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# PREDICTING BUYERS' REPURCHASE INTENTIONS IN CROSS-BORDER E-COMMERCE: A VALENCE FRAMEWORK PERSPECTIVE

*Research paper*

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## Abstract

*Cross-border e-commerce has become an important channel for promoting international trade. Yet, the factors influencing buyer behavior in cross-border e-commerce have received relatively less research attention than in domestic e-commerce settings. In this paper we draw on the valence framework to develop and test a research model of buyer repeat purchase intentions in cross-border e-commerce. We hypothesized the effects of positive valences (value, monetary saving, convenience and product offerings) along with negative valences (product and transaction-based uncertainties) on repeat purchase intention. Data was collected from users of a popular cross-border e-commerce provider in China. Results (n=169) revealed that positive valences exert the strongest effects on repeat purchase intention, but negative valences are also significant. These include product-based uncertainties and transaction-based uncertainties. Our model explained 69% of the variance in repeat purchase intentions in a cross-border e-commerce platform. Results enhance our understanding of cross-border e-commerce and have important implications for online providers competing in international markets.*

*Keywords: Cross-border e-Commerce, Perceived Uncertainties, Perceived Benefits, Valence Framework.*

## 1 Introduction

Cross-border e-commerce has become an important channel for promoting international trade (Li and Chan, 2016). It includes both export and import cross-border e-commerce with global e-commerce sales reaching \$1.9 trillion in 2014 and set to double to almost \$4 trillion by 2020 (Bobs Guide News, 14, Oct. 2016). According to Forrester (2015), cross-border sales will reach 40 Billion Euro by 2018 in Europe.

While the success of domestic B2C or B2B e-commerce has been widely investigated (e.g., Gefen et al., 2003, Kim et al., 2009), to our knowledge, cross-border e-commerce has received less research attention. Cross-border e-commerce has some similarities with traditional domestic e-commerce. However, in cross-border e-commerce, buyer, seller, platform and third parties show more complicated interaction processes and there may be greater uncertainties for buyers (Koh et al., 2012; Guo et al., 2015). Although uncertainties such as financial risk for buyers have been explored in

domestic e-commerce contexts (e.g., Ha, 2002; Hong and Cha, 2013), in cross-border e-commerce, additional uncertainties for buyers might arise during transaction and after-transaction stages. These uncertainties include asymmetric product information, privacy concerns, after-sales quality uncertainty, financial risk, confiscation risk and delivery risk, all of which may detract from the use of cross-border e-commerce (Koh et al., 2012; Chiu et al., 2014; Guo et al., 2015).

On the other hand, cross-border e-commerce can bring potential benefits to international buyers. For instance, the international buyer can purchase high-quality products at lower cost from foreign markets through an export cross-border e-commerce provider (Pei et al., 2016). In addition to monetary savings, other potential benefits for cross-border e-commerce buyers might include enhanced product offerings (Chiu et al., 2014).

The success of cross-border e-commerce depends on firms attracting more buyers and increasing market share. This requires that buyers experience a satisfying transaction platform along with minimizing uncertainties and unexpected negative effects, and maximizing benefits of purchasing (Mou et al., 2016). Therefore, understanding how uncertainties and benefits combine to influence cross-border e-commerce buyer behaviors is an important issue for both academia and industry. This study contributes by drawing on the valence framework and past literature to develop and test a model of the uncertainties and benefits influencing the satisfaction and behavior of buyers in cross-border e-commerce.

The context for our study is a large cross-border e-commerce provider located in China. For China, export cross-border e-commerce has become an important way to obtain foreign exchange earnings. With the booming of the Belt and Road Initiative project in China<sup>1</sup>, cross-border e-commerce along the Silk Road is facilitating firms located in Silk Road countries to expand their global market. In China, cross-border imports were 248 billion Chinese yuan in 2015, and expected to grow to 1.5 trillion yuan through 2020. In contrast, China's B2C export was 503.2 billion yuan in 2015, and expected to reach 2.16 trillion yuan by 2020 (Lan, 2016). Cross-border buyers may be concerned about the quality of Chinese product, yet they may perceive benefits from purchasing from one of the world's largest producing countries. Our results can assist cross-border e-commerce providers with an understanding of factors important to the global market and how traditional international trade may switch to online platforms for transaction cost savings.

