Trust, Perceived Benefit, and Purchase Intention in C2C E-Commerce:
An Empirical Examination in China

Shukuan Zhao, Jilin University, Changchun, China

Yiwen Fang, Jilin University, Changchun, China

Weiyong Zhang, Old Dominion University, Norfolk, USA

Hong Jiang, Jilin University, Changchun, China

ABSTRACT

It is a class research question about how trust and perceived benefit affect consumers' purchase intentions. This research examines the relationship in a very different context: consumer-to-consumer (C2C) e-commerce in China. Specifically, this research empirically assesses the differences in effect size due to the change of context. First, a theoretical model linking trust, perceived benefit, and their antecedents to purchase intention is developed upon the literature. Then the model is evaluated using empirical data collected at Taobao, the largest C2C e-commerce website in China. Partial least squares based structural equation modeling (PLS-SEM) results strongly support the model and research hypotheses. A developing country context can indeed affect the strength of effect. These results contribute to the literature in that they provide new insights toward a more in-depth theoretical understanding. Meanwhile, they can also provide useful guidance for managers.

KEYWORDS

INTRODUCTION

The turn of the millennium is characterized by an extremely fast growth of the Internet. Since its inception in the early 1990s, the Internet has brought tremendous changes to virtually all aspects of human life (Bi et al., 2017, 2018; Civerchia, Bocchino, et al. 2017; Cheng et al 2018; Finogeev and Finogeev, 2017; Gholami, Taboun and Brennan, 2018; Gorkhali & Xu, 2016; Gürdür and Asplund, 2018; Kim 2017; Lai et al 2017; Li, Xu, & Zhao, 2018; Lu 2017; Peruzzini and Stjepandić, 2018; Tan, Jiang, Gu, 2017; Xiao et al 2014; Xu, He, & Li, 2014; Yang, Stankevicius, Marozas et al., 2018). Among all changes, e-commerce is obviously one of the most significant. E-commerce today has developed into a common, daily activity for consumers (Turban, King, Lee, & Viehland, 2002). The past two decades have witnessed numerous new technologies that enabled the deployment of a plethora of e-commerce websites such as Amazon and eBay. Since the Internet does not have a national or geographical boundary, businesses that provide e-commerce are enthusiastic about leveraging the opportunity to reach more customers, further reduce cost and improve profit.

Among all the interesting research questions, a crucial one has attracted many researchers' attention: What factors affect consumers' purchase behavior? It is a classic research question that dates

back to the 1970s in marketing research. Built upon the Theory of Reasoned Action (TRA), marketing scholars have suggested that trust and perceived benefit significantly affect consumers' purchase intention, which in turn guides their purchase behaviors (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). As the Internet and e-commerce becomes increasingly popular and pervasive (Assarzadeh and Aberoumand, 2018; Cai et al 2014; Fan et al., 2014; Fang et al 2014; Li, Oikonomou, Tryfonas, et al., 2014; Liu et al., 2017; Lu 2018; Lu and Xu, 2018; Mao et al 2016; Qi et al 2017; Viriyasitavat and Hoonsopon, 2018; Wang, et al., 2014; Xu, 2011; Xu et al 2018; Yan, et al., 2018; Zhai et al 2016; Zheng et al 2014), information systems and information technology (IS/IT) researchers have shown that the same model is not confined to brick-and-mortar businesses, but also applies to e-commerce or online shopping (Kim, Ferrin, & Rao, 2008). There are conclusive evidences on how trust and perceived benefit affect purchase intention.

Will the relationships remain the same in a different context? Most extant studies were conducted in a developed country setting, where rules and regulations are well established, financial systems are mature, privacy protection is expected, and consumers are less concerned with security issues. In contrast, one cannot assume the same in a developing country context. Researchers have found China particularly interesting in this regard (Cui & Jiang, 2018; Li, 2013; Li & Zhou, 2013). China is a developing country, but its e-commerce growth rate is the fastest in the world. By 2013, the number of online shopping transactions in China exceeded 2.8 billion (iResearch, 2015). Accompanying with this fast growth rate though, is an increasingly severe concern of trust and security issues. Many sellers in China are small businesses or individuals without a strong brand or established credibility. News on security breach or privacy threat is commonly heard. Given such a vastly different context, naturally, the question is whether theoretical models based on TRA are still applicable.

A review of the literature shows that the answer to the question is mostly positive, but quantitative specifics are largely missing. Models based on TRA can explain consumers' purchase behaviors in a developing country context, but parameters such as antecedents and effect size may change. Unfortunately, very few studies have attempted to address the specifics. For example, studies have shown that trust and perceived benefit still affect purchase intention in a developing country context, but it is largely a myth how much effect change it will be when there is a context change. Will consumers in China value trust over perceived benefit or vice versa? There are more questions along the same line of thinking: What is the impact of a developing country context on the relationship between trust and its antecedents, and perceived benefit and its antecedents? Does one antecedent have a stronger or weaker effect?

The purpose of this study is to explore for answers to these questions. Empirically validated answers can lead to interesting novel insights about a proven theoretical framework. Such insights can help further theoretical development, leading to a model that can better explain and predict consumers' purchase behaviors in a developing country. This study can potentially make a solid contribution to the literature. Meanwhile, insights obtained from this study can also help managers be more effective in managing e-commerce, particularly in China.

This paper is organized as follows. The next section reviews and synthesizes the extant literature to develop a theoretical model with research hypotheses. The discussion is focused on how effect size can be different in a developing country context. Empirical research design for this study is described next. The measurement instrument is also presented. Results are obtained and deliberated using the partial least squares based structural equation modeling (PLS-SEM) method. The paper concludes with a discussion on potential contributions to both the literature and practices. The limitation of this study and future research directions are also addressed.

THEORETICAL DEVELOPMENT AND RESEARCH HYPOTHESES

Theory of Reasoned Action (TRA) Theoretical Framework

Consumer behaviors is a main research topic in the marketing field. Many research studies can trace their root back to Theory of Reasoned Action (TRA). TRA posits that behavioral intentions are immediate antecedents to behavior, and behavioral intentions are a function of information or beliefs about the likelihood that performing a particular behavior will lead to a specific outcome (Ajzen & Fishbein, 1980; Bai, 2018; Chong, et al., 2018; Fishbein & Ajzen, 1975). Researchers have used the TRA theoretical framework to study a variety of issues, for example, information technology acceptance or adoption (Venkatesh, Morris, Davis, & Davis, 2003). In the field of consumer behaviors, TRA states that consumers will assess benefits and risks associated with a purchase action, the assessment result will directly affect their purchase intention, which eventually determines whether they will conduct a purchase behavior (e.g., Jarvenpaa, Tractinsky, & Saarinen, 1999). Figure 1 summarizes the TRA theoretical framework for consumers' purchase behavior.

