefficients found that all nine paths were significant in the hypothesized direction. Accordingly, H1b(s), H1c(s), H2c(s), H2d(s), H3a(s), H4a(s), H4b(s), H4c(s) and H5(s) were supported. Nevertheless, the results revealed that three paths failed to meet the T value’s recommended level (above 1.96), which implied that these three paths were not significant. Therefore, H1a(s), H2a(s) and H3b(s) were

rejected. Furthermore, the data showed that 92 per cent of the variance in consumer TCs was explained by five antecedent variables (i.e., perceived Internet expertise, online buying frequency, e-service quality, reputation of online store, and perceived convenience), while consumer TCs explained 64 per cent of the variance in customer satisfaction. In addition, customer satisfaction and TCs accounted for 55 per cent of the variance in customer loyalty. 48 per cent of the variance in online purchase behaviour was explained by TCs.

The preceding SEM analysis of the proposed model for search products provided support for all but three hypotheses, which indicated that the proposed model received mixed support in the context of search products. Figure 5.4 presents the proposed model for search products showing all path coefficients and R^2 values for endogenous variables.

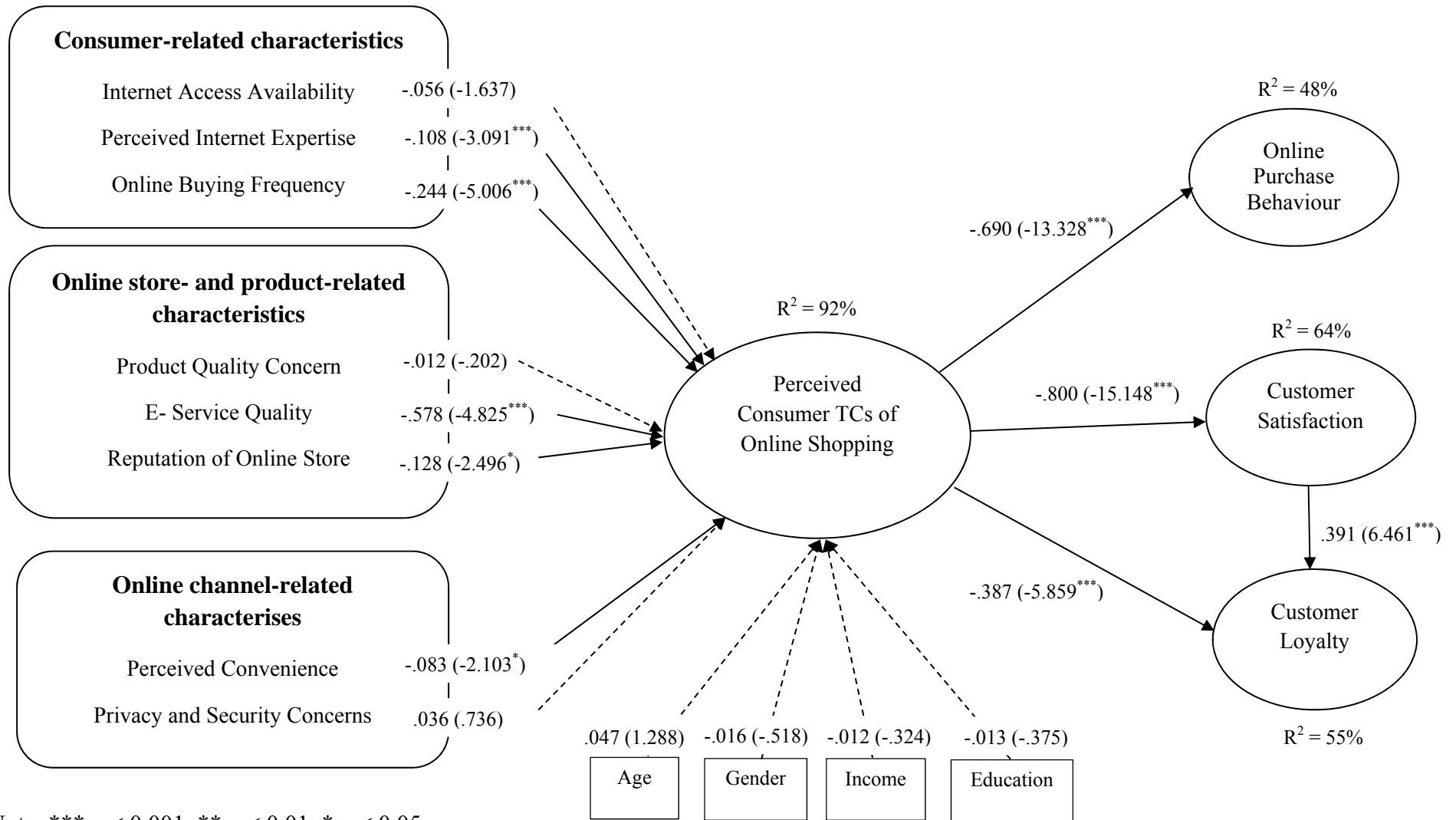
Table 5.29 Results of the Structural Model – Search Products

Equation	Predicted Variables	Predictor Variables	Hypothesis	Beta weight	T value	R ²
1	Perceived Consumer TCs	Internet Access Availability	H1a(s)	-.056	-1.637 (n.s.)	.92
		Perceived Internet Expertise	H1b(s)	-.108	-3.091**	
		Online Buying Frequency	H1c(s)	-.244	-5.006***	
		Product Quality Concern	H2a(s)	-.012	-.202 (n.s.)	
		E- Service Quality	H2c(s)	-.578	-4.825***	
		Reputation of Online Store	H2d(s)	-.128	-2.496*	
		Perceived Convenience	H3a(s)	-.083	-2.103*	
		Privacy and Security Concerns	H3b(s)	.036	.736 (n.s.)	
		Age		.047	1.228 (n.s.)	
		Gender		-.016	-.518 (n.s.)	
		Income		-.012	-.324 (n.s.)	
Education Level		-.013	-.375 (n.s.)			
2	Online Purchase Behaviour	Perceived Consumer TCs	H4a(s)	-.690	-13.328***	.48
3	Customer Loyalty	Perceived Consumer TCs	H4b(s)	-.387	-5.859***	.55
		Customer Satisfaction	H5(s)	.391	6.461***	
4	Customer Satisfaction	Perceived Consumer TCs	H4c(s)	-.800	-15.148***	.64
AVA						.65

Note: AVA: Average Variance Accounted for.

*** p < 0.001, ** p < 0.01 , * p < 0.05, ns: p > .05

Figure 5.4 Model Results – Search Products



Note: *** p < 0.001, ** p < 0.01, * p < 0.05

5.10.2 Model Results --- Experience Products

The fit indices demonstrated a good fit for this model (experience products), for example, χ^2 of 247.456 with 99 df, $p < .01$, $\chi^2/df = 2.500 < 5$, GFI = .955 > .90, CFI = .973 > .90, TLI = .948 > .90, and RMSEA = .054 < .08. RMR = .046 < .05. Table 5.30 showed the results of the SEM analysis (Figure 5.5) for the sample pertaining to experience products by providing the path coefficients, average variance accounted (AVA) for, T value and R^2 . All numbered hypotheses contain an additional “e” which denotes the use of sample pertaining only to experience products in this analysis.

As can be found in Table 5.30, the individual R^2 are greater than the recommended .10 (Falk and Miller 1992) for all of the predicted variables and the AVA for the endogenous variables was .74. Moreover, all but one path met the criterion of T value (above 1.96), which indicated that the eleven paths had significant effects. By examining the standardized path estimates for this model results, it was found that all eleven paths were significant in the hypothesized direction. Thus, H1a(e), H1b(e), H1c(e), H2a(e), H2c(e), H3a(e), H3b(e), H4a(e), H4b(e), H4c(e) and H5(e) were all supported. Nevertheless, in terms of the T value, one path from reputation of online store to consumer TCs was not significant in the expected direction since the corresponding t value was less than 1.96, and as such H2d(e) was rejected. Furthermore, the data showed that 96 per cent of the variance in consumer TCs was explained by seven antecedent variables (including internet access availability, perceived internet expertise, online buying frequency, product quality concern, e-service quality, perceived convenience, and privacy and security concerns), while consumer TCs explained 68 per cent of the variance in customer satisfaction. Customer satisfaction and TCs accounted for 73 per cent of the variance in customer loyalty. In addition, 60 per cent of the variance in online purchase behaviour was explained by TCs.

The preceding SEM analysis of the proposed model for experience products revealed support for all but one hypothesis indicating that the model was supported in the context of experience products. Figure 5.5 presents the proposed model for experience products showing all path coefficients and R^2 values for endogenous variables.

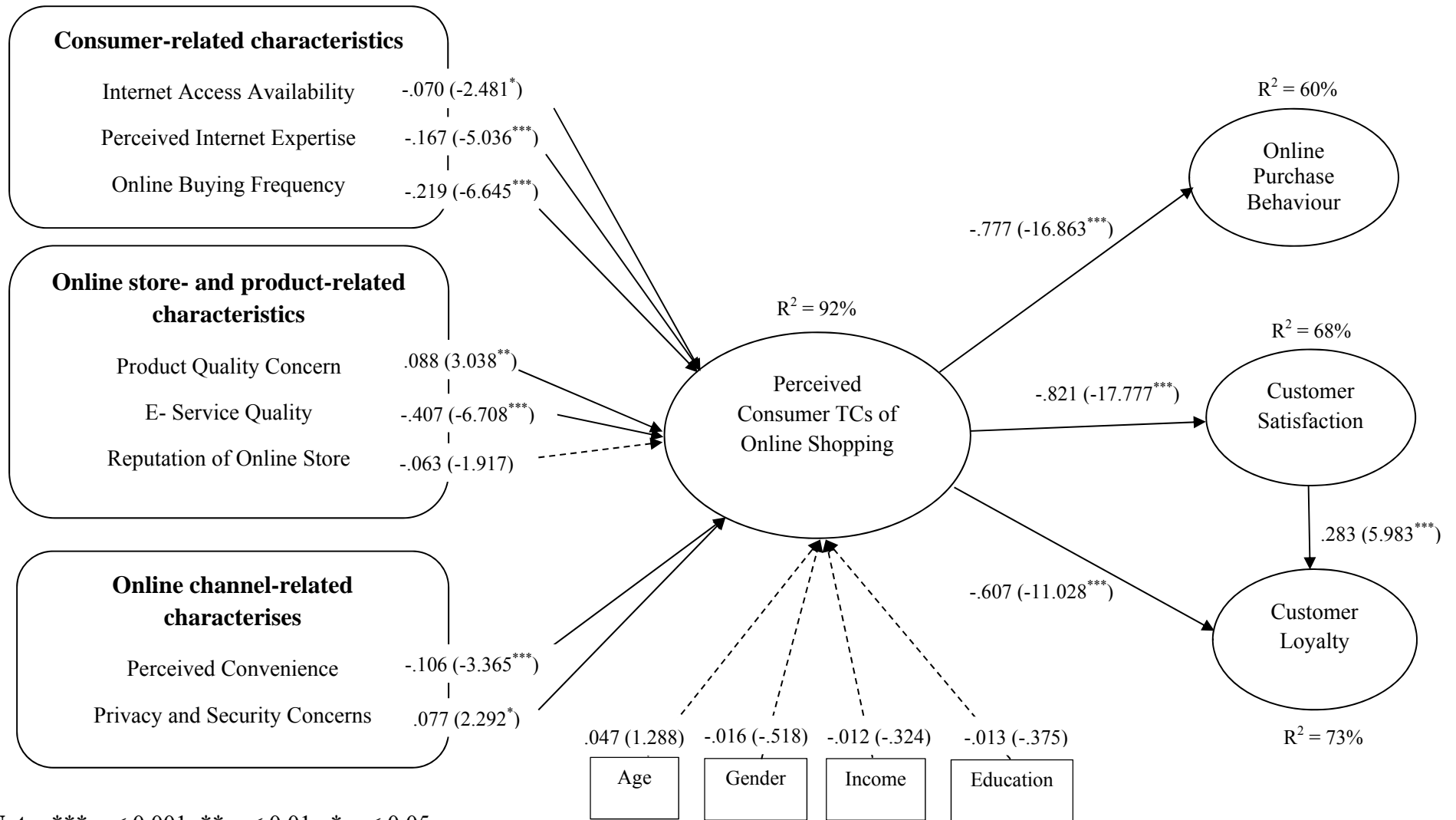
Table 5.30 Results of the Structural Model – Experience Products

Equation	Predicted Variables	Predictor Variables	Hypothesis	Beta weight	T value	R²
1	Perceived Consumer TCs	Internet Access Availability	H1a(e)	-.070	-2.481*	.96
		Perceived Internet Expertise	H1b(e)	-.167	-5.036***	
		Online Buying Frequency	H1c(e)	-.219	-6.645***	
		Product Quality Concern	H2a(e)	.088	3.038**	
		E- Service Quality	H2c(e)	-.407	-6.708***	
		Reputation of Online Store	H2d(e)	-.063	-1.917 (n.s.)	
		Perceived Convenience	H3a(e)	-.106	-3.365***	
		Privacy and Security Concerns	H3b(e)	.077	2.292*	
		Age		.047	1.228 (n.s.)	
		Gender		-.016	-.518 (n.s.)	
		Income		-.012	-.324 (n.s.)	
Education Level		-.013	-.375 (n.s.)			
2	Online Purchase Behaviour	Perceived Consumer TCs	H4a(e)	-.777	-16.863***	.60
3	Customer Loyalty	Perceived Consumer TCs	H4b(e)	-.607	-11.028***	.73
		Customer Satisfaction	H5(e)	.283	5.983***	
4	Customer Satisfaction	Perceived Consumer TCs	H4c(e)	-.821	-17.777***	.68
AVA						.74

Note: AVA: Average Variance Accounted for.

*** p < 0.001, ** p < 0.01 , * p < 0.05, ns: p > .05

Figure 5.5 Model Results – Experience Products



Note: *** p < 0.001, ** p < 0.01, * p < 0.05

5.10.3 Comparison of Models (Search Products vs. Experience Products)

Having presented the SEM results for the search products and experience products separately, a comparative analysis is undertaken in order to determine if these two models are significantly different. To address H9a and H9b, a chi-square difference test was firstly conducted. The results indicate $\Delta \chi^2 = 26.364$, $p < .01$, thus supporting further exploration of parameter differences. Secondly, the search products model (Figure 5.4) and the experience products model (Figure 5.5) were visually examined to determine whether corresponding paths between exogenous and endogenous variables were either significant or not significant across the two models. Table 5.31 presents the results of this visual inspection by listing which relationships were significant in both models and then making a comparison of the corresponding relationships.

Table 5.31 Comparison of Search Products and Experience Products Model

Paths	Search Products n=455	Experience Products n=507	Comparison of Models
H1a	Not significant	Significant	Different
H1b	Significant	Significant	Same
H1c	Significant	Significant	Same
H2a	Not significant	Significant	Different
H2c	Significant	Significant	Same
H2d	Significant	Not significant	Different
H3a	Significant	Significant	Same
H3b	Not significant	Significant	Different
H4a	Significant	Significant	Same
H4b	Significant	Significant	Same
H4c	Significant	Significant	Same
H5	Significant	Significant	Same

The comparison of the two models showed the significances of the corresponding paths were the same for all paths except for four paths. For example, the path from perceived Internet expertise to consumer TCs across the two models both showed significant path coefficients. Also, the effect of perceived convenience on consumer TCs in both models was significant. On the other hand, with regard to the differences in significant paths, the effects of Internet access availability (H1a), product quality concern (H2a), and privacy and security concerns (H3b) on consumer TCs were not significant within the search products model, whereas they were significant within the experience products model. In addition, the comparisons made in Table 5.31 also indicated that the relationship between reputation of online store and TCs was significant within search products model, while it became non-significant within the experience products model. To summarize, H9a was partially supported in regards to the differences in the significance of the four paths across two models, which included the paths from Internet access availability, product quality concerns privacy and security concerns and reputation of online store to consumer TCs. For the rest of the hypotheses concerning the significance of the effects of antecedents on consumer TCs in the structural model, they were still the same across two models.

As for the different effects of consumer TCs on behavioural consequences across product categories (H9b), the comparisons in Table 5.31 showed that there were all significant between search products and experience products, therefore indicating that there are no differences in the significance of the paths from consumer TCs to behavioural consequences (i.e., online purchase behaviour and customer loyalty) across two models. H9b was rejected in regards to the significances of the corresponding paths.

While H9a was partially supported and H9b was rejected by the results in Table 5.30, the individual search products model and experience products model were further compared to determine if there were differences in the *strengths* of the paths within the structural model. Analysis was conducted to examine differences in paths across the two models using *t*-tests procedure which was recommended by Keil et al. (2000). The following formula, as suggested by Keil et al. (2000) was used to calculate the *t*- statistics shown in Table 5.31.

The pooled estimate for the variance was firstly calculated as such:

$$Sp = \sqrt{\frac{m-1}{m+n-2} * S.E.^2 \text{ for sample 1} + \frac{n-1}{m+n-2} * S.E.^2 \text{ for sample 2}}$$

Where m = sample size 1

Where n = sample size 2

$$\text{Then: } t \text{ value} = \frac{p1-p2}{Sp * \sqrt{\frac{1}{m} + \frac{1}{n}}}$$

Where p1= Highest path coefficient

Where p2 = lowers path coefficient

The results of the analysis, conducted via one-tailed *t*-tests, are shown in Table 5.32. Tests performing on the corresponding path beta weights of both models that resulted in *t*-values greater than 1.64 were deemed to be significantly different.

Table 5.32 indicated that *t*-tests conducted on all paths H1a to H5 all showed significant differences in the strengths, supporting H9a and H9b from the perspective of strength of the paths. For search products model, path coefficients were significantly stronger for H1c (online buying frequency → TCs), H2c (e-service quality → TCs), H2d (reputation of online store → TCs) and H5 (customer satisfaction → loyalty). The stronger effect of reputation of online store on TCs (H2d) in search products model was actually found to be statistically

supported in the preceding analysis whereby online store reputation was found to be significant in the search products model (refer Table 5.29) but not significant in the experience products model (refer Table 5.30). On the other hand, for the experience products model, H1a (Internet access availability → TCs), H1b (perceived Internet expertise → TCs), H2a (product quality concern → TCs), H3a (perceived convenience → TCs), H3b (privacy and security concerns → TCs), H4a (TCs → online purchase behaviour), H4b (TCs → customer loyalty) and H4c (TCs → customer satisfaction) were significantly stronger than the corresponding paths in the search products model. The stronger effects of H1b, H1d and H1e in experience products model are consistent with the results predicted and discussed in the previous analysis whereby these three hypotheses were proved to be significant in the experience products model (refer Table 5.30) but not significant in the search products model (refer Table 5.29). Thus, path coefficients exhibit differences in their strength within the individual models across product categories, supporting H9a and H9b in terms of the magnitude of the aforementioned relationships.

Table 5.32 Comparison of Path Coefficients via T-tests

Paths	Search Products		Experience Products		t value	Results
	Paths	St Error	Paths	St Error		
H1a	-.056(n.s.)	.028	-.070	.024	8.348	Significantly stronger for experience products
H1b	-.108	.028	-.167	.022	36.520	Significantly stronger for experience products*
H1c	-.244	.021	-.219	.021	18.483	Significantly stronger for search products*
H2a	-.012(n.s.)	.032	.088	.023	56.057	Significantly stronger for experience products
H2c	-.578	.105	-.407	.043	33.661	Significantly stronger for search products*
H2d	-.128	.041	-.063(n.s.)	.026	29.665	Significantly stronger for search products
H3a	-.083	.036	-.106	.024	11.765	Significantly stronger for experience products*
H3b	.036(n.s.)	.032	.077	.025	22.257	Significantly stronger for experience products
H4a	-.690	.238	-.777	.179	6.448	Significantly stronger for experience products*
H4b	-.387	.095	-.607	.089	37.076	Significantly stronger for experience products*
H4c	-.800	.084	-.821	.081	3.945	Significantly stronger for experience products*
H5	.391	.055	.283	.044	33.781	Significantly stronger for search products*

Note: *Indicates support for both paths being significant

Furthermore, R-square values for the endogenous variables, including consumer TCs, online purchase behaviour, loyalty and satisfaction, were also compared across the modes, with some differences found, for instance, in the search product model: TCs = .92, online purchase behaviour = .48, customer loyalty = .55, satisfaction = .64; whereas in the experience product model: TCs = .96, online purchase behaviour = .60, customer loyalty = .73, satisfaction = .68. The average variance accounted for in experience products model (AVA= .74) was greater than search products model (AVA= .65).

In terms of the significance of the corresponding paths in two models, H9a was partially supported while H9b was rejected. Results shown in Table 5.29 exhibit bigger structural change in which four paths show differences. Analysis undertaken in Table 5.30 indicates that the model nearly remains unchanged structurally, except one path from reputation of online store to consumer TCs. On the other hand, in terms of the strength of the corresponding paths in two models, the proposed model differs across the two product categories, thereby supporting H9a and H9b.