The rest of the paper is organized as follows. Section two introduces the theoretical background and presents the study's research model and hypotheses. Section three describes the research methodology. In section four, we present the results of our data analysis. In the last section we discuss the findings, contributions and some avenues for future research.

## **2 Conceptual Background and Research Model**

### **2.1 Cross-border e-commerce and related research**

Cross-border e-commerce occurs when multiple parties in different customs areas conclude a transaction involving cross-border logistics via an e-commerce platform (Tmogroup, 2015). Typical parties involved are the two subjects (buyer and seller), the e-commerce platform (cross-border online platform), and other third-party service firms (cross-border logistics provider and payment provider).

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<sup>1</sup> The Belt and Road Initiative refers to the Silk Road Economic Belt and 21st Century Maritime Silk Road, a significant development strategy launched by the Chinese government with the intention of promoting economic co-operation among countries along the proposed Belt and Road routes. <http://beltandroad.hktdc.com/en/about-the-belt-and-road-initiative/about-the-belt-and-road-initiative.aspx>

The seller utilizes the online e-commerce platform to sell products, the international buyer utilizes the online e-commerce platform to order the products, and third parties (e.g., logistics firms or payment firms) are used to conclude the cross-border transactions.

There is much potential for cross-border platform firms to build their business strategies and increase their market. Promoted by government policy, China, for example, has received much attention from global e-marketplace in recent years (Li and Chan, 2016). Yet, fierce competition still exists among firms trying to attract potential buyers in the cross-border e-commerce environment and a number of cross-border e-commerce firms failed in 2016 (e.g., Metao.com, which was founded in October, 2013).

Although cross-border sellers face risks such as chargeback fraud (Guo et al., 2015), greater risks typically arise for buyers. For example, due to commission structures and profit seeking motives, cross-border e-commerce platforms are typically incentivized to share as little information as possible with international buyers (Koh et al., 2012; Guo et al., 2015). This information asymmetry increases uncertainties and risks in the cross-border environment for buyers. Buyers also face uncertainties such as private information misuse, and trust in sellers has thus been emphasized as important to cross-border e-commerce success (Guo et al., 2015). Koh et al. (2012) empirically examined the factors underpinning trust formation such as the perceptions of the national integrity, legal structure of the suppliers' country and third-party verification of suppliers.

In addition to trust formation, the value of cross-border e-commerce for buyers has been considered as one of the most important factors for success. For example, Li et al. (2016) found competitive prices, quality of goods, and the reputation of platforms as the most important values for international buyers.

The extant literature thus suggests that both the high degree of uncertainties and the benefits or value of cross-border e-commerce environment should influence international buyer behaviors. Yet, there is a lack of empirical studies that integrate both the dimensions of uncertainties and benefits into a single conceptual model to study cross-border buyer behavioral outcomes and intentions. We draw on the valence framework to develop our research model next.

## **2.2 Valence framework**

To investigate the factors influencing buyers in cross-border e-commerce, we draw on the valence framework. The valence framework was derived from economics and psychology literature to explain consumer behaviors as being simultaneously underpinned by perceptions of risks and rewards through purchasing a product. Peter and Tarpey (1975) have investigated three types of consumer decision-making models based on the valence framework, these are: unexpected negative utility model (e.g., perceived risk); expected positive utility model (e.g., perceived return/benefit); and expected net utility model (e.g., perceived net return). The valence framework addresses perceived risk and perceived benefit as two fundamental aspects influencing consumer behaviors. The valence framework has been adopted as a solid theoretical base in domestic e-commerce (e.g., Kim et al., 2009), mobile payment services (e.g., Lu et al., 2011; Gao and Waechter, 2015), and e-health services (e.g., Mou et al., 2016). The valence framework provides for a more integrated assessment of how perceptions of positive and negative outcomes influence consumer decision making than is suggested by some alternative frameworks. For example, unlike the privacy calculus model of e-commerce adoption (Wang et al., 2016), the valence framework provides for an assessment of risks beyond those associated with information disclosure. The valence framework is similar to social exchange theory which suggests that behavior is a function of a subjective cost-benefit analysis and comparison of alternatives (Liu et al., 2016). A rational model of decision making is assumed with consumers aiming to maximize benefits and minimize costs in an exchange relation (Yan et al., 2016). By taking both benefits and risks and uncertainty expectations into account, the valence framework is considered superior to other models in explaining observed variance in consumer decisions (Kim et al., 2009). To study cross-