Developing Country Context

To date, a rich body of literature is available on consumer behavior using the TRA theoretical framework. On one direction, researchers have enriched the base model with the incorporation of antecedents. For example, many studies have identified different factors that affect consumers' Trust and Perceived Benefit (Sirdeshmukh, Singh, & Sabol, 2002). On another direction, numerous studies have taken the base model to different contexts to examine its validity and generalizability. For instance, some studies examined the model in an e-commerce context instead of physical stores (Hoffman, Novak, & Peralta, 1999; Lee & Turban, 2001). Studies have also looked at a Consumer-to-Consumer (C2C) context other than Business-to-Consumer (B2C) (Chen, Zhang, & Xu, 2009; Giraldi, Ceccacci, Bevilacqua, and Mengoni, 2018; Kim et al., 2008; Li, Ye, Law, & Wang, 2010; Lu, Zhao, & Wang, 2010). In most cases, the TRA theoretical framework has proven its applicability.

To be effective, the base model must be "customized" to fit specific contexts. Many times the consideration of a specific context can be quite challenging. For example, Martinsons (2008) found that e-commerce in China bears the characteristics of relationship-based, hence studies need to incorporate such factors. But the unfortunate fact is that, up to date, such customization effort is rather *ad hoc*. Overall, there is a lack of systematic exploration on how contexts may affect researchers' model development and empirical results.

Figure 1. The base model: Consumers' purchase behavior based on TRA
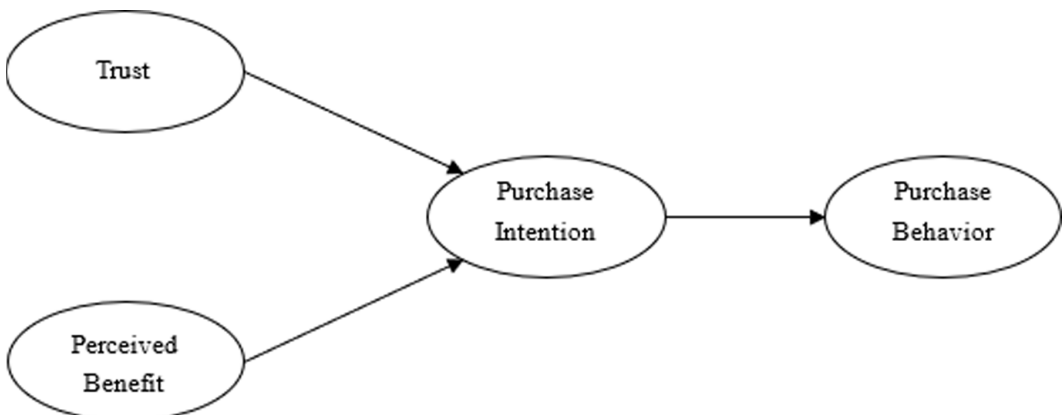
The context of China bears several interesting characteristics, and they will be carefully considered in this research study. Despite fast economy growth in the past several decades, China is still largely a developing country due to its large population. Generally, the literature has characterized developing countries as not having well-established financial and legal systems, and weak consumer privacy and rights protection. However, when the developing country is China, such a characterization may be an oversimplification or even a mischaracterization. For example, development and application of mobile Internet in China is by no means trailing, but to the contrary, leading developed nations in many ways (Su et al 2018). The continued high-speed economy growth in China is nothing short of miracle. This unusually long growth period has caused major changes in China. For instance, the financial system in China is a delicate mix of both a rigid banking system and a highly vigorous mobile payment system, e.g., Alipay. It will be a mistake for researchers with a developed country background to simplify the context as a "lagging-behind financial system." Another major factor is that one-child policy has been implemented in China for several decades, leading to a highly disturbing population structure in which a typical (extended) family is consisted of four grandparents, two parents, and one child. The implications are profound and multi-folded. For example, the only child of such an extended family often has enough financial resources at disposal, which usually lead to a high selectivity in his or her employment choices, making labor availability in China much more than a simple economics issue but also a societal and political issue. All in all, studies on consumers' purchase intention have not sufficiently addressed such a unique and challenging context.

This research study starts with a base model derived from the literature. Then the model is expanded to include antecedents that are relevant to China. Specifically, the focus in on assessing the effect size. First of all, it is expected that the base model is applicable in China due to its wide generalizability: Perceived Benefit and Trust will affect consumers' Purchase Intention in a C2C setting (Kim et al., 2008; Li et al., 2010). However, the literature is yet to define whether the developing country context in China will make the effect of one factor stronger than the other or vice versa. Further, the specific context also demands a careful identification of relevant antecedents to these two factors. There potentially are many plausible antecedents to Trust and Perceived Benefit, which ones are more relevant in this specific context? Moreover, there is a lack of evidence on whether a developing country context will attenuate or strengthen the effect of certain antecedents. Therefore, a systematic exploration may answer these questions, and potentially make a significant contribution to both the literature and practices, which is exactly the purpose of this empirical study.

The Base Model

According to the extant literature, the base model should be applicable in the specific context of this study: C2C e-commerce in China. The base model, as illustrated in Figure 1, states that both Trust and Perceived Benefit have positive effect on Purchase Intention.

Purchase Intention

Purchase Intention refers to a consumer's willingness to commit to a buying transaction. In the context of online shopping, Purchase Intention represents the readiness of a consumer for an online transaction. In today's Internet environment, consumers use an e-commerce service provider's website to search and acquire information about products, and related services. Purchase Intention can be operationalized as the probability that a consumer will buy a certain product or service afterwards (Schlosser, White, & Lloyd, 2006).

C2C Trust, Perceived Benefit, and Purchase Intention

According to Merriam-Webster dictionary, trust is a "belief that someone or something is reliable, good, honest, effective, etc." Undoubtedly, trust plays a crucial role in e-commerce. Indeed, trust is a prerequisite for consumers to participate in online shopping. With trust, consumers are willing

to proceed ahead with transaction even when there are uncertainties (McKnight, Choudhury, & Kacmar, 2002).