5.11 CHAPTER SUMMARY

Since two constructs (site design and environmental uncertainty) did not have satisfactory discriminant validity, H2b and H3c were not tested in the structural model. The estimated structural model for controlling for demographic variables (age, gender, income, and education level) supported eleven research hypotheses (refer Figure 5.3). Only one path from privacy and security concerns to TCs was insignificant in the structural model. Multigroup SEM supported two moderating hypotheses out of the four proposed. The results show that risk-bearing propensity negatively moderates the relationship between TCs and customer

loyalty, and perceived enjoyment negatively moderates the effects of TCs on online purchase behaviour. Moreover, the results based on product category comparisons, clearly indicate that the strengths of the corresponding paths in the proposed model differ between search products and experience products. Overall the data collected provided very good support for the proposed research model of consumer TCs associated with online shopping. In the concluding chapter, the statistical results from chapter five will be interpreted in greater detail.

CHAPTER 6: DISCUSSION AND CONCLUSION

6.1 CHAPTER OVERVIEW

The study aimed to develop an integrative model of consumer TCs associated with online shopping for understanding a comprehensive set of their antecedent factors as well as its behavioural consequences and to empirically examine the model using a large-scale sample randomly selected from real-world online shoppers. Prior research has not well addressed five important elements related to TCs: (1) the applicability of TCT at the individual level for explaining online consumer behaviour; (2) the effects of the antecedents on TCs; (3) the impacts of TCs on online purchase behaviour and customer loyalty; (4) the factors that confound the effects of consumer TCs on its behavioural consequences; and (5) the differences in the causal relationships between the aforementioned constructs in the proposed consumer TCs framework across product categories.

This research directly answers many of the questions that have remained largely unanswered but that hold significant interest for marketing scholars and managers: do TCs matter in consumer- online vendor exchanges? What affects consumers' perception of TCs of shopping at an online store? What are the underlying mechanisms linking consumer TCs and online customers' purchase decision-making regarding a transaction? What is the relationship between TCs and customer loyalty after he/she has had some transactional experiences with the online store? What factors mediate and moderate the effects of consumer TCs on behavioural consequences? And what are the differences in the effects of various antecedents on TCs and the effects of TCs on behavioural outcomes between consumers who purchase

search products and those who purchase experience products? This research provides clear and compelling answers to these questions.

In this concluding chapter, the findings, implications, limitations and direction for future research will be discussed. Specifically, this chapter will first provide a further discussion of the statistical results presented in chapter five. The contributions of the study to e-commerce, TCT, consumer behaviour, and marketing theory and practice are presented next. Then, the limitations of this research, as well as potential areas for future research are discussed. Finally, the overall conclusions of the study are provided at the end of this chapter.

6.2 DISCUSSION OF RESULTS

In this section, the analytical results of this study will be provided. First, the results regarding the relationships between the antecedents and consumer TCs are discussed in detail. Following that, the impacts of TCs on online purchase behaviour and post-purchase behaviour are presented. Next, the mediating effect of customer satisfaction and the moderation roles of consumer's risk-bearing propensity and enjoyment perception are discussed. Finally, the discussion of the group comparison in terms of two product categories (search products and experience products) is provided.

6.2.1 Antecedents of Consumer TCs

Unlike the extant online TC research which focuses on a few attributes mainly pertaining to online store performance functions (e.g., brand, quality, and privacy policy) (Teo *et al.* 2004, Teo and Yu 2005), this study examined the antecedents of consumers' perceived TCs from three aspects, including consumer-related characteristics, online store- and product-related

characteristics, and online channel-related characteristics. By analysing from these three perspectives, this study extends the existing literature by explicating the features and details of online transactions and investigating a comprehensive list of antecedents of consumer TCs. The results of analysing the overall sample when controlling respondents' age, gender, income and education levels suggest that Internet access availability (H1a), perceived Internet expertise (H1b), online buying frequency (H1c), e-service quality (H2c), reputation of online store (H2d) and perceived convenience (H3a) significantly and negatively influence consumer perceived TCs associated with purchasing from an online store, whereas product quality concerns (H2a) significantly and positively influence perceived TCs. The findings reveal that privacy and security concerns (H3b) do not significantly affect perceived TCs. It should be noted that H2b (site design) and H3c (environmental uncertainty) were not tested due to unsatisfactory discriminant validity of site design and environmental uncertainty.

6.2.1.1 Internet Access Availability

The result shows that Internet access availability (H1a) negatively affects TCs perceived by online shoppers ($\beta = -.052, p < .01$), indicating that the perceived TCs are likely to be lower when Internet accessibility is high. Internet availability is a must for online shopping and is related to physical asset specificity for the purpose of online purchasing, which means that online shopping needs special physical equipment, such as personal computers and modems. As the CNNIC Internet Report (2012) pointed out, the most frequently cited reason among Chinese consumers who do not buy online is the inaccessibility of a computer or Internet. This implies that, as also suggested by Liang and Huang (1998), a product with higher physical asset specificity may favour the traditional shopping channel. With the increased availability of Internet access, consumers can easily connect the Internet in their study or work place and will have more opportunities to browse online shopping websites, leading to a

decline in physical asset specificity of online purchase. Consequently, their perceived TCs, particularly the access cost of online shopping, will be significantly reduced. This finding corroborates one of the propositions of TCT (Williamson 1985) in relation to the positive effect of asset specificity on TCs and also confirms the results found by Liang and Huang (1998) and Teo et al. (2004).

6.2.1.2 Perceived Internet Expertise

For the link between perceived Internet expertise and TCs of online shopping (H1b), the result shows that a customer's perceived Internet expertise has a significantly negative effect on his/her perceived TCs associated with purchasing from an online store ($\beta = -.116$, $p < .001$). It indicates that the more the Internet expertise obtained by the online shoppers, the lower will be their perception of the TCs for purchasing products/services online. Internet expertise is connected with human asset specificity which refers to the investment in time and effort to accumulate online shopping experience. The majority of consumers in China lack relevant Internet skills and knowledge. The finding is consistent with TCT (Williamson 1979) which dictates that TCs increase with a rise in the human asset specificity. The finding also coheres with Forsythe and Shi (2003) who propose that Internet expertise will cause a positive reception to the idea of online transaction, thus significantly lowering TCs, such as learning cost, searching cost and adaptation cost, and subsequently facilitating the development of website trust.

As noted by Chen et al. (2007), although many online stores have developed user-friendly websites, consumers still have to expend much time learning to buy online. Moreover, O'Cass and Fenech (2003) contend that Internet skills are invariably a necessary component for use of the Internet for purchasing products. With high expertise in the use of the Internet,

consumers feel more confident to use the Internet for online purchasing. They would have a belief in their capability to search for products online, evaluate products, make payment and adapt to the changing online environments, etc. Accordingly, the corresponding costs of learning to shop online, search for products, evaluate products/services quality, order, complete payment and adapt to online shopping environments will be mitigated.

6.2.1.3 Online Buying Frequency

As expected, online buying frequency (H1c) represents a significant predictor of TCs. It negatively influences the perception of TCs ($\beta = -.228, p < .001$), which implies that online shoppers will sense less TCs with the increase of frequency of online purchase. The result is theoretically consistent with past findings (Williamson 1981b, Choudhury *et al.* 1998, Teo and Yu 2005, Kim and Li 2009b, Yen *et al.* 2013).

For example, Williamson (1985) suggests that there is a negative relationship between transaction frequency and TCs. Yen *et al.* (2013) explicate that the interaction frequency between bidder and seller is negatively associated with the bidder's TCs. One explanation is the learning effect in the buying process. Consumers get used to the online transaction process once they have experience buying online (Teo and Yu 2005). They become familiar with the structure of the site, site aesthetics, navigation style, information content and product/price comparison features, etc., after the first few transactions. When they shop at the store again, they will be able to quickly locate the information they look for, use the live chat system on the web to contact the vendor if they have any inquires about product and delivery, and finish the payment without any technical difficulty. The learning process largely reduces their perceived TCs (Teo and Yu 2005), such as search cost, evaluation cost and payment cost associated with online buying.

Moreover, repurchasing from the online store generally means that consumers are satisfied with the previously purchased products or services provided by the online vendor. When shopping next time, they probably will spend less time in checking the quality of the products and the reliability, competence and benevolence of the retailer because they have built trust in the vendor and tend to believe that the vendor will provide reliable products, superior customer services and the like as promised (Qureshi *et al.* 2009, Kim *et al.* 2013b).

The finding supports the contention that the reaction of inexperienced and experienced online consumers to the same level of uncertainty in the online transaction process could be different as they have different tolerance for uncertainties (Liang and Huang 1998, Furnell *et al.* 2008). Liang and Huang (1998) further state that customers who do not have online buying experience would perceive much more uncertainties in online shopping, whereas for customers who have online buying experience, their perceived uncertainties would be reduced sharply due to the previous online transaction experience. Therefore, consumers' online buying frequency is negatively related to their perception of uncertainties and TCs of online shopping.

6.2.1.4 Product quality concern

Findings show that the product quality concern (H2a) has a positive relationship with TCs ($\beta = .057, p < .05$), suggesting that the increase in concerns regarding product quality increase consumers' perceived TCs. The result lends credence to the past findings in the literature (Liang and Huang 1998, White *et al.* 2000, Teo and Yu 2005, Yen *et al.* 2013), and serves to strengthen the conjecture that consumers are so worried about product quality, when they are

unable to physically check the products prior to purchase, that they sense a high level of TCs in online shopping which may hinder their purchase decision-making (Teo *et al.* 2004).

The findings of Cheskin Research (2000) further revealed that mainland Chinese consumers have a higher experiential orientation (need to examine merchandise physically before purchasing) as compared to Chinese consumers residing in North America. This can be explained by the fact that overseas Chinese are exposed to Western culture (e.g., American culture) which is characterized by a high uncertainty/risk acceptance level. Compared with Mainland China, America scores higher on uncertainty avoidance (one of the Hofstede's culture dimensions), which means that Americans, including overseas Chinese in America, tend to be more tolerant of ambiguous or unknown situation (Hofstede *et al.* 2010). In an online setting, they exhibit a larger degree of acceptance for online shopping even though they cannot physically examine the products.

On the contrary, mainland Chinese people tend to avoid potential risks in online environments and have a strong desire to examine products before making a purchase. However, they are unable to physically check the online products due to the geographical separation between consumers and online products. Consequently, they experience high product uncertainties. Particularly, they are concerned about product uncertainties as to whether the products are genuine, whether the received products are completely consistent with the ones showed on the website, and whether the performance of the purchased products are as good as promised by the online vendors. The difficulty of inspecting products when buying online causes a surge in uncertainty and TCs. If online vendors could provide clear exchange or refund policy to minimize the product uncertainty faced by consumers, consumers would not worry so much about the potential risks and possible losses, and would

be more likely to adopt online shopping and buy more items from the online vendor (Ranganathan 2012).

6.2.1.5 E-service quality

As expected in H2c, the negative relationship between e-service quality and perceived TCs is confirmed ($\beta = -.482, p < .001$). The finding indicates that lowering consumer perceived TCs can be achieved through offering a high level of e-service quality. Extant research has seldom considered e-service quality as an antecedent of the TCs of consumers in online shopping and examined their correlation.

The research by Teo et al. (2004) provides additional evidence to elaborate the finding of this study. As Teo et al. (2004) contend, consumers in China perceive higher uncertainties in e-service than U.S.A consumers. This is probably because many consumers in China believe online shopping generally provides poor after-sales service and is the lack of a guarantee by vendors (China Electronic Commerce Research Centre 2014). On the other hand, most U.S. online stores such as Amazon.com have the capability to provide good after-sales service, differentiate themselves from others by focusing on service differentiation, and guarantee the exchange or return of the products purchased if consumers are dissatisfied, which enable U.S. consumers to sense less uncertainties of the e-service quality and less risks in online environments.

In some cases, since online stores may not have a physical presence, the interaction between online vendors and consumers are limited. Once there are problems concerning product performance, delivery, or product return, consumers can contact online stores only via email, telephone and fax. The non-face-to-face communication prompts consumers to perceive more

behavioural uncertainties of online stores than those of brick-and-mortar stores. As such, consumers would have to spend additional time and effort researching for products and store-related information that are needed for problem-solving, and monitoring online stores to check if their inquiries are processed properly by the vendors.

The result also shows that among the factors affecting TCs, e-service quality has the strongest influence and advances prior research on the drivers of TCs by signifying the importance of e-service quality. The finding suggests that particular attention should be paid to e-service quality by online vendors. The results also provide online vendors with a full and clearer picture of how to improve e-service quality and reduce TCs through each dimension of e-service quality. In line with previous research (Lee 2005, Kassim and Abdullah 2010), this study suggests that, to mitigate online shoppers' perception of TCs, vendors need to provide superior e-service quality via the investment of resources in improving the e-service quality dimensions of reliability, responsiveness and personalization.

Specifically, reliable service enhances consumer trust in the online store (Zhu *et al.* 2002), allays consumer concerns about service quality, and will ultimately result in a drop in perceived TCs. Kassim and Abdullah (2010) advocate that providing prompt services to customers entails online vendors' continuous effort and resource investment. Thus, responsiveness of the service may act as a strong value signal. If online vendors cannot ensure service promptness, customers may doubt their ability to present qualified e-services, which would increase their perceived uncertainties and risks in online environments. Moreover, Lee (2005) notes that providing product or service information that is tailored to meet the needs of the individual customer strengthens customer belief that online vendors have the ability to understand and meet their needs, and therefore can increase customers'

perception of the benefits of online shopping, reduce sacrifices derived from online shopping, such as time and effort expended during the process of searching the most suitable products, and will finally lower their perceived TCs.

6.2.1.6 Reputation of Online Store

The study also points to the relationship between reputation of online store and TCs (H2d) by showing that reputation is negatively related to perceived TCs ($\beta = -.074, p < .01$). This result reveals that the better the reputation of the online store is, the lower the online shoppers' perception of the TCs associated with the transaction process. A number of studies have demonstrated the role of company reputation in value creation for customers and firm performance improvement (Roberts and Dowling 2002, Cretu and Brodie 2007, Trueman *et al.* 2012). Unlike much of the existing literature, this study takes a different approach to uncovering the relationship between online store reputation and TCs which are opposite to transaction value. It is among the first to test empirically the relationship between online store reputation and online TCs. It extends the extant literature by demonstrating a negative effect of online store reputation on TCs.

For those online stores which have established their online branding and possess positive word of mouth (WOM), assurances regarding their ability, integrity and goodwill largely alleviate consumer concerns (Qureshi *et al.* 2009). Consumers may not need to expend additional time and effort ascertaining the trustworthiness of information and products provided by online stores if they generally purchase low cost products online. In this sense, the reputation of online store is a powerful weapon that helps to minimize TCs.

6.2.1.7 Perceived Convenience

Consistent with Teo et al. (2004), the study finds a significant and negative relationship ($\beta = -.087, p < .001$) between perceived convenience and TCs associated with online purchase (H3a). This result indicates that the more the convenience perceived by consumers, the lower the TCs that they will sense during the online transaction process. It suggests that convenience offered by online stores such as powerful search engines, product samples and easy comparison of online prices can significantly allay TCs of online buying.

Empirical research (Childers *et al.* 2001, Prasad and Aryasri 2009, Ranganathan 2012) supports the view that Internet shopping increases search efficiency through the abilities to shop at home, by eliminating such problems as fighting traffic, facing irritating sales people, long checkout lines, and parking space problems, while offering single-stop shopping that eliminates travel to and from a variety of stores, which in turn reduces the time and effort for shopping, and finally reduces the costs of acquiring pre-purchase product information as well as the costs of completing the whole online transaction. A comparison study conducted by Teo et al. (2004) reports that consumers in the U.S. perceive more convenience of online shopping than those in China. As explained, U.S. consumers spend less time searching for online products and monitoring their online purchase due to better IT infrastructure and faster connection speed. Additionally, the costs in buying overseas products for consumers in China are usually high because of the high U.S. dollar exchange rate as well as shipping charges involved, thereby negating the convenience of online shopping.

Several researchers (Bhatnagar *et al.* 2000b, Kuo *et al.* 2011, Jiang *et al.* 2013) state that convenience of online shopping is manifested in the complete, accurate, timely, and customized information available in online environments that is likely to influence online decision-making process. To smooth the online transaction process, they assert that sites

should provide all the information needed to make an informed decision: product specifications, prices, in-stock availability, delivery time, reliability, return guarantees and so on. The more the information is applicable to consumers, the less time and effort they would expend on information search and the more likely they will perceive lower TCs in online shopping. In contrast, if they often encounter information that is unavailable or limited in scope, their experience may be negatively affected (Zhou 2012). This will result in the feeling of a lack of convenience of online information search or purchases.

Similarly, Kim and Li (2009b) and Gao and Bai (2014) maintain that the accurate, relevant and up-to-date information offered by online vendors will reduce consumers' time and effort expended on information search, and enable customers to make fair and fast comparisons, thereby improving their perception of convenience of online shopping. As a result, online shoppers' perceived search and evaluation costs will be dramatically reduced. However, if the information is inaccurate, irrelevant or out-of-date, it may undermine consumer experience as consumers need to expend more time on information scrutinizing and apply more mental resources to accomplish the purchase task (Richard *et al.* 2010), finally leading to an increase in the total perceived TCs.

6.2.1.8. Privacy and security concerns

It is hypothesized that privacy and security concerns are positively related to the perceived TCs (H3b). However, the result shows that the relationship is insignificant ($\beta = .048$, $p > .05$). Extensive literature has regarded invasion of privacy and security as a major concern of many Internet users (Wirtz *et al.* 2007, Tsai *et al.* 2011, Yeh *et al.* 2012b, Hong and Thong 2013). Particularly, Yeh *et al.* (2012b) indicate that buyers perceive increased uncertainty when they have concerns about the seller's ability or willingness to protect their private information

from improper use which could result in financial loss or deception. Consequently, the information security concerns of some potential buyers may be more acute in a B2C online shopping context.

Surprisingly, no evidence in this study is found to support the significant and positive effects of privacy and security concerns on online shoppers' perception of TCs, suggesting that privacy and security concerns may not be a driver of TCs among current online shoppers. One possible reason is that online shoppers can only passively accept the privacy policy and security statement imposed by online stores. They neither have control in altering the policy nor are highly involved in participating in the policy designing. In either case, they lose interest in participating and discussing the privacy policy, and would gradually become less concerned about the privacy and security issues.

Moreover, if consumers do not pay much attention to the privacy and security protection in the physical world, they may be less likely concerned about the privacy and security issues in the online environments due to apathy or lack of knowledge. This is an interesting finding which echoes Yang and Fang's viewpoint (2004) that consumers may pay less attention to security issues if they have never experienced problems of privacy and security invasion.

The unexpected finding can be also explained by the fact that recent advancements in security technology have led to changes in consumer's perception about the online security (Chung and Shin 2010). Alternatively, Teo et al. (2004) claim that consumers in China often pay for products purchased online upon delivery of the goods due to low credit card penetration in China. Such a phenomenon might have lessened the concerns of consumers regarding the security and privacy issues involved in online shopping.

Additionally, another reason for the insignificant relationship may be that while privacy and security concerns may significantly influence trust, their effects on TCs may be limited. According to Wolfinbarger and Gilly (2003), security and privacy concerns pose significant influences on consumer trust in a professional-looking website. This means that due to the lack of protection with respect to online privacy and payment security, it would be difficult for consumers to build trust in the site. The lack of trust would constitute a real psychological barrier to online shopping. This implies that privacy and security concerns directly affect trust development, but their direct effects on perceived TCs may be damped by other factors (e.g., mediators). Trust may serve as the mediator in the relationship between privacy and security concerns and TCs, but this needs to be tested and verified in future research.

6.2.2 Consequences of Consumer TCs

6.2.2.1 Online Purchase Behaviour

The hypothesis (H4a) that a customer's perception of TCs is negatively related to his/her actual online purchase behaviour is supported ($\beta = -.834, p < .001$). This result is in line with the TCT which states that consumers tend to transact in the channel that can economize on TCs (Williamson 1975, Williamson 1985). When making buying decisions, rational consumers will select a transaction channel that costs the least among all the available choices. That is to say, consumers weigh TCs (e.g., search cost, evaluation cost and monitoring cost) associated with the transactions at all possible channels and will choose one channel where it will incur a minimal cost (Adler *et al.* 1988, Cannon and Perreault 1999, Macher and Richman 2008). This cost consideration will affect their decision to buy online or in physical stores and further influence the amount of the items purchased and the buying frequency through that channel. Thus, if consumers perceive high TCs in the online shopping

channel, they will be less likely to buy online and more likely to reduce online purchasing frequency as well as the total numbers of items being purchased.