border e-commerce behavior, we therefore adopt the valence framework to investigate the dimensions of uncertainty and benefits influencing international buyers' behavioral intentions. Thus we recognize that while consumers may perceive benefits from cross-border e-commerce transactions, risk uncertainties and fears of opportunism still characterize the cross-border e-commerce context (Yang et al., 2015).

Our research model is depicted in Figure 1. The dependent variable in the model is consumer repurchase intention. Repurchase intention refers to "the subjective probability that a customer will continue to purchase a product from the same online seller" (Chiu et al., 2014). In our study, repurchase intention is defined as a buyer's willingness to continue to purchase products from the same cross-border e-commerce platform and to be their first choice for future cross-border purchases. In an e-commerce setting, once a consumer forms positive behaviors, they are likely to become a loyal customer, recommending their preferred cross-border provider to others. The relationship between repurchase intention and actual future purchase behaviors has been empirically confirmed in the e-commerce context (e.g., Wu and Wang, 2005), making it a worthwhile dependent variable for our investigation.

Although the valence framework focuses researchers' attentions on perceived benefits (positive valences) and perceived uncertainties (negative valences), it is not specific as to which dimensions of uncertainty and benefit should be examined, and consequently these need to be specified within each study. Drawing on Dimoka et al. (2012) and Yeh et al. (2012), our research model (Figure 1) identifies product-based and transaction-based uncertainties as negative valences. Among the transaction-based uncertainties, we include delivery risk and confiscation risk due to the vulnerability of cross-border transactions to potential shipping and customs-related problems. While not negated in domestic contexts, these potential risks are likely to be more elevated in cross-border e-commerce settings. For example, complex customs clearance procedures in cross-border e-commerce settings may introduce confiscation risks, especially for larger quantities of product and those subject to specific customs regulations. Moreover, as shipment occurs across countries, delivery lead times are likely to be longer than for domestic transactions and risk of delivery failure increases. Other transaction-related uncertainties also include financial risk and privacy risk given that these uncertainties occur most often during online transactions (Pavlou, 2003). Privacy risks may be especially elevated in cross-border contexts especially where foreign country regulations and institutional safeguards to protect consumer information may be perceived as lacking. Fluctuations in exchange rates introduce new uncertainties for financial risk, as well as the potential for fraud. Additional uncertainties arise because transactions are concluded without a buyer having an opportunity to physically inspect the product offering, and there are no physical cues in the online environment on which a buyer can make a product judgment. Product-based uncertainties refer to uncertainties about the physical attributes of the product and the consumer's awareness of the product (Yang and Zhang 2016). This includes perceived product information asymmetry, and fears of seller opportunism driving uncertainties relating to after-sales quality and product quality (Cases, 2002; Featherman and Pavlou, 2003; Pavlou et al., 2007; Yeh et al., 2012; Hong and Cha, 2013; Bai et al., 2015). In domestic e-commerce settings, consumers can more easily obtain assistance for after-service related issues such as product return. However, in cross-border settings, it may be less easy to return or exchange any damaged products. These uncertainties are described in greater detail in Table 1.

Figure 1 also depicts buyer behavior as influenced by positive valences, namely the potential benefits or values they perceive to gain from cross-border e-commerce (Zhou et al., 2014). Multiple utilitarian benefits of cross-border e-commerce have been noted in the literature (e.g., Kim et al., 2007; Chiu et al., 2014). We focus on overall value that is promoted by convenience, monetary savings, and extensive of product offering (Chiu et al., 2014). These values are described in greater detail in Table 2.

Based on the above, we model the negative valences and positive valence as second-order constructs, which may influence repurchase intention. In addition, age, gender, cross-border e-commerce experience, and the type of consumer (business or consumer buyer) are reflected as control variables.