In the literature on online shopping and e-commerce, most studies on trust involve business-to-consumer (B2C) websites. This is understandable because most transactions happen in the context of B2C. However, consumer-to-consumer (C2C) websites are growing rapidly and gaining wide popularity, particularly in developing countries such as China (Chen, Zhang, Yuan, & Huang, 2007). Taobao, the largest C2C website in China, enjoyed a tremendous growth rate in the past several years. On a C2C website, consumers do not deal with a large business. Instead, a C2C website provides a platform for consumers to interact and transact with other businesses or sellers, often small in scale. Trust in this context involves not only the C2C website, but also information provided by sellers on the C2C website. Clearly, a lack of trust will prevent consumers from committing to online shopping (Hong, 2018; Jones & Leonard, 2008). Consumers evaluate online sellers for their ability to clearly describe products and services, to keep promises, and their goodwill to customer service (Ou, Pavlou, & Davison, 2014; Palvia, 2009). The level of trust clearly affects whether consumers will accept the C2C website and use it for transactions. In short, it is believed that a positive impact of trust on purchase intention still exists in a C2C context. It can be further argued that this relationship holds true regardless of developed or developing countries. It is stated as hypothesis H1a and fully expected to be confirmed empirically.

Hypothesis H1a: *Consumers' Trust on C2C e-commerce is positively related to their Purchase Intention.*

In the marketing literature, it is well documented that a consumer's buying behavior is closely related to benefit the consumer perceives. Perceived Benefit refers to value or functionality provided by a product or service that customers can gain by using it. In online shopping, such benefit may include not only the product or service itself, but also convenience, availability of choices, time or cost savings (Kim et al., 2008). Clearly, a higher level of Perceived Benefit will translate into a stronger Purchase Intention. If a consumer is satisfied with benefit provided by an e-commerce service provider, the consumer is likely to become a repeated customer. The opposite is also true, a lower level of Perceived Benefit will decrease the consumer's Purchase Intention, or even stop the consumer from coming back to an e-commerce service provider. In summary, a strong positive effect of Perceived Benefit on Purchase Intention exists in a C2C context, also regardless of developed or developing countries. This is stated as research hypothesis H1b.

Hypothesis H1b: *Consumers' Perceived Benefit is positively related to their Purchase Intention.*

Next, the specific context in which this research is conducted is carefully examined. Hypotheses H1a and H1b state that both Trust and Perceived Benefit have positive impact on Purchase Intention. It is reasonable to argue that Perceived Benefit has a much larger effect size than that of Trust, due to characteristics of C2C e-commerce in China. In this specific context, the role of Trust is more like an order qualifier while Perceived Benefit is an order winner in today's e-commerce in China. Back in early 2000's, e-commerce development in China was slow due to many obstacles (Wong, Yen, & Fang, 2004). More than one decade later, e-commerce has become a norm in ordinary Chinese people's life. According to Deloitte Research (2016), the transaction scale of online retail market reached RMB 3.8 trillion in 2015, representing 12.6% of total retail sales in China. Using C2C website such as Taobao has become a part of Chinese people's daily life. During this process, many C2C websites have emerged and disappeared. The remaining providers must have survived in competition, and earned consumers' trust. To that extent, Trust is a qualifier, or a threshold of the game. Without Trust, consumers will not transact on a C2C website. But once the trustworthiness of a C2C website

has been established, its effect on consumers' Purchase Intention becomes rather small. Perceived Benefit, on the other side, becomes the major driving force behind consumers' online activities (Wang, Po Lo, Chi, & Yang, 2004). The above arguments are summarized as research hypothesis H1c.

Hypothesis H1c: *In a developing country context, Perceived Benefit has a much larger effect than that of Trust on consumers' Purchase Intention.*

Antecedents of C2C Trust

The base model is then expanded to include antecedents for both Trust and Perceived Benefit. There can be many different antecedents. The identification of such antecedents is largely context dependent. For Trust, Perceived Risk is identified as one important antecedent (Lu et al., 2010). Perceived Risk is commonly defined as the felt uncertainty regarding possible negative consequences of using a product or service (Featherman & Pavlou, 2003). It is "the expectation of losses associated with purchase and acts as an inhibitor to purchase behavior" (Peter & Ryan, 1976). Clearly, Perceived Risk can have a strong negative impact on consumers' trust on a C2C e-commerce service provider. Particularly, online shopping is different from traditional shopping in that consumers usually interact with a website but not a brick-and-mortar store. This lack of visibility and transparency may cause fear against online shopping. Consumers simply will stop online shopping if Perceived Risk is too high. Such risks include but are not limited to: product risk (e.g., inaccurate product description, defective products); financial risk (e.g., fraud, ability to return and refund). In physical stores, consumers can touch, feel, or even try a product before committing to a buying decision. In online shopping, consumers must rely on information provided online, e.g., texts, pictures, videos. Their evaluation of the product becomes nothing more than a speculation. Providing personal information to a seller or a website is also a highly risky action, which is generally an irreversible action, and can lead to serious consequences such as ID theft or funds loss (Araujo & Araujo, 2003). A delivery time lag also exacerbates the perception of risks. As a result, the level of Perceived Risk directly contributes to the level of Trust consumers may have for a C2C e-commerce website or service provider (Olivero & Lunt, 2004). This is stated as hypothesis H2a.

Hypothesis H2a: *Consumers' Perceived Risk is negatively related to their trust level in C2C e-commerce.*

Perceived Security Protection is another important antecedent to C2C Trust. Perceived Security Protection refers to consumers' assessment of a C2C website whether it has deployed satisfying security measures. Such security requirements include authentication of transactions, payment security, and confidentiality of transactions and personal information (Li et al., 2010; Zhang, Bian, & Zhu, 2013). Specifically, a C2C website needs to provide a real name authentication system through ID card, credit card, or other mechanisms, so that consumers are confident that they are dealing with legitimate parties. Once fraudulent activities are detected, a consumer's interest can be protected by informing the police or relevant government agencies. A legitimate and independent third-party payment system, usually endorsed by banks in China, is also vital because consumers have a high level of trust in banks in China. Such a system can ensure consumers that the payment mechanism is safe and convenient. In short, hypothesis H2b states:

Hypothesis H2b: *Consumers' Perceived Security Protection is positively related to their Trust in C2C e-commerce.*

Perceived Privacy Protection deals with consumers' perception of how likely their personal information will be leaked to unauthorized parties. During an online shopping transaction, a seller

needs to collect a buyer's name, address, phone number, and other relevant information. While such information should be kept strictly confidential, some sellers may sell this information for profit to marketers or even spammers. Consumers then have to face spam calls or even credit card fraud. To gain consumers' trust, a C2C service provider must demonstrate to consumers that their confidential information is indeed kept confidential. On the other hand, a lack of privacy protection will certainly lead to a lower level of trust (Kim et al., 2008). The above is stated as hypothesis H2c.