The result provides support for the proposition of perceived risk theory that increased uncertainties about the outcome of a purchase will lead to increased reluctance to engage in purchase activities (Forsythe and Shi 2003). This study also concurs with Teo and Yu's (2005) findings that lower TCs in online environments induce consumers to choose online channels and their online buying intention is negatively associated with their perceived TCs. If the TCs perceived by online shoppers change, their online purchasing intention tends to change inversely (Yen *et al.* 2013).

It is worth noting that previous studies concentrate on the impacts of TCs on consumer purchasing intention or repurchase intention (Teo and Yu 2005, Yeh *et al.* 2012b, Yen *et al.* 2013, Wu *et al.* 2014), however there is a lack of a thorough theoretical understanding of the effects of TCs on the actual purchase behaviour. By proposing and testing the direct relationship between TCs and online purchase behaviour, this study offers new insights into the TCT and consumer behaviour theory. Given the finding of this study and other supported evidence from extant studies, it is safe to conclude that TCs can be regarded as a key factor governing consumers' online purchase behaviour. This finding provides managers with a deeper understanding to how to entice consumers to buy more items and shop more frequently at their online store.

6.2.2.2 Customer Loyalty

This study takes a new perspective to examine the possible consequences of TCs in customer-online vendor exchanges: a perspective directed toward relational exchanges instead of

discrete transactions. Consequently, the study proposes customer loyalty as another consequence of consumer TCs associated with purchasing from an online vendor (H4b). The finding regarding the negative impact of TCs on customer loyalty ($\beta = -.563, p < .001$) coheres with Chen (2007) who posits that the greater the TCs the less likely the consumer will be willing to stay loyal toward an online vendor. The result implies that TC economizing determines a customer's future choice of an online vendor with which to conduct a continuing transaction after the first exchange. Customers would like to choose the most efficient online vendor to do business with. They evaluate the overall costs and attempt to transact with an online vendor where they may encounter the minimal TCs during the shopping process (Kim *et al.* 2014, Wu *et al.* 2014). The finding is also consistent with the point of view of Kim and Li (2009b) who articulate that TCs are negatively associated with customer loyalty towards online travel products and a low level of the online TCs play an important role in nurturing customer loyalty.

This study advances the TCT in relation to the outcomes of TCs by testing the effect of TCs on post-purchase behaviour and validating their negative influence on customer loyalty towards an online vendor/store utilizing data from real online shoppers who have completed at least one transaction with the online vendor. It also extends extant loyalty research by showing the important role of TCs in determining customer loyalty towards online vendor/stores.

6.2.3 The Mediating Role of Customer Satisfaction

To assess the reason why consumer TCs are advocated as crucial factors for consumer's choice of an online vendor, this study posits an alternative mechanism for the TCs – customer loyalty relationship whereby customer satisfaction mediates the impact of the TCs on loyalty.

Specifically, consumer TCs are hypothesized to negatively influence satisfaction (H4c) and satisfaction is hypothesized to positively affect loyalty (H5).

6.2.3.1 TCs—satisfaction

The results support H4c that TCs decrease customer satisfaction ($\beta = -.875, p < .001$). These results suggest that high TCs incurred by a consumer during his/her transaction with an online vendor can decrease his/her satisfaction with the online vendor. If a consumer spends a lot of time and effort on pre-transaction activities (e.g., searching for suitable products), contemporaneous transaction activities (e.g., evaluating products and making a payment), and post-transaction activities (e.g., adapting to unexpected changes), he/she would not be satisfied with such a transaction experience at the online store. This finding is consistent with the prior research by Kim and Li (2009b) who assert that consumers' perception of TCs of online shopping is believed to lower the level of their satisfaction with online shopping (Kim and Li, 2009).

Despite that a few studies have affirmed the significance of TCs in explaining initial purchase or purchase intention in an online business setting (Liang and Huang 1998, Teo *et al.* 2004, Teo and Yu 2005), little academic attention has been devoted to examining the role TCs play in the post-purchase phase, such as forming customer satisfaction. This study fills this void in the literature by underlining the significant role of TCs in determining customer satisfaction and confirming the negative effects TCs have on customer satisfaction.

6.2.3.2 Satisfaction---loyalty

The result also establishes that a customer's satisfaction has a significantly positive effect on his/her loyalty towards the online vendor/store ($\beta = .334, p < .001$). As argued by Reichheld

and Sasser (1990) and Oliver (1999), satisfied customers appear to be willing to repeat patronizing the service provider and also to recommend the provider to other customers. While the foregoing relationship has been examined by researchers in traditional shopping settings, the current study validates this relationship in an online B2C setting in a developing country. Moreover, the result is in line with the findings of the survey undertaken by Cheung and Lee (2005) in which 80 per cent of highly satisfied online consumers would shop again within two months, and 90 percent would recommend online vendors to others. However, 87 per cent of dissatisfied customers would permanently leave their online vendors without any complaints.

6.3.3.3 Partially mediation

The conceptual model in this study highlights the mediating role of customer satisfaction in the effect of TCs on loyalty. Prior studies have investigate the relationship between consumer TCs and satisfaction (Kim and Li 2009b), the relationship between service quality and satisfaction (Rust and Oliver 1994, Spreng and Mackoy 1996), and the linkage between satisfaction and loyalty (Sahadev and Purani 2008, Flint *et al.* 2011). Extant studies, however, have either ignored or not formally tested the mediating role of customer satisfaction in the relationship between TCs and loyalty, or they have not explained this role thoroughly (Kim and Li 2009b). By invoking the well-investigated attitudinal framework, cognition → affect → behavioural intention or behaviour (Ajzen and Fishbein 1980), this study provides a theoretical justification for the mediating role of customer satisfaction by viewing consumer TCs as cognition, customer satisfaction as affect, and customer loyalty as behaviour (or a disposition to behave favourably towards an online vendor). The results support the contention that customer satisfaction partially mediates the effect of TCs on loyalty, because the direct effect of TCs on loyalty ($\beta = -.240, p < .001$) as well as the mediated effect through

consumer satisfaction ($\beta_{\text{TCs-satisfaction}} = -.749$, $p < .001$; $\beta_{\text{satisfaction-loyalty}} = .647$, $p < .001$) both achieve significance. It appears that online shoppers are influenced by both their satisfaction and perceived TCs of purchasing from an online store when considering whether to purchase from the online store again or recommend the online store to other consumers.

The results show that though consumer TCs have a direct and negative effect on customer loyalty, part of the effect is conditional on the ability to reduce customer satisfaction. With customer satisfaction, TCs perceived by online shoppers may become less influential on loyalty. This finding is in line with the proposition that high TCs lessen the strength of the long-term orientation or commitment to a relationship by reducing the satisfaction with an exchange relationship as documented by Kim and Li (2009b). The relationships among TCs, customer satisfaction and loyalty found in this study are similar to the findings of Woodruff and Gardial (1996); that is, satisfaction partially mediates between transaction values (opposite to TCs) and loyalty. The present study advances the TCT and online marketing research by explicating the partial mediating role of customer satisfaction in the relationship between TCs and post-purchase behaviour (e.g., loyalty in this study) and positioning their interrelationship within the uncertain online environments in a developing country.

The results also reveal that TCs are still the dominant determinant of loyalty ($\beta = -.563$) (refer to Figure 5.3). Although consumer satisfaction has a significant effect on loyalty, this influence is weaker compared with the direct effect of TCs ($\beta_{\text{satisfaction}} = .334$ versus $\beta_{\text{TCs}} = -.563$). These results indicate that consumers' evaluations of TCs appear to carry greater weight in consumers' decisions to patronize the vendor or recommend them to other customers, though consumers find it preferable to maintain long-term relationships with an online vendor who attempts to make them satisfy with the online shopping experience.

6.2.4 The Moderating Roles of Risk-Bearing Propensity and Perceived Enjoyment

In the TCT literature (both online and offline), little research has studied the factors that moderate the effects of perceived TCs on their outcome variables. To address this gap, this study proposes that consumers' risk-bearing propensity and consumers' perceptions of the enjoyment of online shopping are the key moderators of the relationship between perceived TCs and online purchase behaviour/customer loyalty. Specifically, a consumer's risk-bearing propensity moderates the effects of perceived TCs on his/her online purchase at an online store (H7a) as well as his/her loyalty towards an online store (H7b). Likewise, perceived enjoyment moderates the effects of perceived TCs on actual online purchase (H8a) and customer loyalty (H8b).

The results provide support for the moderating effect of consumers' risk-bearing propensity on the relationship between TCs and loyalty (H7b) and the moderating effect of perceived enjoyment on the relationship between TCs and online purchase behaviour (H8a). However, the results do not support the other two moderating hypotheses (H7a and H8b).

Specifically, the results of testing the moderating role of a consumer's risk-bearing propensity on the relationship between TCs and online purchase behaviour (H7a) indicate that the TCs → online purchase behaviour relationship was the same among either low risk-bearing propensity or high risk-bearing propensity online shoppers although the relationship was significant in both groups ($p < .001$). The results suggest that the relationship between TCs and online purchase behaviour is not affected by consumers' risk-bearing propensity. This finding implies that regardless of whether a consumer is risk-taker or a risk-averse individual, low TCs associated with the transaction with an online store will lead the

consumer to purchase from the online store. In other words, as long as the TCs perceived by the consumer are low enough, online buying will ensue. In this case, the risk-bearing propensity cannot affect the consumer's online purchasing behaviour.

For the moderating effect of consumers' risk-bearing propensity on the relationship between TCs and loyalty (H7b), the results show that the TCs → loyalty relationship is significant in both high- and low-risk-bearing groups with the relationship being significantly greater for the low-risk-bearing group ($\beta = -0.53$, $p < .001$) than for the high-risk-bearing group ($\beta = -0.47$, $p < .001$). The more risk-averse an individual is, the less willing he/she is to bear uncertainties and risks posed by the online environments. In contrast, the more risk-taking an individual is, the more willing he/she is to bear the uncertainties and risks the online shopping poses. Thus, the finding indicates that risk-averse consumers are less likely to be loyal if they perceive high TCs of purchasing products from the online store. In contrast, risk-taking consumers are more likely to be loyal even if they perceive high TCs of purchasing goods from the online store.

One possible explanation would be that risk-averse consumers tend to keep away from risks and uncertainties in the online shopping environment when they sense high TCs which arise from the high levels of uncertainties and risks in the prior experience of online shopping that exceed their acceptance level. Then they would be more likely to look for alternative online vendors or simply abandon online shopping and purchase from the traditional stores. As such, they are not likely to stay loyal towards the online store from which they previously purchased goods. On the contrary, risk-takers may realize that there are certain costs and risks involved in online transactions, but still believe that they can handle these uncertainties

themselves. Therefore, they would like to take the adventure and conduct the online transaction with the online store again and find more potential benefits for doing so.

The results of testing the moderating effect of perceived enjoyment of online shopping on the relationship between TCs and online purchase behaviour (H8a) indicate that the TCs → online purchase behaviour relationship is significant in both high- and low-enjoyment groups with the relationship being significantly greater for the low-enjoyment group ($\beta = -0.82$, $p < 0.001$) than for the high-enjoyment group ($\beta = -0.65$, $p < 0.001$). The finding suggests that consumers who perceive low enjoyment surrounding online shopping are less likely to purchase from an online store if they also face high TCs associated with the transaction with the online store. In contrast, consumers who perceive high enjoyment of online shopping are more likely to purchase from the online store even if high TCs exist. Previous studies (Koufaris 2002, Parboteeah *et al.* 2009, Domina *et al.* 2012) reveal that shopping enjoyment can strongly predict consumers' purchase intention. One plausible explanation is that consumers oriented by the enjoyment of online shopping would be less concerned about uncertainties and risks in online transactions and would show higher possibility to purchase online.

For the moderating effect of perceived enjoyment on the relationship between TCs and loyalty (H8b), the results demonstrate that the TCs → loyalty relationship is the same among either low-enjoyment perception or high-enjoyment perception of online buyers although the relationship is significant in both groups ($p < 0.001$). The results suggest that the relationship between TCs and loyalty is not affected by perceived enjoyment. This finding indicates that regardless of the degree of enjoyment of online shopping perceived by a consumer, low TCs perceived by the consumer during the transaction with an online store will make the

consumer a repeated shopper. In other words, when perceived TCs are so low that consumer will patronize in future, the perception of enjoyment cannot affect consumers' loyal behaviour.

6.2.5 Product Category Comparison

Hypotheses 9a and 9b propose that different product categories may give rise to differences in the relationships between TCs and their antecedents as well as the relationships between TCs and their behavioural consequences (i.e., online purchase behaviour and customer loyalty). The findings show that the magnitude of the proposed relationships varies depending on the product categories online shoppers have purchased.

Specifically, the search products have a greater tendency to be bought online. The findings are in sync with the extant literature (Girard *et al.* 2002, Girard *et al.* 2003, Byramjee and Korgaonkar 2004, Balasubramanian *et al.* 2005, Chocarro *et al.* 2013) which suggest that consumers' preference to shop online is significantly higher for search goods than for experience goods. The possible reason for this would be that the information for search products can be easily obtained prior to purchase through using the Internet as an information source and search tool, therefore strengthening the confidence from consumers for making online purchases. The results also indicate that the effects of online buying frequency, e-service quality, and reputation of online store on TCs are stronger among consumers who have purchased search products than for consumers who have purchased experience products. Also, the relationship between customer satisfaction and loyalty appear stronger for search products relative to experience products, which bear support for past literature (Byramjee and Korgaonkar 2004) wherein similar results have been found.

On the other hand, experience products have a greater tendency to be bought in-store. The impacts of perceived Internet expertise, Internet access availability, perceived convenience, product quality concern, and privacy and security concerns on TCs are stronger for the experience products, as compared with those for the search products. The Internet expertise is related to the costs of learning. Purchasing experience products involves a higher level of learning costs as such products required consumers to own more Internet skills for the purpose of examining the products and comparing the subjective features, and thus perceived Internet expertise has stronger effect on TCs for experience products. Since experience products require more inspection and are thus regarded as more risky to buy from online stores, consumers would have to spend more time and effort searching for relevant information and checking their qualities, and would perceive less convenience, thereby significantly increasing their perceived TCs of online shopping. In other words, the lack of or inadequate information about the experience products increases the uncertainty and difficulty in examining the product quality, leading to a high level of the TCs. Consistent with Lee and Kim (2008), consumers perceive low quality of “high touch” products such as apparels and high quality of “low touch” products such as computer software. When purchasing the experience products (e.g., shoes, cosmetics, and perfume), consumers may also need to give more personal information to online vendors so that they can find out the most suitable items for their customers. In this case, consumers may worry about the protection of their personal information which may be misused by online vendors for other purposes, thus, they may spend additional time and efforts monitoring online vendors’ behaviour and would bear more psychological costs, finally resulting in the increased perceived TCs.

Results also indicate that there are significant differences between search products and experience products with respect to the effects of TCs on behavioural consequences. The

findings show that consumer TCs has stronger effects on online purchase behaviour and loyalty towards purchasing experience goods. The possible explanation is that, due to the difficulties in getting full information of key experience product attributes and determining its quality, consumer confidence level decreases and perceived TCs rise as the amount of information available decreases, which will in turn affect consumer's online purchase behaviour and loyalty. In addition, the effect of TCs on satisfaction appears stronger as well. Such stronger effect is consistent with the previous findings (Engel *et al.* 1995, Klein 1998, Liang and Huang 1998) which state that experience goods have the highest amount of consumer dissatisfaction than other product categories.

The results based on product category comparisons clearly show that the hypothesized relationships differ in the strengths when purchasing search goods and experience goods. This study extends the extant literature on product comparison by advocating a theoretical conjecture that the product categories influence the consumer TCs, their causes and effects in the online shopping environment. Importantly the findings provide guidelines for marketing practices in firms seeking to develop different strategies for different product categories to better meet consumer needs, further entice online purchase behaviour and develop long-term relationships with customers.

In this section, the statistical results presented in chapter five were discussed in detail. The next section addresses the theoretical and managerial implications of the study.

6.3 IMPLICATIONS

6.3.1 Theoretical Implications

This study entails several theoretical implications for understating consumer TCs in an online setting. The literature reflects conflicting findings with regard to TCs which this study attempts to resolve via the empirical results. A major issue pertains to the applicability of TCs to consumer behaviour in online environments as the Internet represents a fundamentally different environment for retailing compared with traditional retailing. This research adds knowledge to three bodies of existing literature (TCT, consumer behaviour, and E-commerce) by developing an integrative theoretical framework of consumer TCs of online shopping that is grounded in strong theories and is successfully tested using a large-scale sample randomly selected from Chinese online shoppers. By examining the antecedents of consumer TCs, the direct consequences of TCs directed toward consumers' online purchase and post-purchase behaviour, the key mediators and the key moderators of the effects of consumer TCs on their behavioural outcomes, as well as the product categories comparison, this study directly addresses many questions that have remained largely unexplored by previous TCs and consumer behaviour research. As a result, the study provides a deeper understanding of TC mechanisms in online consumer behaviour.

Specifically, eight aspects of this study are noteworthy in terms of its theoretical contributions. Firstly, this study takes a new perspective on the study of TC mechanisms in consumer behaviour. It offers deeper theoretical and empirical insights into consumer behaviour by explicating the role of TCs at the individual consumer level. Prior research addressed the relations among TCs, organizational structures and behaviour, however, there have been few empirical studies examining the relationships between TCs and individual consumer behaviour. By showing that individual consumers have to bear some TCs (e.g., search cost, evaluation cost and monitoring cost) associated with each shopping activity, the

study provides opportunities to extend the original TCT from firm level to individual level. It goes beyond previous TCs research (Granovetter 2005, Barney and Hesterly 2006, Hennart 2006) and further reflects that consumers' behaviour toward a transaction is driven by their perception of TCs. By demonstrating the applicability of the TCT at the individual consumer level, this study establishes external validity and contributes to the theory development of both TCT and consumer behaviour.

Secondly, although much research has used TCT to explain the rise of global electronic markets and the cost-savings afforded by network-based communication, few have conducted empirical studies using TCT to explain consumer behaviour in B2C electronic commerce context. The current study applies the TCT to the online market and tests their contractual relationships empirically. Additionally, it develops a nine-component conceptualization (consisting of access cost, search cost, evaluation cost, ordering cost, payment cost, delivery cost, monitoring cost, post-sale cost and adaptation cost) of consumer TCs associated with each step of the online transaction process and further groups them into three broad categories, namely pre-TCs, contemporaneous TCs and post-TCs. It also sheds light on how consumer TCs which are coupled with the unique characteristics that e-commerce carries differ from those in a traditional marketplace. In this sense, one of the contributions of the study is the development and empirical testing of a consumer choice model which is based on the three-component conceptualization of consumer TCs to examine consumer behaviour in online environments. It fills the gap in the existing body of TCT and online consumer behaviour knowledge, and advances the literature by untangling the relationships between consumer TCs and online consumers in a B2C e-commerce setting.

Thirdly, given the unique characteristics of online transaction, this study extends the original TCT by examining various antecedents that can determine consumers' perception of TCs of online shopping, especially extending Liang and Huang's (1998) work. To identify a comprehensive set of antecedents of consumer TCs associated with shopping at an online store, this study examines a consumer's entire online transaction experience including not only a consumer's online experience of purchasing products from a particular online vendor – the focus of previous online B2C TC research (Liang and Huang 1998, Teo and Yu 2005, Yen *et al.* 2013) – but also his/ her offline experience and resources related to online shopping as well as his/her attitudes towards the general online shopping channel. The theoretical development and empirical results suggest that a consumer's perception towards the seven key aspects of his/her online transaction experience, including Internet access availability, perceived Internet expertise, online buying frequency, product quality concern, e-service quality, reputation of online store and perceived convenience, constitute the key antecedents of consumer TCs. The finding enriches online marketing and consumer behaviour research by empirically identifying antecedents of TCs from a more comprehensive perspective, which include consumer-related characteristics, online store- and product-related characteristics, and online channel-related characteristics. It also adds to the TCT literature by incorporating additional beliefs relevant to the online shopping context and investigating the effects of antecedents to beliefs on online TCs.

Furthermore, among the antecedents of importance, consumers weigh e-service quality most heavily when evaluating TCs of online shopping. Online buying frequency and perceived Internet expertise play the second and the third role, respectively. Consumers weigh Internet access availability the least when judging whether the TCs are high or low. Taking an expanded list of antecedent factors into account contributes to the theoretical and empirical

advancement of the role of the key players' (consumer, online vendor/store and online channel) characteristics on consumers' TC evaluation and their subsequent behaviour (Teo and Yu 2005). The findings also provide deeper insights into online vendors' TC-reduction activities and further help them gain a more thorough understanding on how to alleviate consumer perceived TCs associated with purchasing at their stores by looking into the seven antecedent factors identified in this study.