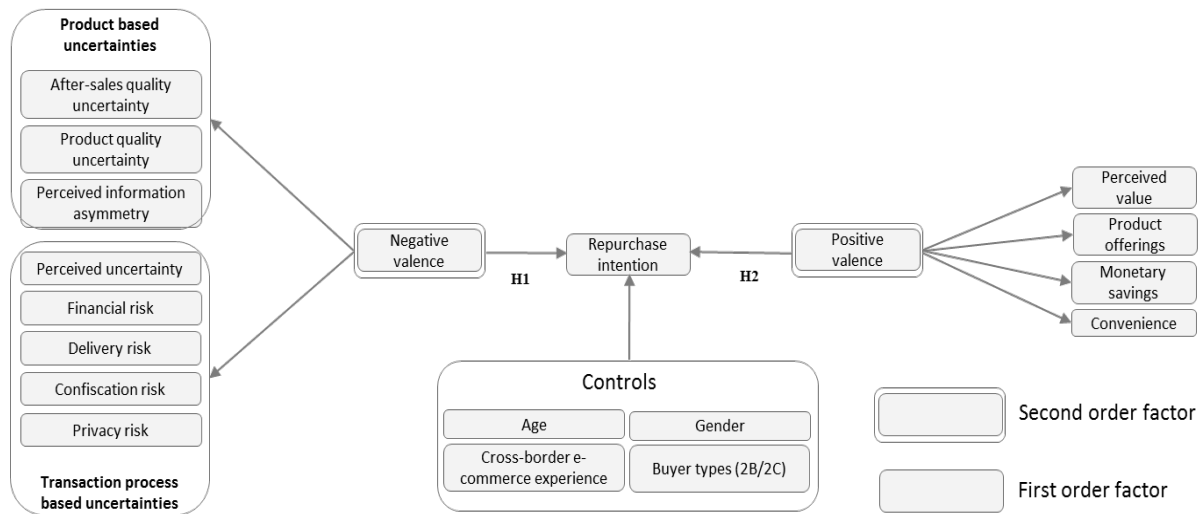


Figure 1. Research model

The uncertainty of the online environment makes consumers reluctant to engage in online shopping (Pavlou et al., 2007). Uncertainty refers to the degree to which the outcome of a transaction may not be accurately performed for the buyer due to seller based reasons and/or transaction environment based reasons (Yeh et al., 2012). For example, in a physical store, consumers can directly touch, feel, even fit the product (e.g., clothing), yet the online buyer cannot physically interact with the product or fully monitor the seller's behavior. Therefore, uncertainty is more likely to arise in an e-commerce setting (Pavlou et al., 2007). Product-based uncertainty and transaction-based uncertainty have been found relevant in e-commerce setting (e.g., Pavlou, et al., 2007; Yeh et al., 2012). According to valence framework, consumers are more likely to form negative repurchase intentions at higher levels of uncertainties. Therefore, the following hypotheses were proposed:

H1a: Product-based uncertainties are negative valences that will detract from cross-border buyers' repeat purchase intentions.

H1b: Transaction-based uncertainties are negative valences that will detract from cross-border buyers' repeat purchase intentions.

Product information asymmetry	A buyer's perceptions that the seller has greater quantity or quality of information about product characteristics (Yeh et al., 2012).
After-sales quality uncertainty	Uncertainty about what may occur after the consumer places an order for a product (Bai et al., 2015).
Product quality uncertainty	"The buyer's difficulty in assessing quality in terms of product characteristic and future performance" (Dimoka et al., 2012).
Financial risk	The potential for monetary loss due to transaction errors (Lin et al., 2014), or hidden and unanticipated costs that may be incurred.
Privacy risk	The potential loss due to fraud, hackers as well as private information misuse without a buyer's permission during cross-border transactions (Lin et al., 2014).

Delivery risk	The likelihood that the ordered product might not be correctly delivered (Hong, 2015).
Confiscation risk	The potential for loss due to the product being intercepted or confiscated by the customs authorities of the destination country.