Hypothesis H2c: *Consumers' Perceived Privacy Protection is positively related to their Trust in C2C e-commerce.*

Among the three antecedents, Perceived Security Protection should have the largest effect on Trust in China. In a developing country, specifically, China, privacy is still a relative new issue. According to the national culture literature (Hofstede & Peterson, 2000), Chinese people do not have as strong a sense about privacy as Western people. Therefore, it is conceivable that Perceived Privacy Protection will not play as important a role as other factors. When compared with Perceived Risk, Perceived Security Protection is more important to Chinese people. As a nation with a long history of monarchy political system, Chinese people has the tendency to rely on authorities to protect them. To most Chinese people, product or financial risk is manageable but it is extremely difficult to deal with security protection breach without authority's intervention. Therefore, it is expected that Chinese people would place more weight on Perceived Security Protection. This is stated as research hypothesis H2d.

Hypothesis H2d: *In a developing country context, Perceived Security Protection has the largest effect on C2C Trust among all three antecedents.*

Antecedents of Perceived Benefit

Similarly, the developing country context of China is considered in identifying antecedents for Perceived Benefit. According to the marketing literature, consumers' experience has a significant impact on how their perceptions form (Jones & Leonard, 2008; Kim et al., 2008). In the context of online shopping, the experience is largely determined by two quality factors: Website Quality, and Decision Quality.

In online shopping, a website is virtually the only interface consumers interact with all the time. There is little doubt that Website Quality hence has a significant impact on consumers' perception formation. For a website that is easy to navigate, filled with up-to-date information, consumers can be more confident that the website is well maintained and the staff behind the website is strong and capable. This will easily translate into confidence of products and services provided. The perception is likely that the service provider has acquired a sufficient amount and variety of products to satisfy consumer requirements. When a website provides valuable and sufficient information, consumers no longer need to search across multiple websites. This equates to convenience and time savings, a significant benefit for consumers (Jones & Leonard, 2008; McKnight et al., 2002). In short, hypothesis H3a states:

Hypothesis H3a: *Website Quality is positively related to consumers' Perceived Benefit of C2C e-commerce.*

Another important antecedent is Decision Quality. Decision Quality refers to the degree of match or fit between different kind of customers' preferences and differentiated products. A higher Decision Quality means that consumers believe that a transaction is valuable, worthwhile, and satisfying. In other words, Decision Quality leads to Perceived Benefit (Zha, Li, & Yan, 2013). This is stated as research hypothesis H3b.

Hypothesis H3b: *Decision Quality is positively related to consumers' Perceived Benefit of C2C e-commerce.*

It can be argued that Website Quality has a much larger effect on Perceived Benefit than that of Decision Quality. According to Bai, Law, and Wen (2008), Chinese online visitors value Website Quality very much to the extent that it drives customer satisfaction and subsequently, purchase intention. The significance of Website Quality becomes apparent when one considers the developmental trajectory of C2C e-commerce in China. Many have characterized e-commerce growth in the past decade as "wild" or even "barbarian." Numerous e-commerce websites emerged and disappeared. Unlike traditional brick-and-mortar businesses who have spent tremendous amount to establish their brand images, almost all e-commerce websites in China are "new" because none of them had a history longer than 20 years. Chinese online shoppers very much can only rely on the web interface to evaluate an e-commerce provider. This website interaction experience largely defines consumers' perception. On the other side, while it is a legitimate argument that the brand image or reputation of a supplier shapes consumers' perception, the influence is in fact minimal in China. Except a few products such as cell phones, most manufacturers are small to medium sized businesses who do not have a strong brand. Their influence, if any, is further dampened due to the large disintermediation effect of C2C e-commerce website. Essentially, Website Quality becomes the most prominent factor in determining consumers' Perceived Benefit (hypothesis H3c).

Hypothesis H3c: *Among the two antecedents, Website Quality has a much larger effect on Perceived Benefit in a developing country C2C e-commerce context.*

Putting all research hypotheses together, the result is a structural model that links antecedents to C2C Trust and Perceived Benefit, and subsequently, Purchase Intention. In Figure 2, bold factors represent having a stronger effect.

EMPIRICAL RESEARCH DESIGN

Empirical Research Setting

For this study, empirical data was collected using online survey from college students in China. An online survey questionnaire was implemented and then distributed to students via email. A total of 403 students were invited and given a two-week time window to complete the survey. The student respondents were also encouraged to share the online survey with their acquaintances, which led to more responses. The majority (>95%) of the survey respondents are college students. With active follow up activities such as reminder emails, the final sample contained 236 valid responses. The response rate is a highly respectable 58.6%.

When college students are used for empirical data collection, the concern is whether their responses represent the population of interest, which may challenge the validity and generalizability of findings. It is a serious concern for studies conducted in a developed country context. In this study though, it is likely the opposite due to the specific characteristics of China: College students well represent the population of C2C e-commerce users. First, Internet is predominantly a young people thing in China. Young people, particularly college students, are pioneers of Internet adoption and active users. This fact largely alleviated the concern that college students are a biased representation of the population of interest. Second, in studies conducted in developed countries, college students are a biased sample because they often have less purchasing power. This is not true in China due to the aforementioned one-child policy. The policy has effectively concentrated wealth of two generations to the only child of a family, making college students not a "poor" group most of the time. In fact, college students are very active in online shopping. In China, many major Internet companies started