Fourthly, although previous research argues that various factors from different aspects of a transaction can affect consumer's online behaviour, little effort has been devoted to the investigation of the consumer's online purchase behaviour from a TCT perspective. A few studies have examined the effects of TCs on purchase intention or willingness to transact (Liang and Huang 1998, Teo *et al.* 2004, Teo and Yu 2005), nevertheless, the initial intention or willingness does not necessarily lead to the occurrence of purchase behaviour (Chandon *et al.* 2005). To better capture the behavioural consequences of TCs, this study fills the gap by investigating online shoppers' actual purchase behaviour. It identifies consumer's online purchase behaviour as the direct consequence of consumer TCs associated with certain transaction with an online store and demonstrates that online purchase behaviour is negatively related to TCs based on a TCT approach. In other words, TC consideration is the underlying criterion for consumers' purchasing behaviour. The findings advance extant literature by adoption a new perspective regarding the role of TCs at both online channel and store levels in determining online purchase behaviour.

By drawing upon the framework of TCs and consumer behaviour, this study enhances the understanding of the TCs as a relational factor that impedes or drives online purchase behaviour in the discrete transactions, and also provides strong arguments for the direct

impact of TCs on a consumer's decision to be loyal towards an online vendor in a continuing transaction context. Empirical evidence derived from this study shows that a rational economic actor (i.e., online shopper) evaluates the utility of the transaction with an online vendor and experiences the lowest TCs associated with purchasing at the most efficient online vendor. By assessing the perceived TCs, it would become easier and more effective for consumers to decide whether or not to purchase at and patronize the online store in future. Meanwhile, from an academic point of view, the study contributes to a clearer understanding of the complex online consumer behaviour by explicating it from the TC perspective.

Fifthly, to explain the mechanism underlying the impact of TCs on customer loyalty, this study posits that customer satisfaction is the underlying link for an individual customer's loyalty building towards an online store. The results reveal that customer satisfaction acts as a partial mediating role in the relationship between TCs and loyalty. It clarifies how and why customer satisfaction matters in the contribution of TCs to loyalty by showing its mediating role. In fact, previous studies have highlighted the importance of customer satisfaction in exchange processes and indicated that satisfaction has a strong effect on customer loyalty development (Deng *et al.* 2010, Kassim and Abdullah 2010, Chang and Wang 2011, Flint *et al.* 2011). This study illuminates an alternative mechanism for the TCs- loyalty relationship whereby customer satisfaction mediates the effect of TCs on loyalty. In this regard, the finding not only extends the transactional application of customer satisfaction by exhibiting its partial mediating role but also makes important theoretical contributions to TCT literature by clarifying the underlying process of TCs influencing consumers' post-purchase behaviour.

Sixthly, this study examines the factors that moderate the impacts of consumer TCs on behavioural consequences. This consideration has been largely ignored in the past research.

In an attempt to shed some light on this issue and provide more precise managerial implications concerning how cost-reduction activities can be conducted to entice purchasers to shop online more frequently and ultimately improve their loyalty, the study identifies a consumer's risk-bearing propensity and perceived enjoyment of online shopping as the key moderators of the effects of TC on a consumer's decision to purchase from or be loyal to, an online vendor. Although the empirical results failed to support the moderating role of the consumer's risk-bearing propensity in the relationship between consumer TCs and online purchase behaviour, and the moderating effect of the perceived enjoyment on the relationship between TCs and loyalty, the findings confirm that the risk-bearing propensity moderates the relationship between TCs and loyalty, and that enjoyment perception moderates the effects of TCs on online purchase behaviour. To the best of researcher's knowledge, the study is among the first to test the interactive effects between consumer TCs, risk-bearing propensity, and perception of enjoyment of online shopping, when estimating their cumulative impacts on online purchase behaviour and customer loyalty.

Seventhly, the model is tested across two product categories, thereby providing some evidence of the generalizability of the research model. Exploring the differences of the hypothesized relationships in two product categories is noteworthy because the knowledge generated from the product comparisons enables online vendors to formulate and implement more effective and accurate strategies to solve existing problems and improve the company's performance. The findings provide empirical evidences to marketing professionals by expounding on which product category consumers are more willing to purchase online and are more likely to be satisfied with and repurchase from online stores in future. The findings have also contributed to the consumer TC research by distinguishing the similarities and

differences in consumers' perceptions of antecedent variables between the search products and the experience products.

Finally, previous research on TCs has commonly used samples from Western countries. By adopting and testing the TCT in an Asian country, this study demonstrates its applicability in a non-Western context. In developing countries, such as China, e-commerce has been growing at an amazing speed in recent years. The findings of the study reveal the main reasons for this phenomenon, provide in-depth explanations based on the analysis of consumer TCs, and contribute to understanding developing countries (e.g. China).

6.3.2 Practical Implications

The results hold a number of interesting implications for individual consumers and practitioners with online retailing operations.

From the consumer's perspective, this research brings benefits to individual consumers by informing them that there are many advantages of online shopping such as convenience, a broader selection of goods, cheaper prices, and easier product comparisons. These advantages can reduce time and cognitive effort spent on shopping and consequently lower consumers' perceived TCs of online shopping. The study helps existing and prospective online shoppers to assess the benefits and costs associated with online shopping by looking at several antecedents of TCs. This research is also expected to make the consumers note that e-commerce has become an important trend in the modern information technology society so that they should be more receptive to online shopping and should accept that there are other shopping options in addition to in-store traditional shopping.

From the marketer's prospective, the research findings have three major practical significances which provide online vendors with a deeper understanding on the allocation of resources and capabilities in achieving minimum consumer TCs and inducing favourable behavioural outcomes. Firstly, the TCs offers online vendors a guideline to identify what is of cost to customers and to reduce understanding what constitutes the overall TCs by tracing the cause of each cost dimension.

Secondly, the research provides online vendors with important enlightenment concerning which antecedent factors should be given closer attention to mitigating consumers' perceived TCs. For example, e-service quality, online store reputation and product quality concern are important factors that e-marketers or online vendors need to pay more attention to. Accordingly, the online vendors should endeavour to provide superior e-service quality, build up a trustable brand, and offer products with excellent performance. Also, they need to provide detailed information about the products/services and make their websites visually appealing to entice consumers to buy on the shopping sites. By identifying antecedent variables influencing consumers' beliefs about online TCs, online vendors can reduce the TCs more effectively.

Thirdly, it is important for online marketers to understand the influences of TCs on online behaviour of this new market to better cater to consumer needs. Liang and Huang (1998) suggest that sellers should first determine the TCs perceived by their customers and then address these costs in their marketing strategy. This advice appears particularly apropos when evaluating a new form of retailing such as the Internet. The model presented suggests that consumer online patronage, satisfaction and loyalty can be achieved through reducing TCs of online buying, thus the study offers a new insight that if e-marketers desire to induce online

purchase, cultivate customer satisfaction and nurture loyalty, they should develop marketing strategies to mitigate the customers' perceived TCs that prevent current online shoppers from increasing patronage. In a word, online vendors' knowledge of the antecedents of TCs and costs-related behavioural consequences provides a rich resource which is often untapped by online firms but should be used as an input into strategy decisions. The implications are given below in terms of prescriptions for online stores, which practitioners can adopt.

In order to purchase online, consumers in China have to pay a high connection fee to Internet service providers (China Internet Network Information Centre 2012) and also buy computer equipment, which may be costly for them. Most consumers are still hampered by low bandwidth because of dial-up access. They also have to invest time to learn online shopping because the levels of computer- and Internet-related skills are relatively low in China. Accordingly, online vendors should be aware that their sites need to be understandable and easy to use by potential customers. Sophisticated outlays may sometimes need to be compensated by lucid designs which enable consumers to browse and transact more easily. Online vendors are advised to provide a wide variety of products and a ready availability of information at the click of a button because they can ease the task of information-acquisition and price-comparisons for buyers, which make online shopping a more convenient experience. Managers of online stores must ensure that their websites are not graphic intensive and can be loaded quickly even through low-speed connections. This will help to reduce consumers' time expended on searching for product information, thereby increasing convenience and economic utility whilst reducing TCs.

Consumers with certain Internet skills can easily transfer their previous skills to online shopping. On this point, site interfaces should be designed to be user-friendly, such as easy to

search for product information and easy to conduct payment, etc. Online vendors should try to eliminate consumers' perception of specific human asset investment (e.g., acquiring knowledge and skills of online shopping) at the beginning of their transactions, because when consumers get the impression that they are required to invest a lot of specific assets, their perceived TCs of online shopping will rise and they will be reluctant to purchase at the shopping site. Thus, the online vendors should pay special attention to make the interface easy-to-use and ensure that online shopping procedures (e.g., placing an order and finishing the payment) are easy to learn and the transaction process is smooth, easy to complete and free of effort, especially for consumers with limited Internet expertise. If the shopping sites have a poor interface and are difficult to operate, customers may feel lack of control and perceive high costs of using them. Online vendors can emulate the interface design of reputable companies.

This study indicates that consumers with high online buying frequency sense less TCs than those with low online buying frequency. Thus, online vendors should increase the transaction frequency with online shoppers in order to reduce their perceived TCs of online purchasing. The survey results from Teo and Yu (2005) show that online shoppers only compose 34 per cent of Internet users, and more than 50 per cent of Internet users have not experienced online shopping yet. Most of them are dissuaded by distrust in online shopping, which would hinder online transactions. To attract those potential customers, online stores could give consumers some incentive at their first-time purchase, such as free samples, gifts, or discounts. Consumers usually are more willing to try a new thing when they feel motivated. The first successful online buying experience will reduce their perception of TCs of purchasing goods from the online vendors, and will increase the likelihood that they will continue to buy online in future.

Since product quality concern is one of the major factors incurring TCs of online shopping, online vendors need to pay particular attention to the ways and means of neutralizing its impact. Successful companies, such as Apple and eBay, have recognized the importance of customers' product concern. For potential customers, being unable to examine the product in person leads to a host of problems, including whether clothing may not fit, software may be incompatible, or a purchase may be damaged during shipping. These potential problems may increase customers' cognitive costs of online shopping. Any service an online vendor can provide to ease the cognitive costs of shopping online increases the customer's perceived value of the product and finally reduces their perceived TCs.

For instance, they should make it clear to consumers about the descriptions of the products and warranty for products purchased, such as a guarantee of satisfaction that allows for returns. Online vendors are advised to adopt a high level of 3D virtual technology where possible to enhance product examination and alleviate the difficulties in checking the product quality. They should endeavour to enhance information transparency with regard to the details of the products and terms and conditions on order cancellation and dispute resolution. Furthermore, they need to provide an explicit statement regarding the product return or refund if customers are not satisfied with the purchased products. Managers of online stores should recognise consumers' right to return goods, within a specified time limit, without having to give a reason. Further, to minimize product quality concerns, online stores must provide consumers with details of their identity and physical location. These measures reduce consumers' concerns about product quality and help them to check the quality of the online goods within a short time and with little effort.

Another important technique for alleviating customers' product quality concern is to incorporate social media into the product strategy. Social networking has changed the way marketers and managers communicate with their customers forever. Spend any amount of time online or at a coffee shop, and customers will find that they are surrounded by individuals who are leveraging the power of social networking to seek and share information about products and services that interest them. Social networking sites (e.g., Facebook, Twitter, Pinterest, LinkedIn, and YouTube) are full of product review information posted by customers, friends and family members. Product reviews posted by their friends or colleagues have more power in influencing their decision-making than the product information offered by the online vendors as consumers generally exhibit more trust in other people's opinions than those of the online vendors. A positive product review can significantly reduce concerns over product quality (Frost and Strauss 2013). Thus, online vendors should encourage their customers to write positive product reviews on the social networking sites and those customers who continuously write about an online vendor and its products should be rewarded.

Drawing on the findings of the study, online vendors are advised to put more emphasis on improving e-service quality as it plays a crucial role in reducing consumers' perceived TCs of online shopping. Indeed, the proliferation of information, products, and services available on the Internet means online vendors must find ways of differentiating their products and services in order to attract customers and to build long-term relationships. Online vendors can add meaningful and valued differences to distinguish their offering from the competition by investing more resources to ensure the superior e-service is provided.

More specifically, online vendors should focus on strengthening their service quality by offering a reliable service, providing personalised service, and promptly responding to customers' inquiries, because such components contribute considerably to consumers' overall e-service quality perception. Some studies (Kuo 2003, Wolfinbarger and Gilly 2003) note that reliability is an affective determinant of web-based service quality, as such, to lower TCs, online stores are suggested to improve the indicators of reliability, such as capability of delivering products as promised, providing error-free transactions and strengthening performance as desired. Online vendors should also practice proper supply chain management to avoid long wait or delivery error, and must endeavour to deliver the agreed product as soon as possible. If customers can be assured of the reliable and consistent service they expect from online vendors, their perception of e-service quality will improve, which will lead to a decrease in their perceived TCs.

Online vendors should be aware of the fact that if consumers have trouble getting prompt service from them, they might switch to alternative retail sites or simply abandon online shopping. Customers expect online vendors to promptly respond to their inquiries regarding product specifications, payment option, delivery method, order status, return policy and the like (Chea *et al.* 2012). Whether online vendors have the capability to provide prompt service when customers have questions/problems will affect their perception of overall e-service quality and TCs. According to Sousa and Voss (2012), one of the secrets behind online retailing success lies in the efficiency of reacting to the customers' inquires and the changing business environment. Therefore, it is imperative for online vendors to improve responsiveness of their customer service.

Online vendors are advised to take prompt communication with customers into account as it serves as an important input in reducing TCs. For instance, many businesses have been adding live chat support. Not only small and medium-sized businesses are recognizing the importance of providing real time customer service, but also corporates like Apple, SKY, Virgin Airlines, and many more are using live chat to be one step ahead of the competition. From a customer perspective, an online chat system provides them immediate access to help. Live chat is one of the best ways to get instant communication with a company. Wait times are often much less than a call centre and customers can easily multi-task while waiting. It has become not only the leading method for online support but also yields to the highest satisfaction rates among customers. An Oracle Global Consumer Trend study (2012) found that 90% of customers consider live chat helpful and an emarketer.com survey (2009) found that 63% are more likely to return to a website that offers live chat. In fact, a Forrester research (Clarkson *et al.* 2010) showed that 44% of online consumers say that having questions answered by a live person while in the middle of an online purchase is one of the most important features a Web site can offer. Live chat has the ability to provide the convenient answers that customers want. The timely contact and smooth communication with the customers contributes to lowering perceived TCs and establishing a trust and long-term relationship between two parties.

In addition, consumers also expect the prompt delivery of products which acts as a strong value signal. In this sense, online vendors are suggested to work on developing efficient and fast logistics options to better meet customers' needs of prompt product delivery. Online vendors who can provide better delivery services and well handle consumers' inquiries and complaints will add credibility to themselves (Teo and Yu 2005). If online vendors cannot ensure service responsiveness, customers may doubt online vendors' ability to present good

e-services to them, which may increase their perception of uncertainty and risk of online shopping. Providing prompt services to customers entails online vendors' continuous effort and resource investment.

Another important implication of this study is related to personalization and online privacy. As Internet technologies become increasingly sophisticated and web sites are able to deliver more targeted content, demand for personalization continues to grow (Gurau *et al.* 2003). Ho *et al.* (2011) and Luo *et al.* (2012) highlight that e-businesses need to necessarily inculcate the customer-orientation in their strategies and address issues encountered by consumers when browsing and purchasing at their websites and offer personalized solution to these issues. Many businesses use e-commerce to let consumers order customized versions of products. The idea is to delight customers by providing exactly what they want and need. Personalization helps companies gain distinct competitive advantages.

For example, at the Nike website, customers can design their own sport shoes. At the shoesignstudio.com, women can design their own shoes that no one else owns and that are completely unique. Customers choose from a range of options to create something truly unique. The site provides more than 120 leathers and fabrics for customers to choose from, as well as some shoe designs that customers can mix and match to create their dream pair. The company's value proposition is that customers can create their own styles not just to match their outfit but also to reflect their personality through their footwear. Another example is Blue Nile. It allows customers to create their own engagement rings, wedding rings, earrings, bracelets and necklaces.

Other simple methods of offering personalized service used by the big successful online vendors include greeting users by name and suggesting product offerings of interest based on previous purchases. For example, LeFeng.com is Chinese's second biggest cosmetic website. A returning customer to LeFeng.com gets an item with his name on it, such as "Hello, James. We have recommendations for you". Clicking on the link reveals a list of items that James might be interested in examining, based on his previous purchases from LeFeng.com or those of similar buyers. By delivering personalized services, customers can enjoy the unique online shopping experience, perceive more benefits and fewer costs, and will be more likely to circulate positive WOM and favourable feedbacks. Thus, it is crucial for online vendors to consider personalized service offering as an important marketing strategy.

On the other hand, however, a vast amount of studies has documented that customers are afraid that the online vendors will sell personal information to other organizations without their knowledge or permission (Wu *et al.* 2012, Jamal *et al.* 2013, Shin *et al.* 2013). Notably, increasing numbers of online customers have expressed concern regarding potential misuse of personal information and abuse of privacy (Castañeda and Montoro 2007, Wirtz *et al.* 2007, Miyazaki 2008). Online vendors often use cookies and other technologies to track customers' online behaviour, their previous purchase behaviour and preferences, which would increase customers' privacy and security concerns. Tracking customers' internet activity is big business (Kim *et al.* 2013d). With regard to the personalized service, the dilemma faced by consumers is that if they expect to obtain personalized service, they have to provide some sensitive personal information to online vendors, while Chellappa and Sin (2005) argue, privacy is the price users pay for the personalization of online shopping. The potential downside of personalized service is that some online vendors may use customers' personal information for other purposes rather than purely for offering personalized service (Awad and

Krishnan 2006). If such information given originally for personalized service is abused or used nefariously, concerns about privacy and security may increase for online shoppers and their perceived TCs will tend to rise.

Online stores thus must try to ensure that customers' personal information will be strictly confidential and protected by them when delivering customized service, because personalization should not be intrusive (Lee and Lin 2005). When they use cookies or other tracking technologies, they should at least make a statement about the cookie and tracking technologies use on its website to reduce customers' privacy and security concerns. For example, ASOS.com states on its website that "We use cookies to ensure that we give you best experience on the website. If you continue we assume that you consent to receive all cookies on all ASOS websites." Online vendors should carefully consider the extent to which actively providing consumers with personalized service is necessary given limited human and material resources. They need to find the right balance of personal information collection and personalized service that will offer customers a unique shopping experience while simultaneously not offending the customers.

Taken together, as e-service quality is identified as the most important predictor of TCs, practitioners initiating or currently conducting Internet business should devote valuable corporate resources to focus on presenting superior e-service. They need to develop effective marketing strategies to improve the quality of web-based service through enhancing their reliable, responsive and personalized service involved in the process of service delivery in order to reduce consumers' perceived TCs, to attract new customers and retain existing ones.

With respect to online store reputation, the findings of the study indicate that an online store reputation reduces TCs perceived by online shoppers when purchasing. A reputable brand builds trust and lowers risk. For example, brand names such as Apple and Amazon generate consumer trust, add to customer perceived benefits, and eventually alleviate customer perceived TCs. Brand also helps customers by reducing stress of making product switching decisions (Pick 2014). Reducing stress is especially important online because of the geographical separation between online vendors and customers and consumer concern over privacy and security issues (Frank *et al.* 2014).

The implication for online vendors is that they should strive to improve their reputation. Online vendors are advised to provide a feedback system to facilitate an informative and normative flow, enhancing customers' overall impressions of the online store, and ultimately improving their store reputation. According to Teo and Yu (2005), Chinese culture tends toward collectivism and Chinese people tend to exhibit high family integrity, small distance from in-groups, and high sociability and interdependence, which implies that Chinese consumers' decisions tend to be influenced by reference groups. In an online context, their perceptions of an online store's products, services and reputation are largely influenced by family, friends and other online consumers. They tend to evaluate the store reputation through reading online reviews and ratings of the online stores. When they hear from friends or other consumers about their pleasant online shopping experiences with an online store, the information will serve as an important cue that guarantees their online compelling experience if they purchase at the online store later on. When they see the positive online reviews or recommendations from other consumers who have purchased at the online store, they may perceive less risks and uncertainties. The positive WOM is treated as an important stimulus

for consumers to increase their risk tolerance (Wu and Gaytán 2012) and purchase willingness (Cheung and Lee 2012).

Since online shoppers usually value eWOM recommendations and WOM communication spreads very fast through the Internet, developing positive eWOM is the paramount concern of online vendors. They need to adopt an integrated mechanism to improve their store reputation through developing positive eWOM, which is pivotal for reducing their consumers' perception of TCs and inducing positive behavioural consequences. For example, online vendors can target influential people who are opinion leaders online, such as online journalists, industry opinion leaders, and influential social network authors. When they post product reviews online, it will draw a lot of attention from their fans or followers. They influence others and drive change in the e-marketplace. Thus, online marketers should try to reach these people and entice them to write about the online store or products and spread eWOM through the online platform.