Table 1. *Product and transaction-based uncertainties*

Perceived value	A consumer's overall assessment of the utility received from a product or purchase (Kim et al., 2007).
Product offerings	The total set of items offered by a cross-border e-commerce platform, reflecting both the breadth and depth of the offered items (Chiu et al., 2014).
Monetary savings	Spending less and saving money for a purchase (Mimouni-Chaabane and Volle, 2010).
Convenience	The time and effort that can be saved by shopping more flexibly on a cross-border e-commerce platform (Chiu et al., 2014).

Table 2. *Utilitarian value*

In the cross-border e-commerce context, buyers are likely to be influenced by the utilitarian aspects of a purchase. One of the value propositions for online shopping is that it allows buyers to purchase a product anytime and from anywhere, thus saving them time and effort compared to physical store purchases (Chiu et al., 2014). Convenience is thus a dimension of value that may positively influence a buyer's repurchase intentions. A second value proposition for cross-border buyers is increased choice due to large product offerings. Cross-border buyers are likely to seek unique products whether for personal use or for reselling. Cross-border e-commerce platforms that can offer a greater variety of products are thus more likely to provoke positive purchase behavior. A third value proposition is monetary saving. Consumers typically buy products online, especially through a cross-border e-commerce platform, when they can spend less money for a comparatively similar product (Mimouni-Chaabane and Volle, 2010; Chiu et al., 2014). Therefore, perceived monetary savings can potentially increase their purchase impulse. Consequently, we proposed the following hypothesis:

H2: Utilitarian values are positive valences that will promote cross-border buyers' repeat purchase intentions.

### 2.3 Control variables

Figure 1 identifies age, gender, cross-border e-commerce purchase experience, and buyer type (business or B-buyer vs. consumer or C-buyer) as controls. Demographics (e.g., age, gender) have been widely considered as control variables in online behavior research (Fang et al., 2014; Chiu et al., 2014; Mou et al., 2017). Moreover, prior experience has been considered as a control because past use can be a basis for the formation of user evaluations at a subsequent stage (Kim and Malhotra, 2005). Buyer type was included as a control because B-buyers may be more likely to repeat purchase wholesale products with more discount, while C-buyers may be more likely to purchase discrete products.

## 3 Research methodology

### 3.1 Study design

To undertake this study, we collaborated with a leading cross-border e-commerce provider in China. Although the selection of a single case site introduces limitations for generalizability, the selected site

was considered appropriate as it was the first cross-border e-commerce platform in China. It provides a leading online marketplace for wholesale consumer products featuring over 40 million product listings from over 1.2 million Chinese suppliers. The products are organized into fourteen product categories such as electronics, health and beauty, apparel, sports and outdoors. It services 10 million buyers in countries such as America, Canada, England, Spain, Australia, and New Zealand, among others. Given this scale of operation and cross-border reach, it provided a useful context for exploring consumers' valence perceptions.

The questionnaire was distributed in English using this firm's online survey system. The questionnaire pops up randomly on the provider's official website for both new website visitors and old buyers. However, to prevent poor response due to over-sampling, the random selection was limited to three out of every 100 site visitors (3%) who had not participated in the provider's satisfaction survey within the previous three month period. This approach allowed us to collect approximately 17 to 18 responses per day over a 10 day period for data collection. Participating in the survey was totally voluntary and anonymity was ensured by configuring the survey application to disregard any respondent identification information. When invited to consider participating, buyers could select to "participate now", or they could choose "maybe next time", or they could choose "Don't ask again". There was no loss of benefit whether or not a respondent chose to participate.

### **3.2 Measurement instrument development**

Most of the measurement instruments are adapted from prior validated scales. Some measures for confiscation risk, delivery risk, and financial risk had to be developed based on the conceptual definitions of those constructs as existing measurement scales were not considered appropriate for the complex nature of cross-border e-commerce compared to a domestic e-commerce setting. All the items were measured using a five-point Likert-scale with anchors from "strongly disagree" to "strongly agree".

## **4 Preliminary Results**

### **4.1 Participants**

After 10 days, we obtained 176 responses. However, after dropping 7 responses that exhibited clear response patterns, such as repeated selection of the same response option for all items, we confirmed 169 useable responses to facilitate model testing. The results show that 76.3% of the respondents were male, and 23.7% were female. The majority of participants were 21 to 60 years old, with 10% of buyers over 60.