Figure 2. Consumers' Purchase Intention in C2C e-commerce in a developing country context
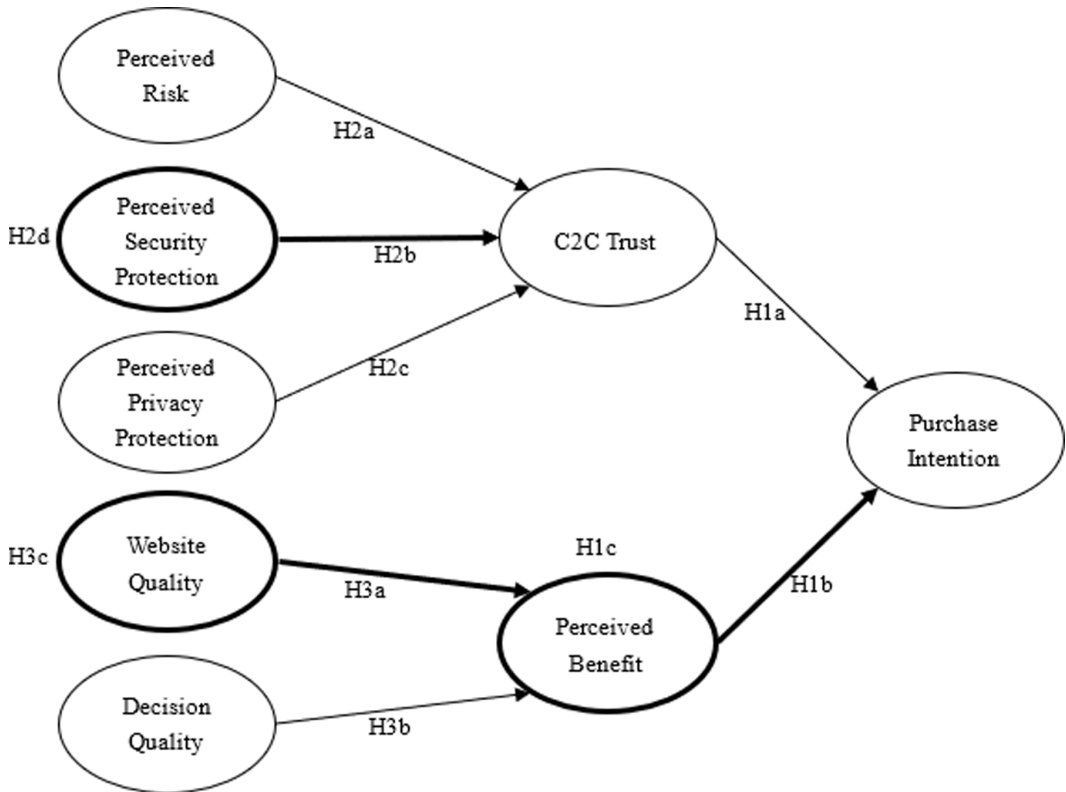
next to college campuses. For example, meituan.com and ele.me, two Internet companies who have successfully established their reputation as food delivery service providers, both started near college campuses. The latest example is OFO, a bike sharing company. In its early stage, OFO strictly focused on college campuses. According to a reported published online by eMarketer.com, over 60% of Taobao mobile app users are under the age of 30. Given the wealth college students possess and time they have for the Internet, the college student sample actually reflects the population of interest very well (Jones & Leonard, 2008; McKnight et al., 2002).

Sample Characteristics

Table 1 below presents descriptive statistics of the samples obtained. The demographics information fits college students precisely. It is worth noting that the majority of respondents have rich experiences with the Internet and online shopping. Therefore, analyzing this sample can lead to valuable insights.

Measurement Instrument

The standard procedure was followed to develop and validate a measurement instrument for the variables. Existing scales generally show better reliability and validity because they have been validated by past empirical studies. In this research, all constructs have existing scales in the literature. The items were adapted to suite the context of this research. For example, Taobao in China is the C2C e-commerce website selected. So the generic phrase of "Website" in the original scales was replaced by "Taobao" wherever appropriate.

Since the survey was conducted in a non-English speaking country, the measurement instrument items were carefully translated into Chinese. Again, the standard procedure was followed to have a

Table 1. Descriptive statistics

Classification	Frequency (%)
Gender	
Male	110(46.61%)
Female	126 (53.39%)
Age	
Under 18	9 (3.81%)
18-30	207 (87.71%)
31-40	16 (6.78%)
41-50	2 (0.85%)
Over 50	2 (0.85%)
Education level (highest level of education completed)	
High school and below	16 (6.78%)
Secondary Technical school	10 (4.24%)
College	38 (16.1%)
Undergraduate	142 (60.17%)
Postgraduate	30 (12.71%)
Experience in using the Internet	
<1 year	8 (3.39%)
1-3 year	53 (22.46%)
3-5 year	74 (31.36%)
>5 year	101 (42.8%)
Experience in shopping online	
<1 year	36 (15.255%)
1-3 year	106 (4.92%)
3-5 year	49 (20.76%)
>5 year	45 (19.07%)
>5年	

third party back translate the Chinese items into English. A thorough examination was performed to ensure that there was no ambiguity or errors.

Table 2 presents the measurement instrument for all variables. All items used the same seven-point Likert scale (1=Disagree strongly, 2=Disagree, 3=Disagree somewhat, 4=Neutral, 5=Agree somewhat, 6=Agree, 7=Agree strongly, and N=No response), which captures more variation than a five-point scale (Ahire, Golhar, & Waller, 1996). Using the same scale also reduces the burden on respondents, which motivates a higher response rate. Note that several items are reverse-coded to detect automatic responses. They were reversed back in data analysis.

RESULTS

Partial Least Squares

Partial least squares (PLS) is an advanced statistical method that "facilitates testing of the psychometric properties of the scales used to measure a variable, as well as estimating the parameters of a structural model – that is, the magnitude and direction of the relationships among the model variables". PLS is an effective multivariate technique that has been widely applied in information systems and information technology research. Compared to the conventional covariance-based technique, PLS has the advantage of being less demanding on data. PLS can work with small data sets with many missing values. In addition, with a large sample size, PLS can leverage the statistical power to reach strong conclusions (Marcoulides & Saunders, 2006).

For this research, the sample size is more than "sufficiently large." The minimum sample size required for PLS is usually determined by the larger one of (1) ten times the measurement scale with the largest number of formative indicators, or (2) ten times the largest number of independent latent variable impacting a dependent latent variable (Chin, 1998). Since no formative indicators are used in this study, the minimum sample size required is 70 (ten times seven independent latent variables). The sample size of 236 is more than adequate.

Measurement Model Assessment

A PLS based structural equation model (PLS-SEM) is composed of both the outer model (measurement model) and inner model (structural model). A valid measurement model is the prerequisite to any meaningful results (Hair, 1995). The validity of the measurement model was first assessed, including a number of properties such as content validity, construct reliability, convergent and discriminant validity (Nunnally & Bernstein, 1994).

Content Validity

Content validity, or face validity, is the fundamental requirement for any measurement item. Briefly, the the measurement items in an instrument should cover the major content of a construct (Churchill, 1979; Nunnally & Bernstein, 1994). Content validity of a measurement instrument is usually achieved through a comprehensive literature review and interviews with very knowledgeable practitioners and scholars. In this research, the constructs are from the extant literature. Their measurement items have been validated by previous studies. Hence content validity of the constructs is ensured.