It is interesting to note that many customers have replaced WOM communication with social media communication through Facebook, Twitter and other similar applications. Before social media, companies were concerned with dissatisfied customers telling 10 to 15 people about their unpleasant transaction. Today, customers can instantly inform thousands of people of their displeasure. Because this information can spread so rapidly, it is now a vital portion of the reputation building process for online vendors to monitor and address misinformation and wrong information. This information may ruin online store reputation. Thus, online vendors need to closely monitor the online reviews on the company's site, product review sites, as well as social networking sites.

Convenience has emerged as the one of the prime determinants in consumer TCs. From the buyer's perspective, the cost of a product purchased online may be higher than offline (due to seemingly hidden elements such as shipping costs and the time and effort needed to search out and compare prices.) Yet, online shoppers may also enjoy the overall TC savings due to the online shopping's convenience in regard to speed, one-stop shopping, variety of goods, self-service capability, comparison shopping, shipping method, and payment method.

One of the most enjoyable conveniences of online shopping is the ability to shop for products or services at a time which is convenient for the consumer. Consumers are finding shopping online easily accessible because it's open 7 days per week, 24 hours per day. Online vendors accept orders 24 hours a day compared with traditional stores' normal business hours. This can be a major inconvenience especially for shoppers who work long hours or shoppers who work odd hours. Online shopping eliminates this concern because shoppers can simply access online stores from their computer whenever they have free time available.

Another convenience of online shopping is the ability to order products from around the world. Shoppers are no longer limited to products offered by local retailers because the vast majority of online vendors offer shipping to many different locations. This can make it easy for online shoppers to acquire hard to find items or items which are a regional specialty or are a specialised items. Shopping online has allowed consumers access to items they would not normally come into contact with and considering the Internet's powerful capability to search effectively and quickly, consumers are able to pursue all the best brands of a certain good or service with a click of a button rather than through conventional procedures where the consumer has to physically walk into the store and ask for directions.

Because online shopping is so convenient, consumers don't have to tolerate the stress of sitting in traffic jams and waiting at the queue lines. Online shopping allows people to relax in the comfort of their own home or office to research their products, whenever they want, and can purchase whenever they want. In addition, shopping on the Internet can save consumers from being annoyed by a salesperson persuading them to purchase a specific item. However, advertisements and presentations on the Internet do not preclude attempts at persuasion. Nevertheless, shopping online gives consumers the opportunity to read through information about a certain product and think cautiously about purchasing the product.

Since Internet retailing is a nascent state and still in the stage of evolution in China, online vendors are advised to adopt advanced web technology to increase the ease and convenience of search and navigation of products/services. In an attempt to lower consumers' information searching cost, online store operators can insert banners into popular search engines to increase the association with the store's web/pages because consumers often employ search engines to find specific online stores. By doing so, they also further the awareness of their online store among potential consumers.

Additionally, the creation of a streamlined, fast and understandable design appears as an important element in electronic encounters that increases the convenience perceived by the customer (Verhagen and van Dolen 2009, Zhou et al. 2009). The online website should also offer the option to save the time and effort expended on browsing by choosing to purchase from a "one click" list of items already selected by customers in their past shopping trips, and therefore through browsing the virtual aisles, the searching cost can be significantly reduced.

Another convenience of online shopping is the ability to comparison shop easily when the shopper can simply open two or more browsers to easily compare more than one item. Thus, online vendors are advised to make comparison shopping as easy as possible. For example, they can provide charts which compare features for similar products to enable the online shopper to make an accurate comparison of two or more items before making a purchase.

To improve customers' perception of convenience of online shopping, one of the methods online vendors can use is to offer various shipping methods. These options are especially beneficial to online shoppers who are guilty of often waiting until the last minute to purchase items that are necessary for other reasons. For these online shoppers express shipping is one of the most beneficial features. Although the shopper will pay significantly more for express shipping options the shopper will have the advantage of being able to purchase an item the day before it is necessary and have the item delivered directly to the necessary party. Other beneficial shipping options often include the inclusion of gift receipts as well as gift wrapping options. This is especially important for online shoppers who are interested in sending gifts to friends and family members. This can save the online shopper a great deal of time because they can have the gift shipped directly to the friend or family member as opposed to having the gift shipped to themselves first and then having to wrap the gift and re-ship it to the recipient. The ability to send gift receipts are also important because it enables the recipient of the gift to return or exchange the item but does not divulge the price paid for the gift.

In China, there are limited methods of online payment available for online shoppers, which may dampen the convenience of online shopping. Online firms should propose innovative solutions, to cater to the needs of customers in terms of time saving of shopping. Eachnet.com, for instance, is tailored for cash-paying Chinese. Once Eachnet members complete

transactions on the Internet, they meet face to face to pay and take delivery of the items, avoiding the hassle of paying online. Companies like JuMei.com, which recently opened China's first and biggest online cosmetics shop, are developing cash on delivery (COD) to accommodate Chinese consumers (China Electronic Commerce Research Centre 2014).

To further enhance customers' convenience perception, online vendors could adopt an integrated customer relationship management (CRM) and supply chain management (SCM) system. The integrated CRM and SCM system can constantly check inventory levels at the manufacturers and this information usually appears right on the product page. If the inventory is low, the system could notify the customer during the ordering process and offer options, such as waiting two weeks for delivery from the manufacturer or consider a similar product currently in stock. If customer service representatives have up-to-the-minute information about product inventories, they will be able to better help consumers immediately. The up-to-date inventory information can bring convenience to customers by saving time and effort in finding such information and making their purchase decision.

This study indicates that the impacts of consumers' concerns for privacy and security play an important role in determining perceptions of TCs when they purchase the experience goods online. Despite many advantages of online buying (e.g., a variety of goods and ease of comparison), some consumers are reluctant to purchase online due to concerns about payment security and privacy disclosure. Although business leaders and lawmakers have pushed industry self-regulation in terms of what online firms should tell consumers what they do with their data and users should trust them to abide by self-imposed privacy standards, the issue of security is still a significant obstacle hindering the growth of internet-based commerce (Lian and Yen 2013, Meskaran *et al.* 2013). Consumers who are unwilling to

provide their credit card details over the Internet tend to perceive great uncertainties and TCs. In this regard, online vendors must be sensitive to security issue and protect customers from the risk of fraud or financial loss from their use of credit cards during the online transactions, and should adopt encryption and certificates to ensure online purchase security. Otherwise, customers may perceive great risk and refuse to purchase online.

The prominent online merchants in China such as TaoBao and 360Buy strive to refurbish their e-business platforms with technological features to establish a secure online transaction environment which protects consumers' transaction security and reduces their perceptions of risk associated with the purchases. Their practices generate important implications for SMEs with online businesses which need to make every effort to secure online transactions to perform their corporate social responsibility.

In addition, with the increased reliance on the Internet to carry out e-commerce, the capacity for computer misuse and abuse is also increasing, online stores are therefore advised to develop online surveillance systems, shorten the transactional process, and create safe infrastructure for consumers. Managers of online stores should adopt integrated mechanisms, such as authentication, non-repudiation and information integrity, to enhance consumers' trust in safeguarding their personal information and avoidance of misuse of credit card model of payments. They should also provide the statement (e.g., privacy policy) pertaining to protection of consumer privacy. This statement should be accurate, easy to understand and clearly signposted. It should be elaborated when personal information is collected and how it is protected by online vendors. Additionally, consumers should be provided with full information about their legal rights and liabilities for any losses if a fraudulent transaction

occurs. This information can help to convince customers to trust online vendors when giving any personal information.

Many online companies display privacy seals, such as TRUSTe on the storefront. TRUSTe is the leading global data privacy management company and powers trust in the data economy by enabling businesses to safely collect and use customer data across web, mobile, cloud and advertising channels. The TRUSTe seal can help companies address their data collection and privacy protection issues. If firms agree to certain terms of use regarding privacy of customer information collected at their site, they may register at TRUSTe, download the TRUSTe seal, and affix it to their web sites as part of a label. The TRUSTe seal signifies online trust and reduces customers' cognitive costs of online shopping.

Additionally, there are a set of implications obtained from the analysis of the effects of TCs on online behavioural consequences. Even though the Internet is believed to reduce cognitive dissonance and information asymmetry through the availability of information and data pertaining to availabilities of markets' offerings, the fact that this data is drafted by online stores on their sites gives them a chance to conceal vital information and behave opportunistically (Yeh *et al.* 2012b). This would create the risk of uncertainty in the online environments, cause buyers to bear the monitoring and maladaptation costs, and eventually lead to high TCs. Therefore, online vendors should be cautious that TCs, such as the search cost, evaluation cost, monitoring cost and adaptation cost, may change a consumer's buying behaviour as well as the degree of his/her loyalty.

They are advised to position TC reduction as a crucial marketing tool that helps to generate favourable behavioural consequences. Online vendors should make an effort to mitigate TCs

by investigating the key factors that drive TCs outlined in this study. For example, it is suggested to provide reliable product and privacy-related information and display one overall total price to the consumers. Moreover, value-added services such as converting prices into the customers' own currencies and tailor-made service according to different customers' need and preference should be provided. This additional information and service will help the consumers considerably to evaluate TCs and decide whether or not to make a purchase and be loyal to the online store.

Since a customer's satisfaction with an online store is positively related to his/her loyalty towards the online store, satisfaction acts as an indicator of the success of online retailing (Frank *et al.* 2014). When customers are satisfied with the offerings and experiences of online shopping, they will be more willing to talk positively to others about the online store, recommend it to others, and purchase more products at the online store in the future. Thus, online vendors should endeavour to improve customer satisfaction as it provides a starting point to elicit their desire to have a continued interaction with the online vendor.

The result of the mediating role of customer satisfaction has an important implication to management. Since customer satisfaction is confirmed to partially mediate the effect of TCs on loyalty, both enhancing customer satisfaction and reducing perceived TCs can be seen as important strategies that promote customer loyalty. It suggests that for the sake of customer retention, it is essential for online vendors to monitor changes in customer TCs scores and satisfaction scores. On one hand, online vendors should track changes of TCs scores and try utmost to reduce the scores. For example, they need to reduce the time and effort consumers expended in the process of purchasing products or services. The easy search and payment system as well as the fast delivery system must be provided to lower consumers' perceived TCs.

On the other hand, caution is suggested against the simplistic view that investments in lowering TCs alone will generate loyalty. When allocating resources to TC reduction activities, a careful assessment is needed, one that provides a full account of TCs-conversion mechanisms. The conversion of TCs to loyalty involves complex processes that require an understanding of (1) how the key antecedent factors (e.g., product quality concern, e-service quality and buying frequency) affect TCs; (2) how the lowered TCs increase customer satisfaction; and (3) how increased satisfaction translates into loyalty. Understanding the underlying process is particularly useful to management because it offers a guideline to online vendors with regard to how the satisfaction can be enhanced by managing TCs and how loyalty can be developed by improving satisfaction. By eliminating complexity from customers' lives, saving them time and effort, and hence improving satisfaction perceived by customers, the online vendor can entice a customer to become loyal to them. Accordingly, enhancing customer satisfaction through reducing consumer TCs is a powerful marketing tool for online firms seeking to develop customer loyalty.

Consumers would naturally be aware of the many cost-inducing elements associated with purchasing online store offerings. In spite of consumers' cognizance of such TCs, it would be also important to note that the consumers' inherent risk-bearing propensity and the degree of their perceived enjoyment of online shopping can influence consumer's ultimate online purchase and post-purchase behaviour. This study confirms that consumer's risk-bearing propensity moderates the effect of TCs on loyalty, and perceived enjoyment moderates the effect of TCs on online purchase behaviour. Accordingly, online vendors are advised to carefully assess these two factors before allocating resources and commitment to cost-reduction marketing.

If a consumer is a risk-averse individual, managers should be careful about investing in TC-lowering activities, because the risk-averse consumer is less likely to be loyal even if he/she perceives low TCs of purchasing goods at the online store, whereas a risk-taking consumer is more likely to patronize in future even if he/she perceives high TCs. In addition, if a consumer perceives low enjoyment of the online shopping, online vendors are advised to delay heavy investments in lowering TCs because the consumer may not choose the online store to make purchases even if he/she perceives low TCs associated with the interaction with the online store. Such an online store should delay heavily investment in reducing TCs until the consumer truly feels online shopping is fun and enjoyable. To attract consumers and further make them enjoy online purchasing, online vendors should consciously design the entertaining and imaginative websites to engross customers into the sites and strive to offer a pleasant and fun-filled online shopping experience.

This study finally demonstrates that the hypothesized relationships vary across the categories of goods being purchased. Knowledge of product category differences in the impacts of antecedents on TCs and the influences of TCs on behavioural consequences would enable online vendors to separately reduce TCs and optimize online purchasing and customer loyalty for search products and experience products. Some noteworthy implications obtained from these analyses are discussed below.

The impact of the two product categories on the relationship between product quality concern and TCs is very clear-cut and legible. This relationship is stronger when purchasing experience products as compared to the search products. This may be because experience products require more tactile cues for their evaluation (Citrin *et al.* 2003). The features of

experience products require consumption before their quality are known, so consumers would have difficulty in both verifying the truthfulness of the objective product information and describing subjective usage experience, and would bear more uncertainties for purchasing such products. Thus, their concern about the quality of experience products has a larger effect on TCs, compared with such effect for search products. Since customers expect more assurance of quality when purchasing experience goods, online vendors should make greater effort in developing more advanced technology (e.g. 3D model) for product quality examination, presenting comprehensive online reviews of product quality from customers who have used the products, and providing product quality and price-matching guarantees as well as third-party endorsements. They should devote resources to continue to improve product quality while simultaneously reducing time and effort expended for checking quality.

Perceived convenience is found to have a stronger effect on TC reduction when consumers buy experience products online. This finding further necessitates the efforts to enhance the convenience of online shopping. Online vendors should make the consumer shopping experience more convenient by easing online search and smoothing the transaction process. Specifically, online vendors selling experience products should clearly state the product price, composition, stock and user experience, offer price comparison options, and allow shopping at any time (24/7 service), etc. These strategies enable the online vendors to gain a competitive edge to compete in the online retailing industry.

Due to the stronger effect of e-service quality on perceived TCs for search products, online vendors selling search products can minimize TCs by providing an easy evaluation system of customer service and/or customer testimonials regarding service performance. Vendors are advised to make it easy and fast for consumers to solve problems about the products, usage

and delivery. Importantly, providing customers with a solution through efficient and effective customer service when the problem arise will help to reduce their time and effort costs, and also delivering the search products to consumer in time will reduce time costs perceived by customers.

The additional insight gained from the negative stronger relationship between online store reputation and TCs associated with purchasing search goods implies that online vendors can largely reduce TCs for those products by enhancing their store reputation. For example, they should sell high-quality and dependable products, make it easy to return and exchange products, provide reliable e-services and develop specialized marketing strategies to better address any concerns over privacy and security, for example.

Since the effects of TCs on consumers' online purchase behaviour, satisfaction and loyalty are found to be significantly different across two product categories and are stronger for experience products than those for search products, the implication for online vendors derived from this finding is that they need to heavily invest in the activities of TC reduction associated with purchasing the experience goods as mentioned earlier in order to sell more experience products and finally improve customer satisfaction and loyalty.

6.4 LIMITATIONS

Although the findings have been encouraging and useful, the research is not without limitations which will be discussed in this section.

This study possesses five main limitations. Firstly, because this study is cross-sectional in nature, the findings may be biased by spurious cause/effect inferences. Within the relatively short period of time in which the study was administered, it would be difficult to infer causality relations between variables. Therefore, it would be more appropriate to build the hypothesized sequence of the effects over a longer period of time.

Secondly, this study identifies three types of TCs (pre-, contemporaneous-, post-TCs), but it does not explain how and which of these three types of costs would be instrumental in determining consumers' online purchase and loyalty. Although it has been verified in the study that an increase in overall TCs of online shopping would inhibit the occurrence of purchasing behaviour and the development of customer loyalty, the void of results to articulate which type of TCs affects purchase behaviour and post-purchase behaviour calls for more research on this point.

Thirdly, due to the lack of strong theoretical support or grounding from extant literature, the moderating effect of consumers' risk-bearing propensity on the relationship between TCs and online purchase behaviour and the moderating effect of perceived enjoyment on the relationship between TCs and customer loyalty have not been addressed as this would initially have seemed more like speculation on account of the presence of these moderators in the conceptual model. However, upon empirically gaining evidence of the strong effects of these moderators on consumers' preference of shopping medium, it may warrant the need for future research to observe the moderating influence and propose some theoretical structuring for this suggested moderating effect.

Fourthly, although the proposed model is tested across two product categories, whether the findings are generalizable to all products and services on the web is unclear. Further research is necessary to verify their generalizability. This study required online shoppers to focus on their most recent online shopping experience with an online store, but overlooked the possibility that consumers' purchase behaviour and post-purchase behaviour could vary in the forms of the shopping websites and the characteristics of online vendor. Previous research (Hahn and Kim 2009) has indicated that multi-channel retailers who operate online stores and also own brick-and-mortar stores have received more trust from consumers and adopt different strategies to carry out online businesses. Accordingly, consumer behaviour towards this type of retailers might differ from those who do not have physical stores (i.e., pure online players).

Finally, as the sample was collected in China, generalizability to other cultures may be limited as China may have very different social and cultural beliefs (Hofstede *et al.* 2010), government regulations, business norms and the likes from other developing or developed economies. However, as TCT at the firm level has been shown to be valid in many domains and cultures, this limitation is not seen as problematic.

6.5 RECOMMENDATIONS FOR FUTURE STUDY

While this study offers valuable insights into the important phenomenon of consumer TCs of online shopping as outlined above, there are many other fruitful avenues for further research.

Firstly, future research could replicate the current study using real data collected from online vendors. Online vendors in China like Taobao.com, JuMei.com or Dangdang.com are large e-

commerce companies. It would be of great interest to see how well the results of this study fit the real business operation, from the perspective of online vendors.

Secondly, it is obvious that a cross-sectional research design does not provide as much insight as does a longitudinal research design while studying the dynamics of TCs, their antecedent variables and outcomes. For this reason, it may be appropriate to adopt a longitudinal study together with interviews to collect a richer set of data to further analyse the time sequence of the relationships among constructs.

Thirdly, in regard to the measurement model, the two hypothesized antecedent variables - online store design and environmental uncertainty did not show satisfactory discriminant validity, thus, they were eliminated from analyses of hypotheses testing. There may be a need for future research in refining the measurement scale for these two constructs. In addition, this study has been the initial endeavour to develop and implement the measurement scales for consumer TCs of online shopping, thus, future research should call for suitable amendments to the scale.

Fourthly, additional research efforts should be conducted to examine the roles of the three subtypes of consumer TCs in greater detail. For instance, how do pre-TCs, contemporaneous TCs, and post-TCs affect online behaviour, respectively? Does customer satisfaction mediate the relationships between each type of consumer TCs and loyalty in the same way that customer satisfaction mediates the relationship between TCs as a whole and loyalty? The researcher encourages future study in her line of enquiry to examine how these distinct TCs differentially affect consumer behaviour in the online B2C context.

Fifthly, the study did not theoretically examine the relative importance of the seven antecedents that significantly influence TCs although empirical results regarding that are provided and discussed. Future studies may be needed to theoretically investigate why e-service quality has the strongest effect on TCs, online buying frequency is the second strongest predictor, perceived Internet expertise is third strongest, and Internet access availability is the weakest.

Sixthly, the empirical test failed to support the moderating role of the consumer's risk-bearing propensity in the relationship between TCs and online purchase behaviour. The problem might lie in the measurement scales used in the study. However, there is a possibility that the risk-bearing propensity is actually not a moderator of the consumer TCs – online purchase relationship. Customers will purchase from an online store where they perceive the lowest TCs and there will be no difference between risk-takers and risk-averse consumers. TCs would be the only criteria for them to make the purchase decision. Their purchasing decision-making has nothing to do with their inherent risk-bearing propensity. Future research is encouraged to further test the role of the consumer's risk-bearing propensity in the relationship between TCs and purchase behaviour. Likewise, due to the insignificant role of perceived enjoyment of online shopping in affecting the relationship between TCs and loyalty, future research should investigate this issue.

Seventhly, although the proposed integrative model aims to understand consumer TC mechanisms in the online shopping environment, it is not limited to consumer- online vendor relationships only. Although not explicitly stated, when constructing the integrative model, the researcher attempted to develop a general consumer TC model which includes the antecedents and consequences of consumer TCs, and the key mediator(s) and moderator(s)

between consumer TCs and outcome variables. This general model can probably be applied to other relationship contexts such as consumer-to-consumer relationships and consumer-to-government relationships. However, the key antecedents of consumer TCs may need to be modified to suit the particular relationship context being studied. As a result, replication of this study in other relationship contexts is necessary before the results can be generalized.

In addition, future study can re-test the current research model in the context of different forms or characteristics of the shopping sites. For example, future research could examine what type of online store site is more attractive and why they are more appropriate for marketing certain type of goods. Such research will help online vendors better allocate their resources and develop appropriate marketing strategies. As different sites have different attributes, the effects of various web attributes on TCs should be investigated, which will generate knowledge that helps online firms to design site interface, select proper products selling on the sites, and modify product characteristics to make them suit the style of the site.