Among the total respondents, 26.6% are B-buyers. B-buyer consumer reflects the buyers who buy products for their online/offline business as well as for their company. 73.4% respondents are C-buyers. C-buyer reflects the buyers who buy products for themselves or for their family. Among the respondents, 34.3% were from US, 10.1% were from Canada, 2.4% were from Mexico, Chile, and UK; and others are from the countries such as France, Philippines etc. This greater proportion of responses from North America was not unexpected and is consistent with this firm's marketing strategies, which are largely focused on North America, Europe and English speaking counties. Further, most of the international buyers indicated that they have cross-border purchase experience.

We carried out Harman's one factor test to check for common method bias (Podsakoff and Organ, 1986). An exploratory factor analysis revealed factors explaining 74.1% (N = 169) of the variance in our study's constructs, with the first factor explaining 30.9% of the total variance. This suggests that no single factor explained a majority of the variance, suggesting common method bias is not a threat.

## 4.2 Measurement model evaluation

An initial PCA was run to confirm the unidimensionality of the measures. We removed the PQU5 and PV1 at this stage, all other items loaded onto their expected constructs. We next tested our research model using Smart-PLS (version 2.0 M3) (Ringle et al., 2005). We first tested for the reliability and validity of the measurement model. The test of the measurement model showed that all items loaded onto their expected first-order constructs. The results show that all items loadings are above 0.7. In addition, AVE values are above the recommended threshold value of 0.5, with the lowest AVE being 0.730. For scale reliability, all the CR values are above 0.889, and the alpha value are above 0.826, which both are above the acceptable values. Moreover, the square root of the AVE of each construct is larger than the inter-construct correlations (see Table 3), therefore, discriminant validity is confirmed.

	ASQ	CR	CON	DR	FR	RPI	MS	PIA	PU	PV	PR	PQU	PO
ASQ	<b>0.862</b>												
CR	-0.019	<b>0.918</b>											
CON	-0.504	-0.113	<b>0.898</b>										
DR	-0.036	0.743	-0.068	<b>0.855</b>									
FR	-0.023	0.641	-0.025	0.668	<b>0.935</b>								
RPI	-0.553	-0.139	0.775	-0.117	-0.068	<b>0.927</b>							
MS	-0.482	-0.048	0.657	-0.036	-0.078	0.650	<b>0.905</b>						
PIA	0.688	0.072	-0.610	0.082	0.046	-0.653	-0.525	<b>0.887</b>					
PU	0.048	0.457	-0.178	0.460	0.355	-0.290	-0.054	0.202	<b>0.936</b>				
PV	-0.431	-0.102	0.636	-0.073	-0.122	0.679	0.647	-0.585	-0.196	<b>0.944</b>			
PR	-0.008	0.563	-0.093	0.585	0.635	-0.153	-0.012	0.096	0.351	-0.069	<b>0.908</b>		
PQU	0.090	0.531	-0.097	0.560	0.531	-0.164	0.031	0.217	0.638	-0.107	0.542	<b>0.864</b>	
PO	-0.483	-0.051	0.667	-0.053	-0.040	0.611	0.679	-0.570	-0.107	0.683	-0.057	-0.026	<b>0.935</b>

Table 3. Construct correlations (Diagonal values are square root of AVE)

## 4.3 Structural model evaluation and hypothesis testing

After evaluating the measurement model, the hypotheses were tested by using SmartPLS software with bootstrap method (5,000 re-samples). The research model explains 69.3 percent of the variance in repurchase intention to use this cross-border e-commerce platform (Figure 2).