Reliability and Validity

Next, the reliability of constructs were examined. Reliability assesses the consistency or stability of a measure and is inversely related to the degree to which a measure is contaminated by random error (O'Leary-Kelly & Vokurka, 1998). Traditionally, internal consistency reliability of a construct is assessed by Cronbach's alpha, which is estimated based on the inter-correlations of the indicators (Cronbach, 1951; Cronbach & Shavelson, 2004). For PLS-SEM studies, scholars have suggested to examine the composite reliability (CR) measure in addition to Cronbach's alpha (Shah & Goldstein, 2006). Cronbach's alpha assumes that all indicators are equally reliable, which is not the case in PLS-SEM. In PLS-SEM, indicators are prioritized based on their individual reliability (Hair, Hult, Ringle, & Sarstedt, 2014). Further, Cronbach's alpha is sensitive to the number of items in the scale, and tends to underestimate the internal consistency reliability. A scale is considered reliable if the CR value is between 0.60 and 0.70 for exploratory studies, and higher than 0.7 for confirmatory studies (Nunnally & Bernstein, 1994). Table 2 presents the reliability measures for each construct. All values exceeded the suggested 0.70 threshold. Therefore, the constructs are determined to be reliable.

Convergent validity is the extent to which an empirical indicator correlates positively with alternative indicators of the same construct. This is generally assessed by examining the item loadings on the construct as well as the average variance extracted (AVE). A high loading on the construct

Table 2. The measurement instrument

Construct		Items	AVE	α	CR
Perceived Risk, adapted from Kim et al. (2008)	PR1	Compared to traditional shopping channels, purchasing from Taobao (except for Tmall, similarly hereinafter) involves more product risk, e.g., product not working or defective product.	0.827	0.896	0.935
	PR2	Compared to traditional shopping channels, purchasing from Taobao (except for Tmall, similarly hereinafter) involves more financial risk, e.g., fraud or difficulty in returning the product.			
	PR3	Overall, shopping on Taobao involves more risks.			
Perceived Security Protection, adapted from Kim et al. (2008)	PSP1	Taobao implements security measures to protect Internet shoppers.	0.716	0.901	0.926
	PSP2	Taobao ensures that transactional information is protected from being altered or destroyed while transmitted over the Internet.			
	PSP3	I feel secured about Taobao's electronic payment system.			
	PSP4	I am willing to use my credit card to make a purchase on Taobao.			
	PSP5	I feel safe in making transactions on Taobao.			
Perceived Privacy Protection, adapted from Kim et al. (2008)	PPP1	I am concerned that Taobao is collecting too much personal information from me.	0.727	0.875	0.914
	PPP2	I am concerned that Taobao will use my personal information for other purposes (i.e. sell private personal information of consumers to other organizations or share with them) without my authorization.			
	PPP3	I am concerned that unauthorized persons (i.e. hackers) have access to my personal information.			
	PPP4	I am concerned about the privacy of my personal information during a transaction.			
Construct		**Items**	**AVE**	**α**	**CR**
Web Site Quality, adapted from Jones and Leonard (2008), and McKnight et al. (2002)	WSQ1	Taobao is of high quality.	0.731	0.908	0.931
	WSQ2	Organization and layout of Taobao make it easy to search for products.			
	WSQ3	Taobao is simple to navigate.			
	WSQ4	It is easy to find the information I wanted on Taobao.			
	WSQ5	Taobao clearly shows how I can contact or communicate with a seller.			
Decision Quality, adapted from Zha et al. (2013)	DQ1	I am confident with my online purchase decisions.	0.782	0.861	0.915
	DQ2	I am satisfied with the choices that I have made in online purchases.			
	DQ3	I will make the same purchase decision again when given the opportunity.			
C2C Trust, adapted from Jones and Leonard (2008)	C2CT1	Taobao is unreliable.	0.662	0.829	0.887
	C2CT2	Taobao cannot be trusted due to too many uncertainties.			
	C2CT3	In general, I cannot rely on Taobao sellers to keep the promises they have made.			
	C2CT4	Anyone trusting Taobao is asking for trouble.			
Perceived Benefit, adapted from Kim et al. (2008)	PB1	I think using Taobao is convenient.	0.703	0.894	0.922
	PB2	I can save money by using Taobao.			
	PB3	I can save time by using Taobao.			
	PB4	Taobao enables me to accomplish a shopping task more quickly than traditional stores.			
	PB5	Taobao enables me to buy more types of products than traditional stores.			
Purchase Intention, adapted from Kim et al. (2008)	PI1	I am likely to purchase products on Taobao.	0.882	0.933	0.957
	PI2	I am likely to recommend Taobao to my friends.			
	PI3	I am likely to make another purchase from Taobao if I need the products that I will buy.			

indicates good convergent validity. The suggested cut off value is that the standardized item loading should be 0.708 or higher, which indicates that the variance shared between the construct and its indicators would be at least 50% or higher. Items with loadings between 0.4 and 0.7 should be considered for elimination if this leads to an increase of the CR value to above 0.7 (Hair et al., 2014). All item loadings exceeded 0.708 to not cause any concern. In addition, AVE for each construct is greater than 0.60, providing strong support to convergent validity (Straub, Boudreau, & Gefen, 2004).

Discriminant validity is the extent to which a construct is truly distinct from other constructs. Discriminant validity can be assessed by examining the cross loadings of the indicators. An indicator's loading on its construct should be greater than cross loadings, i.e., loadings on other constructs

(Jöreskog, 1971). However, this criterion is generally considered conservative and it is recommended to use the Fornell and Larcker (1981) test instead. To pass the test, the AVE values should be greater than the squared correlation with other constructs, with the rational being that a construct should share more variance with its indicators than with any other constructs (Hair et al., 2014).

All constructs passed the Fornell and Larcker (1981) test. As can be seen in Table 3, the values along the diagonal are square roots of AVE of each latent construct, and values off the diagonal are pair-wise correlation coefficients between latent constructs. All values along the diagonal are larger than corresponding correlation coefficients, hence passing the Fornell and Larcker (1981) test. Each latent construct is relatively independent and demonstrates sufficient discriminant validity.

Structural Model Assessment

Since the measurement model was judged to be adequate, it is appropriate to assess the structural model. The path coefficients and R^2 values for all endogenous variables were examined. They are labeled in Figure 3. A standardized path coefficient represents the strength of the relationship between two adjacent constructs. As expected, all path coefficients are positive except one (PR→C2CT), which is in line with the research hypotheses. Then the statistical significance of these path coefficients was examined. Since PLS-SEM does not make data normality assumptions, traditional statistical procedures for confidence interval construction cannot be used. Instead, a bootstrapping procedure was performed to obtain the standard error of the path coefficient estimates. The bootstrapping procedure is a nonparametric resampling approach for standard error estimation. Results show that all path coefficients are significant. No path coefficient is extremely small when compared to each other, indicating that the proposed model does not have the issue of relevance of significant relationship (Hair et al., 2014).