Next, further research should be conducted to apply the model to new environments of B2C e-commerce. In the recent years, iPhones, iPads and other handheld devices for downloading and later listening/watching to music, films and even books have gained popularity. It would be of interest to see how well the results of this study fit new technological advances and environments as opposed to the traditional e-commerce of buying apparel or books.

At last, as acknowledged in the limitation section, the examination of the integrative model of consumer TCs of online shopping in other countries can expand the understanding in different cultural settings, in general, on this topic. A cross-cultural study is necessary because people affected by different cultural values may exhibit different level of perceived

TCs and online behaviour. Different results may be found. Therefore, it is recommended that future research should expand the boundary to online firms in more emerging or developed economies in order to verify the validity of the model established in this study. Future study can also consider conducting a comparison study in different countries. Special attention still needs to be paid to the use of homogeneous groups in cross-cultural study.

6.6 OVERALL CONCLUSIONS

TCs are advocated as an important factor for organizations choosing governance structure (market, hybrid and hierarchy). Recently, there is a growing call for a paradigm shift in marketing from market focus to customer focus and cost reduction. Marketing is thus headed towards interaction and customer focus. In line with this transformation from current generation of market-focused marketing to next generation of customer-focused marketing, this study examines individual customers' TCs and argues that not only organizations bear TCs, but individual consumers also incur TCs for almost all of the products they consume. Further, building on the TCT and extending it to the online shopping environment at the individual consumer level, the study proposes and empirically tests the integrative TC model utilizing data from China's online shopping industry. The findings highlight that TCs are affected by three-category antecedent factors, namely consumer-related characteristics, online vendor- and product-related characteristics, and online channel-related characteristics. The results show that TCs negatively influence online purchase behaviour, customer satisfaction and loyalty. Consumer's risk-bearing propensity is found to moderate the effect of TCs on loyalty, and perceived enjoyment moderates the effect of TCs on online purchase behaviour. The model is further tested in two product categories and reveals the significant difference in the aforementioned relationships across product categories.

Overall, the study provides new insights into TCT within the domain of online shopping. It contributes to a more comprehensive understanding of the online shoppers' decision making process by taking TCs into account. It also enhances the online consumer behaviour literature by identifying three categories of antecedent factors affecting consumer TCs and further examines the linkage between TCs and behavioural consequences. This study is responsive to the call for greater understanding of online consumer behaviour from the perspective of TCs by Teo (2004) and Wu et al. (2014). The researcher hopes this study can provide some further insight and contributions to the on-going discussion of cost challenges facing both theorists and practitioners in the online shopping discipline.

From managerial perspective, this study highlights important implications for online vendors in relation to the TC reduction activities. The results call on online vendors to realize that to minimize TCs, they should endeavour to provide superior e-service, eliminate consumers' concerns over product quality, enhance convenience of online shopping, improve their store reputation and increase online transaction frequency with exiting consumers. Importantly by showing the dimensions of TCs, the measures provide guideline for management practices in online firms seeking to identify the dimensions in which they perform poorly. By allocating more resources in the underperforming areas, online vendors would be able to reduce the overall TCs. The lowering of TCs will, subsequently, encourage the online purchase behaviour of customers, enhance customer satisfaction with the online vendors and improve their loyalty towards the online vendors. The researcher hopes through this study that the TC reduction will be recognized as a key driver of online purchase, acting as a driver of satisfaction and loyalty formation.

Although this study has been conducted with methodological rigour, the findings should be interpreted with caution. Since this study examined online consumer behaviour in China, the findings may not be generalizable to other geographic areas. Future research could include online shoppers representing different countries and cultures. Such research could help academicians uncover country and cultural specific relationships that were not exposed with this initial study. The study only conducted cross-sectional research by capturing data at one time point. It does not provide as much insight as does a longitudinal research design while studying the dynamics of TCs, their antecedent variables and behavioural consequences. Thus, a longitudinal design could be used in future research to identify the changing roles of online TCs in affecting their decision-making process.

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APPENDICES

APPENDIX A

Summary of the Findings of the Consumer Characteristics on Online Shopping Adoption

Factor types	Individual factors	Surveyed Studies	Major findings
Demographics	Gender	(Alreck and Settle 2002);(Brown <i>et al.</i> 2003); (Donthu and Garcia 1999); (Korgaonkar and Wolin 1999);(Van Slyke <i>et al.</i> 2002);(Seock and Bailey 2007); (Garbarino and Strahilevitz 2004);(Li <i>et al.</i> 1999); (Rodgers and Harris 2003); (Stafford <i>et al.</i> 2004);(Zayer and Coleman 2012);(Zhang <i>et al.</i> 2012);(Hasan 2010);(Sakkthivel 2009); (Young and Stoel 2004);(Kim and Kim 2004)	Male consumers make more online purchases and spend more money online than females
		(Blake <i>et al.</i> 2003);(Burroughs and Sabherwal 2002); (Goldsmith and Goldsmith 2002); (Raijas and Tuunainen 2001); (Hernandez <i>et al.</i> 2011);(Sin and Tse 2002)	No difference
	Age	(Bellman <i>et al.</i> 1999);(Bhatnagar and Ghose 2004a); (Bhatnagar <i>et al.</i> 2000b); (Donthu and Garcia 1999);(Joines <i>et al.</i> 2003); (Korgaonkar and Wolin 1999);(Stafford <i>et al.</i> 2004); (Sakkthivel 2009);(Sorce <i>et al.</i> 2005)	+
		(Li <i>et al.</i> 1999);(Rohm and Swaminathan 2004);(Hernandez <i>et al.</i> 2011)	0
	Income level	(Bagchi and Mahmood 2004); (Donthu and Garcia 1999); (Korgaonkar and Wolin 1999); (Li <i>et al.</i> 1999);(Mahmood <i>et al.</i> 2004);(Mathwick <i>et al.</i> 2001);(Miyazaki and Fernandez 2000);(Susskind 2004); (Burroughs and Sabherwal 2002); (Sakkthivel 2009)	+
		(Raijas and Tuunainen 2001); (Sin and Tse 2002); (Hernandez <i>et al.</i> 2011)	0
	Education level	(Li <i>et al.</i> 1999);(Liao and Cheung 2001); (Susskind 2004);(Burroughs and Sabherwal 2002); (Sin and Tse 2002); (Sakkthivel 2009)	+
		(Bagchi and Mahmood 2004); (Bellman <i>et al.</i> 1999);(Donthu and Garcia 1999); (Mahmood <i>et al.</i> 2004)	0

	Culture	(Chau <i>et al.</i> 2002);(O'Keefe <i>et al.</i> 2000) ;(Park and Jun 2003);(Park <i>et al.</i> 2004);(Shiu and Dawson 2002);(Shiu and Dawson 2004);(Liu and McClure 2001) ;(Pavlou and Chai 2002); (Stafford <i>et al.</i> 2004);(San Martín and Camarero 2012);(San Martín <i>et al.</i> 2009);(Constantinides <i>et al.</i> 2010);(Qureshi <i>et al.</i> 2009)	Consumers from an individualistic culture are more likely to use the Internet for e-commerce than those from a collectivistic culture. A more masculine society has more predominant male shoppers and is more involved in online shopping.
	Time starvation	(Bellman <i>et al.</i> 1999)	+
	Access to credit card	(Van Slyke <i>et al.</i> 2002)	+
	Social status	(Raijas and Tuunainen 2001)	0
	Race	(Goldsmith and Goldsmith 2002)	0
	Employment status	(Blake <i>et al.</i> 2003)	0
Shopping orientations	Convenience oriented	(Donthu and Garcia 1999) ;(Li <i>et al.</i> 1999);(Girard <i>et al.</i> 2003);(Swaminathan <i>et al.</i> 1999)	+
	Impulsiveness	(Donthu and Garcia 1999); (Park <i>et al.</i> 2011)	+
	Price conscious	(Sim and Koi 2002);(Koyuncu and Bhattacharya 2004)	+
		(Donthu and Garcia 1999);(Li <i>et al.</i> 1999)	0
	Experiential oriented	(Li <i>et al.</i> 1999)	-
	Recreational oriented/ Hedonic	(Swaminathan <i>et al.</i> 1999);(Goldsmith and Goldsmith 2002);(Van der Heijden and Verhagen 2004); (Park <i>et al.</i> 2011); (Khare and Rakesh 2011)	+
		(Donthu and Garcia 1999);(Li <i>et al.</i> 1999);(Bridges and Florsheim 2008)	0
	Utilitarian	(Bridges and Florsheim 2008); (Park <i>et al.</i> 2011); (Khare and Rakesh 2011)	-
	Time conscious	(Sim and Koi 2002); (Sin and Tse 2002)	+
	Brand conscious	(Lunn and Suman 2002);(Van den Poel and Leunis 1999)	+
(Donthu and Garcia 1999)		0	

Computer /Internet experience	Training on computer	(Liao and Cheung 2001)	+
	Computer experience	(Van Slyke <i>et al.</i> 2002)	+
	Channel knowledge	(Liao and Cheung 2001)	+
	“Wired” lifestyle	(Bellman <i>et al.</i> 1999)	+
	Email usage	(Van Slyke <i>et al.</i> 2002)	+
	Word processing use	(Van Slyke <i>et al.</i> 2002)	0
	Web browser use	(Van Slyke <i>et al.</i> 2002)	0
	Website awareness	(Foucault and Scheufele 2002);(Yoon 2002)	+
	Internet accessibility	(Li <i>et al.</i> 1999)	+
	Level of internet usage	(Alka Varma <i>et al.</i> 2000, Bhatnagar <i>et al.</i> 2000b);(Bhatnagar <i>et al.</i> 2000b);(Blake <i>et al.</i> 2003); (Burroughs and Sabherwal 2002);(Goldsmith and Goldsmith 2002); (Liao and Cheung 2001)	+
		(Sin and Tse 2002)	0
	Frequency of internet usage	(Bhatnagar and Ghose 2004b);(Bhatnagar <i>et al.</i> 2000b);(Citrin <i>et al.</i> 2000);(Jarvenpaa and Todd 1996);(Jarvenpaa <i>et al.</i> 1999); (Liao and Cheung 2001);(Park 2002)	+
		(Cho 2004);(Nysveen and Pedersen 2004)	0
	Comfort with the internet	(Mauldin and Arunachalam 2002)	+
	Internet accessibility	(Li <i>et al.</i> 1999)	+
Non-internet in-home shopping experience	(Eastin 2002);(Lunn and Suman 2002);(Lohse <i>et al.</i> 2000); (Cho 2004);(Kaufman-Scarborough and Lindquist 2002)	+	
	(Sin and Tse 2002)	0	
Online shopping experiences	Level of expertise required	(Citrin <i>et al.</i> 2000)	0
	Shopping experience	(Ahn <i>et al.</i> 2007);(Goldsmith 2002); (Hsu <i>et al.</i> 2011); (Jarvenpaa and Todd 1997)	+

	(effort, compatibility, playfulness)	(Mathwick <i>et al.</i> 2001);(Vijayasathy and Jones 2000)	0
	Aesthetics	(Mathwick <i>et al.</i> 2001)	0
	Internet purchase experience	(Cho 2004);(Foucault and Scheufele 2002);(Gefen 2002a); (Goldsmith 2002);(Goldsmith and Goldsmith 2002);(Lunn and Suman 2002);(Shim <i>et al.</i> 2001)	+
		(Khalifa and Liu 2007)	moderates the relationship between satisfaction and online repurchase intention
	Frequency of online purchases	(Brown <i>et al.</i> 2003); (Cho 2004); (Foucault and Scheufele 2002); (Moe and Fader 2004);(Park and Jun 2003); (Yang and Lester 2004)	+
	Satisfactory levels about past online transactions	(Cho 2004); (Devaraj <i>et al.</i> 2002); (Foucault and Scheufele 2002);(Koivumäki 2001);(Pires <i>et al.</i> 2004);(Lee and Lin 2005)	+
	Emotion /affect	(Huang 2003);(Lynch and Beck 2001);(Lynch <i>et al.</i> 2001);(Wolfenbarger and Gilly 2001);(Xia 2002);(La and Choi 2012);(Verhagen and van Dolen 2011); (Smith <i>et al.</i> 2013)	+ in some countries
	Flow	(Korzaan 2003);(Novak <i>et al.</i> 2000);(Richard and Chandra 2005);(Skadberg and Kimmel 2004);(Skadberg <i>et al.</i> 2005);(O'Cass and Carlson 2010);(Hsu <i>et al.</i> 2011);(Mathwick and Rigdon 2004);(Hausman and Siekpe 2009);(Wu and Chang 2005); (Hsu <i>et al.</i> 2012); (Lee and Chen 2010);(Gao and Bai 2014)	+
Psychological characteristics	Attitude	(Ahn <i>et al.</i> 2004); (O'cass and Fenech 2003);(Fisher 2000);(Goldsmith 2002);(Grazioli and Jarvenpaa 2000);(Jarvenpaa <i>et al.</i> 1999);(Jarvenpaa <i>et al.</i> 2000);(Van der Heijden <i>et al.</i> 2003);(Limayem <i>et al.</i> 2000); (Khare and Rakesh 2011);(Hausman and Siekpe 2009);(Sorice <i>et al.</i> 2005);(Yang <i>et al.</i> 2006); (Ha and Stoel 2009);(Mazaheri <i>et al.</i> 2011);(Yuliharsi <i>et al.</i> 2011);(Ahn <i>et al.</i> 2007);(Hernandez <i>et al.</i> 2009);(Crespo <i>et al.</i> 2009);(Lee 2009a); (Lee 2009b);(Andrews and Bianchi 2013);(Mazaheri <i>et al.</i> 2011); (Kim 2012)	+
	Intention	(Limayem <i>et al.</i> 2000);(Chen <i>et al.</i> 2002)	+
	Intention to use the internet for information search	(Shim <i>et al.</i> 2001); (Young and Stoel 2004);(Khare and Rakesh 2011);(Hahn and Kim 2009)	+
	Site commitment	(Park and Kim 2003)	+

	Site involvement	(Mazaheri <i>et al.</i> 2011); (Yusniza 2007)	+
	Satisfaction	(Park <i>et al.</i> 2012);(Bai <i>et al.</i> 2008);(Park and Kim 2003); (Yen <i>et al.</i> 2013)	+
	Perceived behavioural control	(Limayem <i>et al.</i> 2000);(Shim <i>et al.</i> 2001);(Koufaris <i>et al.</i> 2001); (Lee 2009a);(Lee 2009b); (Domina <i>et al.</i> 2012)	+
	Subjective norm	(Blake <i>et al.</i> 2003);(Foucault and Scheufele 2002);(Limayem <i>et al.</i> 2000); (Choi and Geistfeld 2004); (Yuliharsi <i>et al.</i> 2011); (Al-Maghrabi and Dennis 2011); (Lee 2009a); (Clemes <i>et al.</i> 2013)	+
	General innovativeness	(Donthu and Garcia 1999);(Limayem <i>et al.</i> 2000); (Sin and Tse 2002)	+
		(Young and Stoel 2004); (Alka Varma <i>et al.</i> 2000);(Citrin <i>et al.</i> 2000); (Yusniza 2007)	0
	Domain specific innovativeness	(Alka Varma <i>et al.</i> 2000);(Blake <i>et al.</i> 2003);(Bigne-Alcaniz <i>et al.</i> 2008); (Goldsmith 2001);(Goldsmith 2002);(San Martín and Herrero 2012)	+
	Risk aversion	(Donthu and Garcia 1999); (Sim and Koi 2002)	-
	Disposition to trust	(Gefen 2000);(McKnight <i>et al.</i> 2002)	-
	Confidence	(Hahn and Kim 2009)	+
		(Sin and Tse 2002)	0

APPENDIX B

Summary of the Findings of the Online Vendor and Product Characteristics on Online Shopping Adoption

Factor types	Individual factors	Surveyed Studies	Major findings
Risk reduction measure	Money-back guarantee(risk relievers)	(Kim and Kim 2004);(Van den Poel and Leunis 1999)	+
	Store reputation (risk relievers)	(Jarvenpaa <i>et al.</i> 2000);(McKnight <i>et al.</i> 2002);(Van den Poel and Leunis 1999); (Lee <i>et al.</i> 2011a);(Mark and Harris 2007)	+
	Reduced-price (risk relievers)	(Kim and Kim 2004); (Van den Poel and Leunis 1999)	+
	Security protection	(Ha and Stoel 2012); (Ranganathan and Ganapathy 2002);(O’cass and Fenech 2003);(Belanger <i>et al.</i> 2002);(Liao and Cheung 2001);(Ranganathan and Grandon 2002);(Swaminathan <i>et al.</i> 1999);(Grewal and Dharwadkar 2002); (Mark and Harris 2007)	+
	Privacy protection/assurance	(Ha and Stoel 2012); (Kim and Kim 2004);(Ranganathan and Ganapathy 2002); (Ranganathan and Grandon 2002); (Belanger <i>et al.</i> 2002); (Swaminathan <i>et al.</i> 1999);(Tsai <i>et al.</i> 2011);(Lee <i>et al.</i> 2011a)	+
Online store feature	Information content/quality	(Bigne-Alcaniz <i>et al.</i> 2008);(Ha and Stoel 2012); (Kim and Kim 2004);(Ranganathan and Ganapathy 2002);(Perdue 2002);(Ranganathan and Grandon 2002); (Pearson <i>et al.</i> 2012)	+
	Online store design	(Kim and Kim 2004); (Liang and Lai 2002); (Mark and Harris 2007); (Ranganathan and Ganapathy 2002);(Quick 1999);(States 1999);(Zimmerman 2002); (Verhagen and van Dolen 2009);(Chau <i>et al.</i> 2000);(Childers <i>et al.</i> 2001);(Bank 1997);(Bell and Gemmell 1996);(Cho <i>et al.</i> 2003);(Fram and Grandy 1997);(Hoffman <i>et al.</i> 1996);(Iacobucci 1998);(Peterson <i>et al.</i> 1997);(Powell 2001);(Weinberg 2000);(Udo and Marquis 2002); (Eroglu <i>et al.</i> 2003a);(Childers <i>et al.</i> 2001) (Yoon 2002);	+

	Online store image	(Verhagen and van Dolen 2009);(Van der Heijden and Verhagen 2004); (Fan <i>et al.</i> 2013b)	+
		(Aghekyan-Simonian <i>et al.</i> 2012)	+ (indirectly by decreasing risk perceptions)
E-service quality	Overall e-service quality	(Ahn <i>et al.</i> 2004);(Chen and Tan 2004); (Clemes <i>et al.</i> 2013);(Lee and Lin 2005); (Liao and Cheung 2001);(Shih 2004);(Hsu <i>et al.</i> 2011);(Schneider and Bowen 1999);(Udo <i>et al.</i> 2010);(Sousa and Voss 2012); (Pearson <i>et al.</i> 2012)	+
		(Verhagen and van Dolen 2009)	0
	Reliability	(Ahn <i>et al.</i> 2004);(Koyuncu and Bhattacharya 2004);(Raijas 2002);(Cho 2004);(Kim and Kim 2004); (Lee <i>et al.</i> 2011a); (Mark and Harris 2007)	+
	Tangibility	(Vijayasathya and Jones 2000)	0
	Empathy	(Vijayasathya and Jones 2000)	0
	Customer service quality	(Anthes 1999);(Burroughs and Sabherwal 2002);(Jarvenpaa and Todd 1997);(Totty 2001) (Kunz 1997); (Schneider and Bowen 1999); (Kim and Kim 2004); (Ha and Stoel 2012); (Chung 2001); (Wingfield 2002)	+ (reliability, responsiveness, personalization)
		(Mathwick <i>et al.</i> 2001)	0
	Providing good pre-order information	(Vijayasathya and Jones 2000)	0
	Providing good post-selection information	(Vijayasathya and Jones 2000)	+
Product characteristics	Low vs. high cost (Product type)	(Phau and Poon 2000)	People are more likely to buy low cost and frequently purchased products
		(Vijayasathya 2002)	0

Tangible vs. intangible (Product type)	(Vijayasathy 2002);(Vijayasathy 2003); (Phau and Poon 2000)	People are more likely to buy intangible products
Low vs. high differentiation (Product type)	(Phau and Poon 2000)	People are more likely to buy highly differentiated products
Product value	(Lee <i>et al.</i> 2011a);(Guenzi <i>et al.</i> 2009); (Chen <i>et al.</i> 2010);(Jarvenpaa and Todd 1997);(Mathwick <i>et al.</i> 2001); (Vijayasathy and Jones 2000)	+
Merchandising	(Anand 2007);(Schaupp and Belanger 2005);(Szymanski and Hise 2000);(Cho 2004);(Sin and Tse 2002);(Park <i>et al.</i> 2011);(Verhagen and van Dolen 2009)	+
Product brand image	(Aghekyan-Simonian <i>et al.</i> 2012)	+ (directly and indirectly by reducing risk perceptions)
Asset specificity	(Liang and Huang 1998)	0