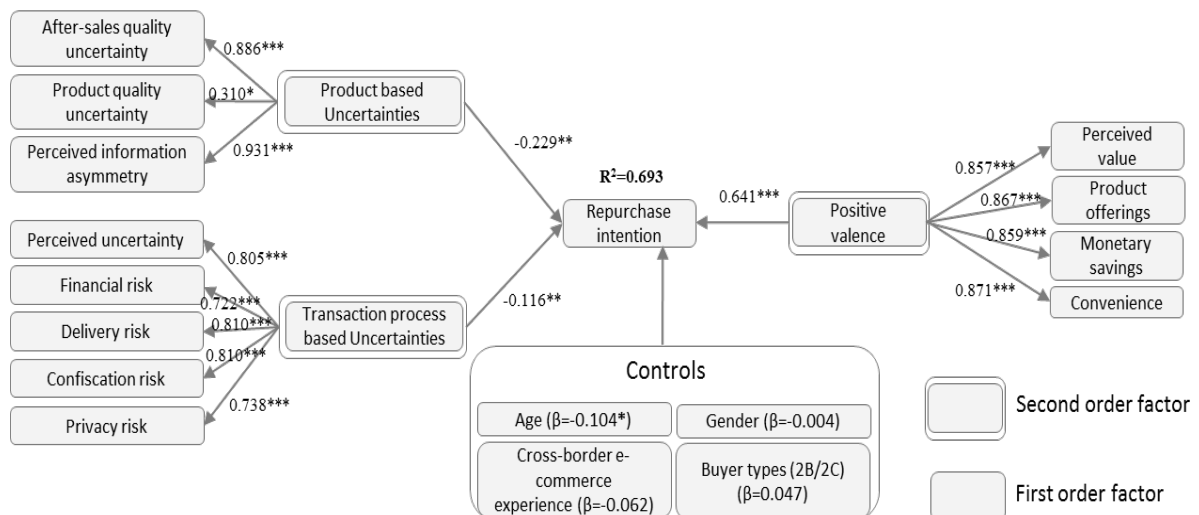


Figure 2. Partial least squares test of research model (notes: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ )

As seen in Figure 2, product based uncertainty had a significant negative effect on repurchase intention ( $\beta = -0.229$ ,  $t = 3.000$ ), and this support the hypothesized link between product based uncertainty and repurchase intention. Transaction based uncertainty also had a negative effect on repurchase intention ( $\beta = -0.116$ ,  $t = 2.760$ ), hence, H1a and H1b were supported. Positive valence also has a significant positive effect on repurchase intention ( $\beta = 0.641$ ,  $t = 9.431$ ). Thereby, H2 was supported. Its effect size was relatively larger suggesting that perceived benefits rather than uncertainties exert a stronger influence on buyer behavior. Among the controls, we found age had a significant effect on repurchase intention. We could not confirm other control variables as having significant effects on repurchase intention. Table 4 summarizes the results of hypothesis testing.

Hypothesis (path)	Path coefficient	t-value	Supported
H1a: Product-based uncertainties ►Repurchase intention	-0.229	3.00**	Yes
H1b:Transaction-based uncertainties ►Repurchase intention	-0.116	2.760**	Yes
H2: Positive valence ► Repurchase intention	0.641	9.431***	Yes

Table 4. Summary of results (notes: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ).

## 5 Discussion

This study aimed to explore the factors influencing international buyers' use of a cross-border e-commerce platform. To do so, we employed the valence framework as our theoretical background and empirically examined our research model. Data was collected from users of a popular cross-border e-commerce platform in China. All the participants are cross-border buyers including North America, Europe, Africa and Asia. We confirmed several important findings. Specifically, buyers are largely driven by perceptions of value. These include product offerings, monetary savings, convenience and overall value reflecting that cross-border shopping is worthwhile and delivers good value to buyers. Moreover, negative valences, i.e., risks and uncertainties, are still a factor influencing buyer behaviors. We confirmed the dimensions of perceived uncertainty as product based uncertainty and transaction-based uncertainty. More specifically, product-based uncertainty includes after-sales quality uncertainty, product quality uncertainty and product information asymmetry. Transaction-based uncertainty has been confirmed as financial risk, delivery risk, privacy risk, confiscation risk and overall transaction uncertainty. Among these, product-based uncertainties exert the larger effect with product information asymmetry a relevant concern. Here, buyers lack information on the products featured. After-sales service quality is also a concern such as whether the products have freight descriptions on cross-border e-commerce platform. The effect of transaction-based uncertainties was lower, including factors such as financial risk and privacy risk. This may be because buyers are becoming more comfortable over time with the institutional structures that safeguard online purchasing. Importantly, we confirmed confiscation risk as an important dimension of transaction-based uncertainty in the cross-border e-commerce setting. Future research may wish to adopt our scales and further explore the impact of this variable. By confirming the multi-dimensional nature of cross-border e-commerce uncertainties as well as the multi-dimensional values that constitute positive valences we have made a solid theoretical contribution to the valence framework. The practical contributions, limitations and future research are discussed below.