The other important model evaluation measure is the R^2 values for each endogenous variable. As methodologists have suggested, the level of acceptable R^2 value is research model and discipline dependent. Rules of thumb have been provided for some disciplines such as Marketing (Hair, Ringle, & Sarstedt, 2011), but not for all disciplines. In this research, the R^2 values are highly respectable. The smallest R^2 values is 35.7% (C2C Trust). The other two R^2 values are more than 60%, indicating the majority of variance can be explained by the proposed model. Therefore, the proposed model is judged to have strong predictive relevance and validity. Finally, the path coefficients are compared to see if certain factors have stronger effect as hypothesized.

Table 3. Correlations of latent variables

	C2CT	DQ	PB	PI	PPP	PR	PSP	WSQ
C2CT	**0.814**							
DQ	0.513	**0.884**						
PB	0.257	0.589	**0.838**					
PI	0.259	0.556	0.790	**0.939**				
PPP	0.260	-0.018	-0.281	-0.237	**0.853**			
PR	-0.272	-0.032	0.175	0.174	-0.602	**0.909**		
PSP	0.516	0.809	0.572	0.555	-0.013	0.001	**0.846**	
WSQ	0.251	0.629	0.808	0.771	-0.221	0.154	0.697	**0.855**

Figure 3. Empirical results

$$^*p < 0.05,\ ^{**}p < 0.01,\ ^{***}p < 0.001$$
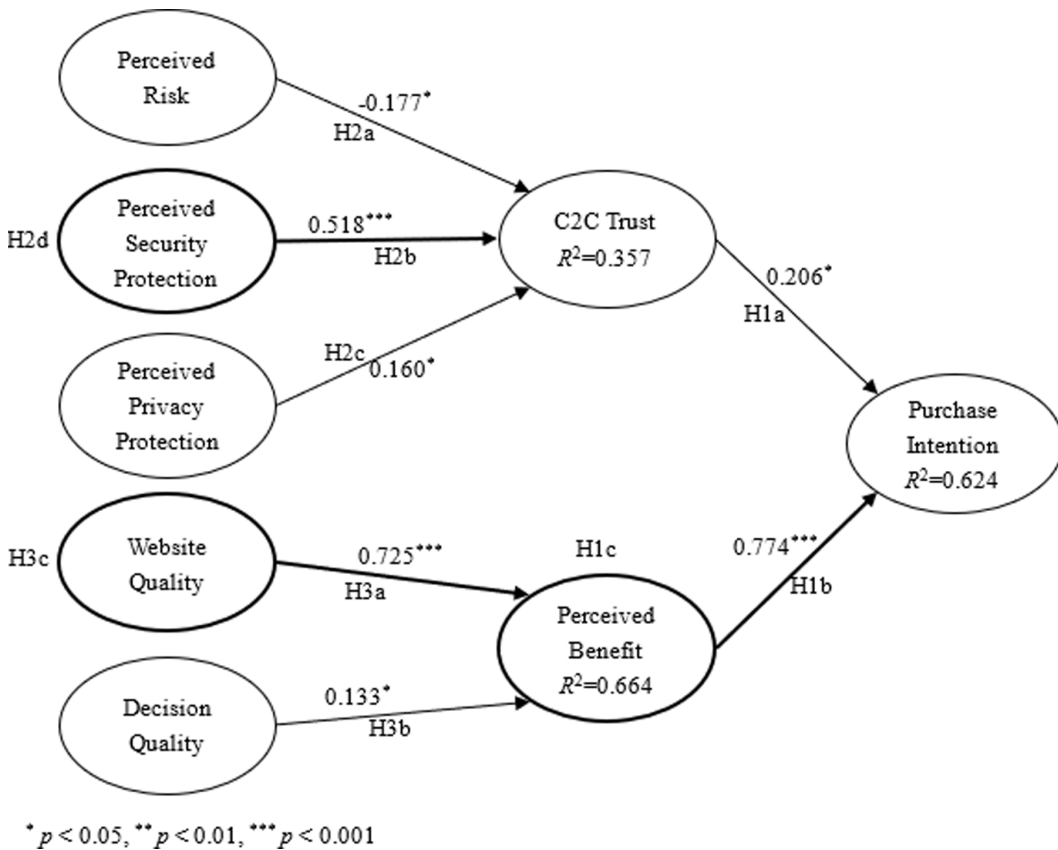
Summary of Results

Empirical results supported all research hypotheses. There is no surprise at all that both C2C Trust and Perceived Benefit have significant positive effect on Purchase Intention, supporting hypotheses H1a and H1b. The effect of C2C Trust on Purchase Intention is significant but the effect size is relatively weak (0.206). The effect of Perceived Benefit on Purchase Intention is substantially stronger at 0.774. Therefore, hypothesis H1c is supported.

The path coefficients for the three antecedents to C2C Trust are significant, in line with Hong and Cha (2013) and Kim et al. (2008). As expected, Perceived Risk negatively affects C2C Trust. Perceived Security Protection and Perceived Privacy Protection are positively associated with C2C Trust. Hypotheses H2a, H2b, and H2c are confirmed. In terms of effect size, Perceived Security Protection does have the largest effect (0.518), noticeably higher than Perceived Risk (-0.177) and Perceived Privacy Protection (0.160). Hypothesis H2d is supported.

For Perceived Benefit, the two antecedents also demonstrate a strong relationship, supporting the findings of Zha et al. (2013). Statistically significant path coefficients show that hypotheses H3a and H3b are supported. The effect of Website Quality on Perceived Benefit is a much stronger 0.725 than that of Decision Quality (0.133). Hypothesis H3c is supported.

Discussion

In this study, the effect of Trust on consumers' Purchase Intention is much smaller than that of Perceived Benefit. In past studies, researchers have found that the effect of Trust on consumers'

purchase intention is significantly strong in the absence of Perceived Benefit (Lim, Sia, Lee, & Benbasat, 2006; McKnight et al., 2002), but the effect of Trust reduces substantially when Perceived Benefit is included in the model (Kim et al., 2008; Li et al., 2010). It is possibly due to a substitution or interaction effect between C2C Trust and Perceived Benefit. For this study, the argument is that Trust is no longer a critical concern once trustworthiness of a C2C e-commerce website is established, particularly when consumers perceive a large amount of benefit. It is plausible to interpret the result as consumers constantly adjusting their priorities in online shopping: the importance of order winners exceeds order qualifiers.