APPENDIX C

Summary of the Findings of the Perceived Online Channel Characteristics on Online Shopping Adoption

Factor types	Individual factors	Surveyed Studies	Major findings
Perceived risk	Risk perception	(Bhatnagar and Ghose 2004a);(Bhatnagar and Ghose 2004b);(Bhatnagar <i>et al.</i> 2000b);(Cheng <i>et al.</i> 2012);(Crespo <i>et al.</i> 2009); (Doolin <i>et al.</i> 2005);(Kim <i>et al.</i> 2008); (Lee 2009b);(Luo <i>et al.</i> 2010);(Featherman and Pavlou 2003);(Garbarino and Strahilevitz 2004);(Chang and Chen 2008);(Huang <i>et al.</i> 2006);(Jarvenpaa and Todd 1997);(Jarvenpaa <i>et al.</i> 1999);(Jarvenpaa <i>et al.</i> 2000);(Joines <i>et al.</i> 2003);(Kolsaker <i>et al.</i> 2004);(Liang and Huang 1998);(Liao and Cheung 2001);(Park <i>et al.</i> 2004);(Pavlou 2003);(Pires <i>et al.</i> 2004);(Kimery and McCord 2002);(Limayem <i>et al.</i> 2000);(Van der Heijden <i>et al.</i> 2003);(Vijayarathy and Jones 2000);(McKnight <i>et al.</i> 2002); (Yousafzai <i>et al.</i> 2009);(Kim and Lennon 2013);(D'Alessandro <i>et al.</i> 2012); (Clemes <i>et al.</i> 2013); (Park <i>et al.</i> 2005); (Forsythe and Shi 2003)	-
		(Miyazaki and Fernandez 2001); (Yusniza 2007)	0
	Credit card fault risk (financial risk)	(Bhatnagar <i>et al.</i> 2000b);(Hong and Cha 2013);(Lee 2009a);(Hong and Cha 2013)	-
	Product quality risk	(Bhatnagar <i>et al.</i> 2000b); (Featherman and Pavlou 2003); (Jarvenpaa <i>et al.</i> 1999); (Joines <i>et al.</i> 2003); (Kolsaker <i>et al.</i> 2004); (Liang and Huang 1998); (Park <i>et al.</i> 2004);(Pavlou 2003);(Kim and Lennon 2010)	-
	Concern of privacy infringement (Privacy risk)	(Wirtz <i>et al.</i> 2007);(Lian and Lin 2008);(Lee 2009a); (Ranganathan and Ganapathy 2002); (Van Slyke <i>et al.</i> 2006);(Ruiz-Mafé <i>et al.</i> 2009)	-
		(Bellman <i>et al.</i> 1999); (Miyazaki and Fernandez 2001)	0
	Concern of system/web security (security risk)	(Burroughs and Sabherwal 2002); (Sin and Tse 2002);(Liao and Cheung 2001); (Lian and Lin 2008); (Lee 2009a); (Ranganathan and Ganapathy 2002); (Hong and Cha 2013)	-
		(Miyazaki and Fernandez 2001)	0

	Fraudulent behaviour	(Miyazaki and Fernandez 2001)	0
	Environmental uncertainty	(Liang and Huang 1998);(Park <i>et al.</i> 2004)	(-)
	Perceived uncertainty	(Yeh <i>et al.</i> 2012b);(Pavlou <i>et al.</i> 2007)	-
Relative advantages over conventional shopping	Benefits/ value	(Kim <i>et al.</i> 2008); (Lee 2009a); (Lee 2009b); (Verhoef and Langerak 2001);(Wu <i>et al.</i> 2014);(Park and Kim 2003);(Chang and Tseng 2011)	+
	Perceived consequence	(Limayem <i>et al.</i> 2000)	+
	Utility as communication channel	(Li <i>et al.</i> 1999)	+
	Convenience	(Sin and Tse 2002);(Saprikis <i>et al.</i> 2010); (Lorek 2003);(Chen <i>et al.</i> 2009);(Donthu and Garcia 1999);(Eastin 2002);(Li <i>et al.</i> 1999);(Swaminathan <i>et al.</i> 1999);(Clemes <i>et al.</i> 2013)	+
		(Foucault and Scheufele 2002)	0
	Time saving	(Saprikis <i>et al.</i> 2010); (Raijas and Tuunainen 2001);(Goldsmith and Goldsmith 2002);(Koyuncu and Bhattacharya 2004);(Karayanni 2003);(Lorek 2003);(Kohli <i>et al.</i> 2004)	+
	Easy to order	(Raijas 2002); (Raijas and Tuunainen 2001)	0
	Can try something new	(Raijas and Tuunainen 2001); (Sin and Tse 2002)	+
	Financial benefits	(Eastin 2002);(Van den Poel and Leunis 1999);(Kim and Kim 2004)	+
	Representative retail price on the e-market	(Liao and Cheung 2001)	-
Perceived enjoyment	(Koufaris <i>et al.</i> 2001);(Al-Maghrabi and Dennis 2011); (Van der Heijden and Verhagen 2004);(Parboteeah <i>et al.</i> 2009);(Domina <i>et al.</i> 2012)	+	

	Perceived usefulness	(Chen <i>et al.</i> 2002);(Gefen <i>et al.</i> 2003b);(Ha and Stoel 2009);(Pavlou and Fygenon 2006); (Yulihastri <i>et al.</i> 2011); (Lee <i>et al.</i> 2011a);(Chen <i>et al.</i> 2009); (Al-Maghrabi and Dennis 2011); (Van der Heijden and Verhagen 2004); (Ahn <i>et al.</i> 2007); (Cheng <i>et al.</i> 2012); (Lee 2009a); (Lee 2009b); (Luo <i>et al.</i> 2010);(Khalifa and Liu 2007);(Chen and Tan 2004);(Henderson and Divett 2003);(Liu and Wei 2003); (Smith <i>et al.</i> 2013); (Yusniza 2007); (Chen and Teng 2013)	+
		(O'cass and Fenech 2003)	+ (Indirect effect through attitude towards Web retail)
	Perceived ease of use	(Bigne-Alcaniz <i>et al.</i> 2008); (Gefen <i>et al.</i> 2003b);(Cho 2004);(Verhoef and Langerak 2001);(Pavlou and Fygenon 2006);(Lee <i>et al.</i> 2011a);(Smith <i>et al.</i> 2013)	+
		(O'cass and Fenech 2003)	+ (Indirect effect through attitude towards Web retail)
		(Yusniza 2007)	0
	Trust	Overall trust	(Bhattacharjee 2002);(Roca <i>et al.</i> 2009); (Wang 2012); (Lee <i>et al.</i> 2011a); (Kim <i>et al.</i> 2008); (Luo <i>et al.</i> 2010);(Pavlou 2003);(Pavlou and Fygenon 2006);(Chang and Chen 2008);(Yousafzai <i>et al.</i> 2009);(Chircu <i>et al.</i> 2000);(Gefen 2000);(Gefen 2002b);(Gefen <i>et al.</i> 2003b);(McKnight <i>et al.</i> 2002);(Wingfield 2002);(Yoon 2002);(Hong and Cha 2013); (D'Alessandro <i>et al.</i> 2012); (Bock <i>et al.</i> 2012); (Kim <i>et al.</i> 2011); (Riedl <i>et al.</i> 2010); (Kuan and Bock 2007); (Ba and Pavlou 2002); (Hong and Kim 2012); (Chen and Barnes 2007); (Kuan and Bock 2007); (Gefen <i>et al.</i> 2003a)
(Yusniza 2007);(Chen and Teng 2013)			0
Ability		(Gefen 2002a)	0
Integrity		(Gefen 2002a)	+
Benevolence		(Gefen 2002a)	0
Familiarity		(Bhattacharjee 2002);(Chircu <i>et al.</i> 2000); (Chen and Barnes 2007); (Kim <i>et al.</i> 2008); (Gefen <i>et al.</i> 2003a)	+

APPENDIX D

The Mean, Stand Deviations, Skewness and Kurtosis of All Variables (Main Study)

Variables	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Gender	1.51	.500	-.033	.079	-2.003	.158
Age	2.47	1.191	.594	.079	-.256	.158
Education	3.34	1.446	.616	.079	.205	.158
Income	2.97	1.330	.910	.079	.546	.158
Internet access availability	4.6624	1.24906	-.305	.079	-.551	.158
Perceived Internet expertise	4.6318	1.34718	-.366	.079	-.644	.158
Online buying frequency	3.00	1.666	.392	.079	-1.004	.158
Product quality concern	4.3927	1.61388	-.234	.079	-1.326	.158
Site design	4.3968	1.28607	-.354	.079	-1.060	.158
E- service quality	4.1625	1.20187	-.149	.079	-1.182	.158
<i>Reliability</i>	4.2397	1.37804	-.178	.079	-1.043	.158
<i>Responsiveness</i>	4.1047	1.34820	-.110	.079	-.821	.158
<i>Personalization</i>	4.1109	1.38445	-.068	.079	-.760	.158
Reputation of online store	4.3080	1.28601	-.256	.079	-.733	.158
Perceived convenience	4.7581	1.21610	-.459	.079	-.567	.158
Privacy and security concerns	4.0362	1.53790	.073	.079	-1.255	.158
Environmental uncertainty	3.9289	1.13250	-.009	.079	-.858	.158
Perceived consumer TCs	3.4226	1.31661	.328	.079	-1.194	.158
<i>Pre-TCs</i>	3.3185	1.45864	.326	.079	-1.086	.158
<i>Contemporaneous TCs</i>	3.9383	1.58138	.068	.079	-1.055	.158
<i>Post-TCs</i>	3.2943	1.45101	.437	.079	-1.099	.158
Online purchase behaviour	3.2931	1.85570	.329	.079	-1.133	.158
Customer loyalty	4.1208	1.42015	-.208	.079	-1.158	.158
Customer satisfaction	4.0745	1.52252	-.176	.079	-1.236	.158
Risk-bearing propensity	3.7183	1.12511	.142	.079	-.735	.158
Perceived enjoyment	4.3842	1.26856	-.235	.079	-.682	.158
Valid N (listwise)						

APPENDIX E

Survey Instrument (English Version)



PARTICIPANT INFORMATION SHEET

Dear Online Shoppers,

Invitation to participate

You are kindly invited to participate in the following research project titled ‘Understanding consumer online shopping behaviour from the perspective of transaction costs’.

This research is being undertaken to fulfil the requirements of a Doctor of Philosophy under the auspices of the Tasmanian School of Business and Economics (TSBE) at the University of Tasmania. The research will be conducted by Miss Lingling Gao, a PhD candidate of the TSBE, and overseen by Dr. Fan Liang, Dr Rob Hecker and Dr Tommy Wang in the School.

The purpose of this research project

The purpose of the project is to examine the online shoppers’ purchase behaviour and post-purchase behaviour, which may be affected by the transaction costs incurred during the online transaction process. We are interested in your online shopping experience, and the extent to which you perceive the transaction costs associated with shopping from certain online store where you have made the most recent purchase. We are not seeking any specific information which might be considered sensitive.

Your participation in the study would be extremely valuable. We believe that this study will enhance understanding of consumers’ online purchase behaviour, their satisfaction, loyalty and the costs consumers encounter in online environment, as well as provide guidance for online vendors wishing to reduce these costs beared by consumers and to gain the competitive advantages in online retailing. This study will also provide implications for consumers to assess the benefits and costs associated with online shopping.

What participants are expected to do?

Your participation in the study involves completing a questionnaire regarding your experiences with online shopping. Please find the attached questionnaire and consent form. The questionnaire should only take about 20-25 minutes to complete. There are no known or anticipated risks to participation in this study.

Privacy protection

Participation in this study is entirely voluntarily. You can decline to answer any questions, or can decline to participate at all. You are also free to withdraw from the study at anytime.

All participants are guaranteed confidentiality of their survey responses. Any information you provide will be used solely for the purpose of this research. The completed questionnaires will be viewed only by the researcher, and will be analysed and reported in statistical terms. Please be assured that you will not be identified by name in the doctorate thesis or any publications arising from this research.

All questionnaires will be kept securely in locked filing cabinets and on a password-protected computer in the University of Tasmania TSBE building for a period of five years after the completion of the project, at which time all information will be destroyed.

Research outcome

The summary of this research results will be available on website from 01/12/2014.
http://blog.sina.com.cn/s/blog_98365b98010106e3.html.

Contact Information

This study has been approved by the Tasmanian Social Sciences Human Research Ethics Committee (HREC), in which the HREC project number is H12176. If you have any concerns of an ethical nature or complaints about the manner in which the study is conducted, please contact the Executive Officer of the HREC (Tasmania) Network on +61 3 6226 7479 or email human.ethics@utas.edu.au.

If you have any other questions about this research, please direct them to Dr Fan Liang or Dr Rob Hecker at the contact details provided below.

Thank you for taking the time to read this information sheet. If you are willing to participate in this study, please complete the attached consent form and questionnaire.

Dr Fan Liang TSBE University of Tasmania Private Bag 16 Hobart TAS 7001 Ph: (03) 6226 1710 Liang.Fan@utas.edu.au	Dr Rob Hecker TSBE University of Tasmania Private Bag 16 Hobart TAS 7001 Ph: (03) 6226 1774 Rob.Hecker@utas.edu.au	Ms Lingling Gao TSBE University of Tasmania Private Bag 16 Hobart TAS 7001 Ph: (03) 6226 1805 Lgao0@utas.edu.au
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CONSENT FORM

Project Title: ‘Understanding consumer online shopping behaviour from the perspective of transaction costs’.

1. I have read and understood the ‘Information Sheet’ for this study.
2. The nature of the study has been explained to me.
3. I understand that the study involves completing a questionnaire.
4. I understand that all research data will be securely stored in the University of Tasmania for a period of five years after the completion of the project. At the end of five years, all data will be destroyed.
5. I have had all of my questions answered to my satisfaction.
6. I agree that research data gathered for the study may be published. However, I will not be identified by name in any publications arising from this research.
7. I agree to participate in this research study and understand that I may withdraw at any time without any effect.

Name of participant:

Signature of participant.....Date.....

Email address:



SURVEY OF ONLINE CONSUMER BEHAVIOUR IN CHINA 2012

Part A. Information about You for Statistical Purposes

A1-A4. Please circle the answer that best describes you. Responses will be treated anonymously and confidentially.

A1. Your gender is:

1. Male 2. Female

A2. Your current age is:

1. 18 - 25 2. 26 - 33 3. 34 - 41 4. 42 - 49
5. 50 - 57 6. 58 - 65 7. > 65

A3. The highest level of formal education that you have completed is:

1. Junior high school 2. Senior high school 3. College 4. University
5. Master 6. Ph.D. 7. Other (Please describe) _____

A4. Your total household annual income (RMB) is:

1. < 10,000 2. 10,000-59,999 3. 60,000-109,999 4. 110,000-159,999
5. 160,000-209,999 6. 210,000-259,999 7. > 260,000

Part B. Your Perception about the Conditions for Online Shopping

B1-B13. Please circle the answer that best describes you. There is no right or wrong answer. Your opinion is what matters. (1=strongly disagree 2=Moderately Disagree 3=Slightly Disagree
4=Undecided 5=Slightly Agree 6=Moderately Agree 7=Strongly Agree)

	Strongly Disagree		Undecided			Strongly Agree	
B1. I can easily find Internet, whether it is a wired network or wireless.	1	2	3	4	5	6	7
B2. My PC can easily connect to the Internet.	1	2	3	4	5	6	7
B3. I can easily access to Internet in my study or work place.	1	2	3	4	5	6	7
B4. I can easily access to the Internet at anytime and anywhere.	1	2	3	4	5	6	7
B5. I could easily use the web to find product information on a product/service.	1	2	3	4	5	6	7
B6. I can get to a specific website with a browser.	1	2	3	4	5	6	7
B7. I feel comfortable searching the World Wide Web on my own.	1	2	3	4	5	6	7
B8. I would be able to use web on my own to locate retail sites.	1	2	3	4	5	6	7
B9. I am usually among the first to try new products.	1	2	3	4	5	6	7
B10. I like to buy newer and different things.	1	2	3	4	5	6	7
B11. I like to try new and different places and modes to shop.							
B12. I would not mind taking a risk with unfamiliar shopping situations.	1	2	3	4	5	6	7
B13. I enjoy buying unfamiliar brands.	1	2	3	4	5	6	7

Part C. Your Perception about Online Shopping

C1-C23. Please circle the answer that best describes you. There is no right or wrong answer. Your opinion is what matters.

	Strongly Disagree		Undecided			Strongly Agree	
C1. I can save time by shopping on the Internet.	1	2	3	4	5	6	7
C2. I shop online where I can reduce my efforts in travelling, walking, parking, and waiting as much as possible.	1	2	3	4	5	6	7
C3. Online shopping is convenient to search product information.	1	2	3	4	5	6	7
C4. I can shop on the Internet at home.	1	2	3	4	5	6	7
C5. I can buy things on the Internet at any time when I want.	1	2	3	4	5	6	7

C6. I would assess the experience of online shopping as convenience.	1	2	3	4	5	6	7
C7. I am concerned over the security of personal information exchange via the Internet.	1	2	3	4	5	6	7
C8. I am concerned that my personal information may be shared with business without my consent as a result of purchasing via the Internet.	1	2	3	4	5	6	7
C9. When sending a message or transmitting information via the Internet, I am concerned that it may be read or stored by some other person/entity/company without my knowledge.	1	2	3	4	5	6	7
C10. I am worried about the security of financial transactions carried out via the Internet.	1	2	3	4	5	6	7
C11. I am uncomfortable giving my credit card number via the Internet.	1	2	3	4	5	6	7
C12. It is difficult to be assured that the existing laws and regulations are good enough to protect me from problems on the Internet.	1	2	3	4	5	6	7
C13. It is difficult to be assured that the existing laws and regulations are adequate for the protection of my interest.	1	2	3	4	5	6	7
C14. It is difficult to determine whether the existing laws and regulations can well regularize the online vendors' behaviour.	1	2	3	4	5	6	7
C15. It is difficult to determine whether media reports are credible and authentic.	1	2	3	4	5	6	7
C16. It is difficult to be assured that media reports can well supervise online vendors.	1	2	3	4	5	6	7
C17. It is difficult to be assured that online reviews are always authentic and credible.	1	2	3	4	5	6	7
C18. It is difficult to determine whether online reviews provide facts in support of their position.	1	2	3	4	5	6	7
C19. Shopping on the Internet is one of my favourite leisure activities.	1	2	3	4	5	6	7
C20. When shopping online, I feel playful.	1	2	3	4	5	6	7
C21. I would assess the experience of online shopping as enjoyment.	1	2	3	4	5	6	7
C22. I enjoy shopping on the Internet.	1	2	3	4	5	6	7
C23. Online shopping can bring me happiness.	1	2	3	4	5	6	7

Part D. Online Purchase

D1-D5. Please circle the answer that best describes your situation.

D1. On average, how often do you buy online?

- | | | |
|-----------------------------|-----------------------|------------------------|
| 1. Less than once per month | 2. About once a month | 3. A few times a month |
| 5. A few times a week | 6. About once a day | 7. Several times a day |

D2. What did you buy online in the last time? _____

D3. Which online store did you buy from? _____

D4. How many products have you purchased from this online store during the past 12 months?

- | | | | |
|----------------|------------------|----------------|----------------|
| 1. 1 item | 2. 2 – 3 items | 3. 4 – 5 items | 4. 6 – 7 items |
| 5. 8 – 9 items | 6. 10 – 11 items | 7. > 11 items | |

D5. Altogether, how many times have you purchased from this online store in the last 12 months?

- | | | | |
|---------|----------|---------|--------|
| 1. 1–2 | 2. 3–4 | 3. 5–6 | 4. 7–8 |
| 5. 9–10 | 6. 11–12 | 7. > 12 | |

Part E. Your Most Recent Online Purchase

E1-E17. Think about your most recent online purchase (the product and online store you mentioned above in Part D). Please indicate how strongly you agree or disagree with the statements below, on a scale from 1 to 7. There is no right or wrong answer. Your opinion is what matters.