### 5.1 Theoretical contributions

We classified negative valence as product-based uncertainties and transaction-based uncertainties. Product based uncertainties include after-sales quality uncertainty, product quality uncertainty, and product information asymmetry. While transaction-based uncertainties include financial risk, delivery risk, confiscation risk, privacy risk and overall uncertainty. Risk perceptions such as financial risk and privacy risk have been considered important uncertainties in domestic e-commerce settings (Hong,

2015; Kim et al., 2008). As an extension of the literature, we confirmed their salience in the cross-border e-commerce context along with two other important uncertainties, namely confiscation risk and delivery risk. Therefore, the multi-dimensional negative valence construct has been confirmed. This is important to guide future researcher considering multi-dimensional negative valence when they employ valence framework as their theoretical background. Furthermore, we developed measurement scales for confiscation risk, financial risk and delivery risk that others can incorporate into future studies of cross-border e-commerce.

In addition, positive valence has been shown most significant to repeat purchase intentions, and confirmed as consisting of product offerings, monetary savings, convenience and perceived value. Consistent with the valence framework, our research has found both negative valence and positive valence as two fundamental aspects influencing consumer behaviors.

## **5.2 Practical contributions**

To satisfy the international buyer, cross-border e-commerce providers should minimize any potential uncertainties for buyers. For example, product sellers should reduce product-based uncertainties by providing up-to-date, reliable and comprehensive product information, by ensuring after-sale service information is clear and ensuring products shipped are consistent with those advertised. Transaction-based uncertainties can be reduced by improving the accuracy of shipping charges and ensuring timely and trackable deliveries. Products must be shipped with proper documentation so as to reduce confiscation risks and aircraft refusal. They should also recognise buyers' concerns over the use of personal information and should comply with global standards surrounding consumer information protection, privacy statements, and the use of internationally trusted third-party seals. Moreover, providers should maximize the expected values that can be gained through cross-border purchases. In cross-border e-commerce settings, buyers aim to spend less money to purchase a variety of products in a convenient, anytime-anywhere, manner. Therefore, to satisfy buyers' needs, providers should pay attention to recruiting more sellers to provide a variety of products, the products should be provided with a lower price than domestic e-commerce platforms, and importantly, cross-border e-commerce platforms should facilitate international buyers to purchase products at anywhere and anyplace. Compatibility with mobile devices may become increasingly important in that regard.

## **5.3 Future research and limitations**

As an extension of this study, we will collect more samples to test the cross-culture difference in cross-border e-commerce. Culture differences have been emphasized as an important issue in studying e-commerce website loyalty (Cry, 2008; Chen, et al., 2015). This is because, each country have their own infrastructure, the political and economic situation, the physical environment and the culture dynamics (Ford et al., 2003). In addition, in e-commerce setting, once a consumer formed positive behaviors, they are more likely to become a loyal customer. The relationship between repurchase intention and actual purchase will be tested accordingly.

Our results were largely representative of male shoppers. If female shoppers are more (or less) risk averse than male shoppers, then positive and negative valences may have different effects to those observed here. Future research may wish to consider whether gender moderates the strength of effects. Further, most cross-border shoppers in our sample are from North America. Other regions such as Europe and Asia may be under-represented, and future research may wish to target cross-border buyers from specific regions. Our data were also cross-sectional, and therefore, causal inferences could only be made with reference to theory. Future studies could adopt longitudinal designs and consider the temporal changes in the valence framework, which may make more interesting contributions for the theoretical lens of valence framework. Others may wish to extend the valence framework to incorporate social influences. At last, our data were collected from buyers of a specific

cross-border e-commerce website. This may limit the generalizability to other cross-border e-commerce websites.

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