The result also indicates that, in China, consumers' Trust to C2C website is largely dependent on how strong the website has provided security protection. This result makes complete sense in this unique context. In the past ten to twenty years, e-commerce growth is "wild" and a huge amount of security breach cases have happened. Unlike in developed countries, a strong legal system is readily available to assist consumer victims. In China, it is a nightmare for consumers to deal with such problems. Therefore, it is no surprise at all that Chinese online shoppers have placed a high priority on security protection when it comes to trust of an e-commerce website.

Empirical results suggest that Website Quality is likely the strongest factor that affects consumers' Purchase Intention because both path coefficients (Website Quality → Perceived Benefit → Purchase Intention) are high. Website Quality has a much stronger effect than Decision Quality on Perceived Benefit because Chinese online shoppers' perception of benefit is greatly influenced by how well a C2C e-commerce website is constructed. To some extent, it is a good news for C2C e-commerce service providers. Website Quality is a rather objective measure while Decision Quality can be higher subjective. C2C e-commerce websites can strive to improve quality by checking against many established metrics such as response time.

CONCLUSION AND FUTURE RESEARCH

Conclusion and Contributions

This research study proposed a model linking antecedents of Trust and Perceived Benefit to consumers' Purchase Intention based on the literature. The model development process is guided by a careful consideration of a specific context: consumer-to-consumer (C2C) e-commerce in China, the largest developing country of the world. The model was then empirically examined using data collected regarding Taobao, the leading C2C e-commerce website in China. Specifically, empirical data was collected using a survey regarding consumers' experiences and perception about Taobao. The empirical data was then analyzed using the partial least squares based structural equation modeling (PLS-SEM) method.

The findings in this research supported all research hypotheses that are derived from the extant literature. In short, Trust and Perceived Benefit have a significant positive effect on consumers' Purchase Intention in a (C2C) e-commerce context. The antecedents identified for C2C Trust and Perceived Benefit all have significant impact. This result supports that the theory of reasoned action (TRA) model is applicable to C2C e-commerce in a developing country context. Because characteristics of developing countries can be vastly different from that of developed countries, validating the applicability of an existing theoretical framework is a contribution by itself.

A more important contribution, though, is an exploration of effect size change in light of a developing country context. In the United States and Western European countries, business regulations are well established. E-commerce service providers have an existing legal framework that they can refer to. Meanwhile, citizens' awareness of privacy and security is at a rather high level. In contrast, the development and growth of Internet e-commerce in countries such as China follows a quite different trajectory. In many ways, government and regulatory bodies cannot provide a comprehensive framework to guide e-commerce service providers without having them trial and error first. Their feedback construes the basis for rules and regulations development. Indeed, many have characterized

the growth and development of Internet commerce in China as "wild" or even "barbarian." Clearly, consumers will have very different perceptions of e-commerce, when compared to those in developed countries.

Insights about effect size change due to a different context contributes to further theory development based on TRA. The effect of Perceived Benefit on Purchase Intention is much stronger than that of Trust. Clearly, in China, consumers are willing to use a C2C e-commerce website (Taobao in this study) due to benefits such as convenience, time, or cost savings. It is a novel insight that Trust matters less than Perceived Benefit in a developing country context, though it should not be interpreted as Trust does not matter. It is also highly intuitive that Perceived Security Protection has the largest effect on Trust. In a developing country such as China, security protection is clearly not as sophisticated as in developed countries. Incidents of security breach often receive high media attention in China. Researchers hence should pay more attention to security protection in further theory development. The result that Website Quality has an effect much larger than Decision Quality is in line with the developing country context, where tangibles are often valued more than intangibles. Consumers tend to anchor their perceptions more on those tangible attributes such as how well a website is constructed, and how easy they can obtain information. In summary, these insights contribute to a more in-depth understanding of consumers' Purchase Intention in a developing country context.

These results can provide useful guidance for managers. To C2C e-commerce service providers such as Taobao, this research study suggests that their priority should be on making benefits clearly visible to consumers, because Perceived Benefit is a key driver toward consumers' Purchase Intention. Among actions a service provider can take, improving Website Quality is the top priority. Consumers in China often look at websites for easy navigation, information access. When a website provides such qualities, consumers form a strong perception regarding benefits they can reap by interacting with the website, and subsequently, conduct a purchase on the website.

Limitations and Future Research

Some limitations of this empirical study should be recognized. Since the majority of empirical data for this research was collected from college students, the findings may not be generalizable beyond this type of C2C e-commerce consumers. However, as discussed earlier, college students well represent active C2C e-commerce consumers in China. It is a reasonable sampling choice. Therefore, results are valid, and generalizability of findings may be limited but the impact is likely minimal. Nevertheless, it is plausible to conduct the same empirical research in a more generic setting.

This research study can be extended in multiple ways in the future. It is conceivable that a comparative study can be conducted to further highlight the differences between the developing and developed countries. It is a plausible idea to incorporate factors such as national culture in a future study (Gefen & Heart, 2006). It is a fruitful path to investigate how other consumers' feedback affect or revise a consumer's perceptions. The current research study is a rather "static" one because no user feedback is taken into consideration. Incorporating a dynamic factor may lead to even more insights.

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Shukuan Zhao (Ph.D.) is a full Professor, since1996, in School of Management at Jilin University, China. Born in 1963, he received his Ph.D. degree in Technology Economy and Management from the original of Jilin University of Technology, and worked as a lecturer teacher also in School of Management original of Jilin University of Technology in 1993. Now he is the Dean in Department of Management in Jilin University, China. His current researches are on strategic management, technology innovation, Development of Science and technology, economic and social coordination, etc.

Weiyong Zhang is an Assistant Professor in the Department of Information Technology and Decision Sciences, Strome College of Business, Old Dominion University. He holds both a Bachelor's and Master's degree in Management Information Systems from Fudan University, China, and a Ph.D. in Operations and Management Sciences from University of Minnesota. He accumulated extensive industrial experiences while he worked as a consultant at Hewlett-Packard. His research interests include information systems, project management, process improvement, supply chain management, and quantitative methods. His work has appeared in top tier research journals such as Production and Inventory Management Journal, Operations Management Research, Project Management Journal, Quality Management Journal, Information Technology and Management, Internet Research, International Journal of Forecasting, and International Journal of Information Management.

Hong Jiang (Ph.D.) is a Professor since 2013 in School of Management at Jilin University, China. Born in 1978, she received her Ph.D. degree in Technology Economy and Management from Jilin University and had worked as a lecturer teacher also in School of Management at Jilin University in 2008. She is also a Ph.D. student supervisor in School of Management at Jilin University. Her research interests include technology standardization, technology innovation and management, strategic management, etc.She is the corresponding author of this article and can be reached at jiang_hong@jlu.edu.cn.