	Strongly Disagree		Undecided			Strongly Agree	
E1. It took time and effort to connect to the Internet.	1	2	3	4	5	6	7
E2. It took time and effort to navigate to this store's website.	1	2	3	4	5	6	7
E3. I spent a lot of time and effort getting information that would	1	2	3	4	5	6	7

be a help in decision-making of online purchase from this store.							
E4. I spent a lot of time and effort searching for product information at this store.	1	2	3	4	5	6	7
E5. I spent a lot of time and effort getting familiar with the layout of this site and the organization of its products.	1	2	3	4	5	6	7
E6. I spent a lot of time and effort assessing the credibility of this online store.	1	2	3	4	5	6	7
E7. I spent a lot of time and effort placing an order with this online store (including completing information about this product, my personal contact and delivery).	1	2	3	4	5	6	7
E8. It took time and effort to complete the online payment.	1	2	3	4	5	6	7
E9. It took time and effort to wait for this product to be delivered at home.	1	2	3	4	5	6	7
E10. I spent a lot of time and effort checking the status of my order.	1	2	3	4	5	6	7
E11. I spent a lot of time and effort contacting this online store to check whether the products I ordered are processed as promised.	1	2	3	4	5	6	7
E12. I spent a lot of time and effort monitoring the processing of my order.	1	2	3	4	5	6	7
E13. I spent a lot of time and effort resolving post-purchase problems.	1	2	3	4	5	6	7
E14. I spent a lot of time and effort returning and replacing this product.	1	2	3	4	5	6	7
E15. It took time and effort to deal with the unpredictable events in the transaction.	1	2	3	4	5	6	7
E16. It took time and effort to make changes to orders that has been sent to this online store.	1	2	3	4	5	6	7
E17. It took time and effort to arrange another time to receive this product ordered if it was not physically delivered on time as promised.	1	2	3	4	5	6	7

Part F. Your Opinions about This Online Store

F1-F29. Think about your most recent online purchase (the product and online store you mentioned above in Part D). Please indicate how strongly you agree or disagree with the statements below.

	Strongly Disagree		Undecided			Strongly Agree	
F1. It is difficult to be assured that this product will perform as well as it is supposed to.	1	2	3	4	5	6	7
F2. It is difficult to be assured that this product is reliable without trying and touching it.	1	2	3	4	5	6	7
F3. I am worried that this product received cannot represent accurately by this online store's website.	1	2	3	4	5	6	7
F4. I am worried that the performance of this product I purchased from this online store cannot live up to what is promised.	1	2	3	4	5	6	7
F5. I am worried that the quality of this online product cannot be as good as the one in the physical store.	1	2	3	4	5	6	7
F6. This site is visually attractive.	1	2	3	4	5	6	7
F7. This site is easy to use.	1	2	3	4	5	6	7
F8. This site is easy to navigate.	1	2	3	4	5	6	7
F9. This site quickly loads all the text and graphics.	1	2	3	4	5	6	7
F10. This site provides me with sufficient information.	1	2	3	4	5	6	7
F11. This site provides me with accurate information.	1	2	3	4	5	6	7
F12. This site provides me with up-to-date information.	1	2	3	4	5	6	7
F13. This site is quick and easy to complete a transaction.	1	2	3	4	5	6	7
F14. This online store delivers on its undertaking to do certain things by a certain time.	1	2	3	4	5	6	7
F15. Transactions with this online store are error-free.	1	2	3	4	5	6	7
F16. The product I purchased is delivered by the time promised by this online store.	1	2	3	4	5	6	7
F17. This online vendor shows a sincere interest in solving customer problems.	1	2	3	4	5	6	7
F18. The performance of this online store is as desired.	1	2	3	4	5	6	7
F19. When I have a problem, this online store is always willing to help me.	1	2	3	4	5	6	7
F20. This online store is never too busy to respond to customer requests.	1	2	3	4	5	6	7
F21. It is easy to get in contact with this online store.	1	2	3	4	5	6	7

F22. This online store is prompt in replying to queries.	1	2	3	4	5	6	7
F23. This online store provides me with information and products according to my preferences.	1	2	3	4	5	6	7
F24. This online store gives me individual attention.	1	2	3	4	5	6	7
F25. This online store can understand my specific needs.	1	2	3	4	5	6	7
F26. This online store has excellent public image.	1	2	3	4	5	6	7
F27. This online store is extremely committed to customer satisfaction.	1	2	3	4	5	6	7
F28. This online store is known to be concerned about consumers.	1	2	3	4	5	6	7
F29. This online store has a good reputation compared to other rival online stores.	1	2	3	4	5	6	7

Part G. Your Future Intention toward This Online Store

G1-G8. Think about the online products and store you mentioned above in Part D. Please indicate how strongly you agree or disagree with the statements below.

	Strongly Disagree		Undecided			Strongly Agree	
G1. My choice to purchase from this online store was a wise one.	1	2	3	4	5	6	7
G2. I am satisfied with this online store, when compared with expectation.	1	2	3	4	5	6	7
G3. I think I did the right thing by buying from this online store.	1	2	3	4	5	6	7
G4. When I need to buy this kind of products, this online store is my first choice.	1	2	3	4	5	6	7
G5. I will recommend this online store to other consumers.	1	2	3	4	5	6	7
G6. I will encourage other friends to purchase at this online store.	1	2	3	4	5	6	7
G7. I doubt that I would switch online stores in terms of buying this kind of product.	1	2	3	4	5	6	7
G8. To me, this online store is the best one to do business with.	1	2	3	4	5	6	7

Thank you for completing our survey.

APPENDIX F

Survey Instrument (Chinese Version)



问卷调查说明书

尊敬的网购朋友，

邀请参与

我们盛情邀请您参加这项关于从交易成本角度研究消费者网购行为的研究项目。这项研究的开展是为了满足塔斯马尼亚大学经济与商学院对博士学位的要求。该项目是由经济与商学院的博士候选人高玲玲同学发起，并由Fan.Liang博士，Rob. Hecker博士和Tommy Wang博士共同指导完成。

该项目的研究目的

该项目的目的是为了研究消费者网上购物行为及购买后的行为。这些行为可能会受到在网上交易过程中所产生的交易成本的影响。我们感兴趣的是您的网购体验，以及在多大程度上您从最近一次网购体验中感知到的交易成本。我们不寻求任何可能会被认为是敏感的具体信息。

您参与该研究将是非常有价值的。我们相信此研究将会促进我们对消费者网购行为，满意度，忠诚度和购物成本的理解，同时它为渴望降低这些成本的网络零售商提供发展市场营销战略方面的指导以及在网络零售中取得竞争优势的启示。本研究也将帮助消费者更好地评估网购相关的收益和成本。

参与者预计做什么

您的参与涉及到完成一份关于您网购经历的调查问卷。请参考附上的调查问卷和知情同意书。调查将占用您20-25分钟来完成。参与该项目没有任何未知的或者预期风险。

隐私保密

参与此项目是完全自愿的。您可以拒绝回答任何问题，也可以完全拒绝参与此研究项目。您可以在任何时候自由退出本研究。

我们确保所有参与者在调查问卷上的答复的保密性。您提供的任何信息将只用于本研究。完成的调查问卷将只由研究员本人查看，进行分析和以统计术语的形式来报告。请放心，任何可能显示您个人身份的信息将不会在此博士论文中或者从这项研究产生的任何出版物中以名字的形式标记出来。

所有的调查问卷将会被安全地存放在塔斯马尼亚大学经济与商学院大楼里上锁的文件柜中和一台受密码保护的电脑里。问卷将会在此研究项目结束后安全保存五年，然后由研究员一并销毁。

研究结果

本研究成果的总结报告将从 2014 年 12 月 1 号在以下网站上公布。

http://blog.sina.com.cn/s/blog_98365b98010106e3.html

联系信息

此项研究已被塔斯马尼亚社会科学人类研究伦理委员会批准。项目编号是H12176。如果您对该项目在道德性质方面有担心或者对开展此研究的方法有投诉，请联络该委员会的执行主管 +613 62267479，或者电邮 human.ethics@utas.edu.au。

如果您有任何关于此研究的其它问题，请发给Fan.Liang博士或者Rob. Hecker博士。他们的联系方式如下。

感谢您花时间来阅读这份问卷调查说明书。如果您愿意参与此项研究，请填写所附上同意书和调查问卷。

Fan Liang博士 经济与商学院 塔斯马尼亚大学 Private Bag 16 Hobart TAS 7001 电话: (03) 6226 1710 Liang.Fan@utas.edu.au	Rob Hecker博士 经济与商学院 塔斯马尼亚大学 Private Bag 16 Hobart TAS 7001 电话: (03) 6226 1774 Rob.Hecker@utas.edu.au	Lingling Gao女士 经济与商学院 塔斯马尼亚大学 Private Bag 16 Hobart TAS 7001 电话: (03) 6226 1805 Lgao0@utas.edu.au
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同意书

项目标题：“从交易成本角度研究消费者网购行为”

1. 我已经阅读和理解此研究的‘问卷调查说明书’。
2. 此研究的性质已经向我进行了解释。
3. 我知道该研究涉及到填写一份调查问卷。
4. 我知道所有的研究数据将会被塔斯马尼亚大学在此项目结束后安全存放五年。五年后，所有数据将会被销毁。
5. 我所有的问题都得到了满意的答复。
6. 我明白此研究获取的数据可能会被发表。但是，我的身份不会被从这项研究产生的任何出版物中由名字所标记出来。
7. 我同意参与此研究，同时我知道我可以不受任何影响，随时退出此研究项目。

参与者姓名:

参与者签名时间.....

电邮地址:



2012年中国消费者网上购物行为调查问卷

A部分. 个人统计信息

A1-A4. 请圈出最能描述您本人情况的一个答案。您的回答将以匿名和保密的方式处理。

A1. 您的性别是:

1. 男 2. 女

A2. 您的年纪是:

1. 18 - 25 2. 26 - 33 3. 34 - 41 4. 42 - 49
5. 50 - 57 6. 58 - 65 7. > 65

A3. 您已经完成的正规教育的最高级别是:

1. 初中 2. 高中 3. 技校 4. 大学
5. 硕士 6. 博士 7. 其它 (请注明) _____

A4. 您的家庭年总收入 (人民币) 是: :

1. < 10,000 2. 10,000-59,999 3. 60,000-109,999 4. 110,000-159,999
5. 160,000-209,999 6. 210,000-259,999 7. > 260,000

B部分. 您对网购条件的认知

B1-B13. 请圈出最能描述您本人情况的一个答案。这里没有正确或错误答案的区分, 您自己观点最重要。(1=强烈不同意 2=较不同意 3=有些不同意 4=不清楚 5=有些同意 6=较同意 7=强烈同意)

	强 烈 不 同 意	较 不 同 意	有 些 不 同 意	不 清 楚	有 些 同 意	较 同 意	强 烈 同 意
B1. 我能轻松地找到网上, 不管是用有线网络还是无线的方式	1	2	3	4	5	6	7
B2. 我的个人电脑可以轻松连接到互联网	1	2	3	4	5	6	7
B3. 在学习或者工作的地方, 我上网很方便	1	2	3	4	5	6	7
B4. 随时随地我都可以很方便的上网	1	2	3	4	5	6	7
B5. 我可以很轻松地使用网络来找到产品或者服务方面的信息	1	2	3	4	5	6	7
B6. 我可以用浏览器找到一个特定的网站	1	2	3	4	5	6	7
B7. 我觉得自己动手来搜索网站挺好的	1	2	3	4	5	6	7
B8. 我自己就能利用网络找到在线购物的网站	1	2	3	4	5	6	7
B9. 我通常最先尝试新产品	1	2	3	4	5	6	7
B10. 我喜欢买新的和不同的东西	1	2	3	4	5	6	7
B11. 我喜欢尝试新的不一样的购物地点和购物方式							
B12. 我不会介意承担未知购物环境所带来的风险	1	2	3	4	5	6	7
B13. 我喜欢买不熟悉的品牌	1	2	3	4	5	6	7

C部分. 您对网购的看法

C1-C23. 请圈出最能描述您本人情况的一个答案。这里没有正确或错误答案的区分, 您自己观点最重要。

	强 烈 不 同 意	较 不 同 意	有 些 不 同 意	不 清 楚	有 些 同 意	较 同 意	强 烈 同 意
C1. 网购可以为我节省时间	1	2	3	4	5	6	7
C2. 网购可以尽可能的减少我在行驶、步行、停车、等待中花费的精力	1	2	3	4	5	6	7
C3. 网购可以很方便地搜寻产品信息	1	2	3	4	5	6	7
C4. 我在家就能网购	1	2	3	4	5	6	7
C5. 只要想买, 我随时都能上网买东西	1	2	3	4	5	6	7

C6. 我对自己网购经历的评价是“很方便”	1	2	3	4	5	6	7
C7. 我担心互联网上个人信息交换的安全性	1	2	3	4	5	6	7
C8. 我担心网购时所提供的个人信息会在未经本人同意的情况下被商业共享	1	2	3	4	5	6	7
C9. 当通过互联网发送信息时，我担心它可能会在我不知情的情况下被其他人/机构/公司阅读或存储	1	2	3	4	5	6	7
C10. 我担心通过互联网进行的金融交易的安全性	1	2	3	4	5	6	7
C11. 在网上提供信用卡号码让我觉得不舒服	1	2	3	4	5	6	7
C12. 很难确保现有法律和规定足够好到能保护我免受互联网上不法问题的侵害	1	2	3	4	5	6	7
C13. 很难确保现有法律和规定可以充分保护我的权益	1	2	3	4	5	6	7
C14. 很难确定 现有法律和规定能很好地规范网店经营者的行为	1	2	3	4	5	6	7
C15. 很难确定大众媒体对网购的报道都是真实可信的	1	2	3	4	5	6	7
C16. 很难确保大众媒体对网购报道能很好地监督网店经营者	1	2	3	4	5	6	7
C17. 很难确保在线评价都是真实可信的	1	2	3	4	5	6	7
C18. 很难决定是否在线评价都能拿出事实来支持他们的观点	1	2	3	4	5	6	7
C19. 网购是我最喜欢的休闲活动之一	1	2	3	4	5	6	7
C20. 网购的时候，我觉得很好玩	1	2	3	4	5	6	7
C21. 我对自己网购经历的评价是“很有趣”	1	2	3	4	5	6	7
C22. 我很享受上网买东西	1	2	3	4	5	6	7
C23. 网购能带给我快乐	1	2	3	4	5	6	7

D部分. 网上购买

D1-D5. 请圈出最能描述您本人情况的一个答案。

D1. 平均而言，您网购的频率？

- | | | |
|-----------|------------|----------|
| 1. 每月少于一次 | 2. 大概一个月一次 | 3. 一个月几次 |
| 5. 一周几次 | 6. 大概一天一次 | 7. 一天几次 |

D2. 您上一次网购时买的是什么产品？ _____（请填写）

D3. 您上一次网购时在哪个网店购买的? _____ (请填写)

D4. 在过去的12个月中, 您一共从**该网店**购买过多少件产品?

- | | | | |
|---------|-----------|---------|---------|
| 1. 1件 | 2. 2-3件 | 3. 4-5件 | 4. 6-7件 |
| 5. 8-9件 | 6. 10-11件 | 7. >11件 | |

D5. 在过去的12个月中, 您一共在**该网店**购买过多少次?

- | | | | |
|----------|-----------|---------|---------|
| 1. 1-2次 | 2. 3-4次 | 3. 5-6次 | 4. 7-8次 |
| 5. 9-10次 | 6. 11-12次 | 7. >12次 | |

E部分. 您上一次网购

E1-E17. 根据您**上一次网购**的经历 (D部分中您所提到的产品和网店), 请指出您同意或者不同意以下声明的程度。这里没有正确或错误答案的区分, 您自己观点最重要。

	强 烈 不 同 意	较 不 同 意	有 些 不 同 意	不 清 楚	有 些 同 意	较 同 意	强 烈 同 意
E1. 找到可以上网的地方需要花时间和精力	1	2	3	4	5	6	7
E2. 搜到该网店需要花时间和精力	1	2	3	4	5	6	7
E3. 我花了很多时间和精力去找能帮我做从该网店购物决定的信息	1	2	3	4	5	6	7
E4. 我在该网店花了很多时间和精力来搜索产品方面的信息	1	2	3	4	5	6	7
E5. 我花了很多时间和精力去熟悉该网店的布局和产品分布	1	2	3	4	5	6	7
E6. 我花了很多时间和精力来评估该网店的信誉	1	2	3	4	5	6	7
E7. 我花了很多时间和精力来填写订单信息 (包括产品信息, 个人联系方式和邮寄信息)	1	2	3	4	5	6	7
E8. 完成在线支付需要花时间和精力	1	2	3	4	5	6	7
E9. 等待该产品寄送到家需要花时间和精力	1	2	3	4	5	6	7
E10. 我花了很多时间和精力来检查我的订单状态	1	2	3	4	5	6	7
E11. 我花了很多时间和精力去联系该网店以便检查是否我所订购的产品按照承诺那样进行处理	1	2	3	4	5	6	7

E12. 我花了很多时间和精力去督促该网店处理我的订单	1	2	3	4	5	6	7
E13. 我花了很多时间和精力去解决购买后出现的问题	1	2	3	4	5	6	7
E14. 我花了很多时间和精力去退货和更换该产品	1	2	3	4	5	6	7
E15. 应对此交易中难以预测的事件需要花时间和精力	1	2	3	4	5	6	7
E16. 更改已经发到该网店的订单需要花时间和精力	1	2	3	4	5	6	7
E17. 当该产品不能按承诺的那样准时递送时，安排另一个时间来接收产品需要花时间和精力	1	2	3	4	5	6	7

F 部分. 您对该网店的看法

F1-F29. 根据您上一次网购的经历（D部分中您所提到的产品和网店），请指出您同意或者不同意以下声明的程度。

	强 烈 不 同 意	较 不 同 意	有 些 不 同 意	不 清 楚	有 些 同 意	较 同 意	强 烈 同 意
F1. 很难保证该产品如其所言一样好	1	2	3	4	5	6	7
F2. 在没有试过和接触的情况下，很难确保该产品是可靠的	1	2	3	4	5	6	7
F3. 我很担心收到的产品和该网站上显示的图片不符	1	2	3	4	5	6	7
F4. 我很担心从该网店购买的产品的性能不能达到承诺的效果	1	2	3	4	5	6	7
F5. 我很担心从该网店购买的产品的质量不如实体店里面的好	1	2	3	4	5	6	7
F6. 该网店从视觉上很吸引人	1	2	3	4	5	6	7
F7. 该网站很好使用	1	2	3	4	5	6	7
F8. 该网店的导航功能容易使用	1	2	3	4	5	6	7
F9. 该网站能快速加载所有的文字和图片	1	2	3	4	5	6	7
F10. 该网站为我提供了足够的信息	1	2	3	4	5	6	7
F11. 该网站为我提供了准备的信息	1	2	3	4	5	6	7
F12. 该网站为我提供了最新的信息	1	2	3	4	5	6	7
F13. 在该网站上，能快速轻松地完成交易	1	2	3	4	5	6	7
F14. 该网店信守承诺，在特定的时间里做该做的事	1	2	3	4	5	6	7
F15. 和该网店的交易是完全无差错的	1	2	3	4	5	6	7
F16. 我在该网店购买的产品是按承诺那样按时送达的	1	2	3	4	5	6	7

F17. 该网店解决消费者问题的态度很真诚	1	2	3	4	5	6	7
F18. 该网店的表现和预期的一样好	1	2	3	4	5	6	7
F19. 当我遇到问题时，该网店总是很愿意帮助我	1	2	3	4	5	6	7
F20. 该网店从来不会因为忙不过来而不回复顾客的询问	1	2	3	4	5	6	7
F21. 很容易与该网店取得联系	1	2	3	4	5	6	7
F22. 该网店能及时地解答我的咨询	1	2	3	4	5	6	7
F23. 该网店根据我的喜好来提供信息和产品	1	2	3	4	5	6	7
F24. 该网店给了我特别的关注	1	2	3	4	5	6	7
F25. 该网店能够理解我特定的需求	1	2	3	4	5	6	7
F26. 该网店具有良好的公众形象	1	2	3	4	5	6	7
F27. 该网店非常致力于让顾客满意	1	2	3	4	5	6	7
F28. 该网店因关心消费者而倍受青睐	1	2	3	4	5	6	7
F29. 相对于其他网店竞争对手，该网店拥有良好的口碑	1	2	3	4	5	6	7

G部分. 您将来在该网店购物的意向

G1-G8. 根据您上一次网购的经历（D部分中您所提到的产品和网店），请指出您同意或者不同意以下声明的程度。

	强 烈 不 同 意	较 不 同 意	有 些 不 同 意	不 清 楚	有 些 同 意	较 同 意	强 烈 同 意
G1. 从该网店购物是一个明智的选择	1	2	3	4	5	6	7
G2. 相比于期望，该网店让我很满意	1	2	3	4	5	6	7
G3. 我觉得从该网店购物是正确的	1	2	3	4	5	6	7
G4. 当我需要买此类产品的时候，该网店是我的第一选择	1	2	3	4	5	6	7
G5. 我将会把该网店推荐给其他人	1	2	3	4	5	6	7
G6. 我将会鼓励我的朋友们来这家网店购物	1	2	3	4	5	6	7
G7. 对于换别家购买此类产品，我表示很怀疑	1	2	3	4	5	6	7
G8. 对我而言，该网店是最佳合作伙伴	1	2	3	4	5	6	7

感谢您完成我们的调查问卷！