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An Econometric Model

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ABSTRACT

Most studies on online marketplaces focus on seller uncertainty and rely on data from online marketplaces in the U.S. This paper extends this literature by focusing on *product uncertainty* and defining its two dimensions - *description* uncertainty (identifying the product's characteristics) and *fit* uncertainty (matching product characteristics with the buyer's needs). It also examines the distinction, relationship, and relative effects of the two dimensions of product uncertainty on actual product returns, and how online marketplaces can use IT-enabled mechanisms to mitigate product uncertainty.

The proposed hypotheses are tested with data from 144 buyers in Taobao's online marketplace in China using an econometric model. The results stress the role of *product presentations* in reducing description uncertainty and of *online communication*, both between the buyer and the seller and also among buyers, in reducing fit uncertainty. The paper draws implications for reducing product uncertainty in online marketplaces with the aid of IT.

Keywords:

Online marketplaces, product uncertainty, fit uncertainty, description uncertainty, buyer-seller communication, product presentation, product returns

INTRODUCTION

Online marketplaces (e.g., eBay, Amazon) have received much academic interest (e.g., Dellarocas, 2003; Li et al., 2009). While much of the work on online marketplaces has been conducted in the United States, online marketplaces in China, such as Taobao, increasingly attract attention (Ou et al., 2008; Li et al., 2008). According to China's Industry and Information Bureau (CNNIC, 2008), the total Internet users in China surpassed 360 million by 2009; Taobao's penetration rate is 81.4%, while 67.3% of online buyers have bought only from TaoBao. Taobao's success, especially its defeat of eBayCN in 2006, made researchers intrigued about the reasons of its success (Ou et al., 2008; Ou and Davison, 2009).

Recent surveys (CNNIC, 2008) reveal some interesting phenomena about online marketplaces. Experience goods – those that cannot be perfectly evaluated before purchase, such as clothes – are heterogeneous that vary not only in quality but also in design and texture. As most e-business textbooks suggest, they are not ideal products for online marketplaces. However, a recent report on China's online marketplaces (CNNIC, 2008) shows that experience goods, such as clothes, are the top selling product in online marketplaces, exceeding search goods, such as books, digital products, and CDs. This is despite the fact that current technology does not permit trying on clothes. The dilemma in online marketplaces lies in the tradeoff between low price and greater selection versus higher uncertainty about (experience) goods, which may lead to costly product returns. While most buyers are satisfied with online transactions and online complaints are fewer than offline ones (Taobao, 2009), statistics show online transactions to be only around 1% of total transaction value (Ministry of Commerce of China, 2008). We posit that this is largely due to the product uncertainty in the online marketplaces.

IS researchers have long studied what discourages e-commerce (Dellarocas, 2003; Li et al., 2009). Uncertainty was identified as the major hurdle for online marketplaces (Pavlou et al., 2007) due to the spatial and temporal separation among buyers and the sellers and products (Pavlou and Gefen, 2004). The IS literature focused on seller-related uncertainty and proposed several mechanisms to mitigate seller uncertainty in online marketplaces, such as feedback mechanisms (Dellarocas, 2003), third party escrows (Pavlou and Gefen, 2004), and guanxi[1] (Ou et al., 2008). However, relative to the literature on seller uncertainty and trust in seller (McKnight, 2002; Gefen et al., 2003), product uncertainty has not received equal attention. Product uncertainty is often subsumed under the umbrella of seller uncertainty and even equated with seller uncertainty (Pavlou et al., 2008). Thus, we still have a weak understanding about its dimensions, consequences, and antecedents.

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[1] Guanxi is defined as a close and pervasive interpersonal relationship between a buyer and a seller (Ou et al., 2008).

Understanding product uncertainty has practical implications for designing mechanisms in online marketplaces to avoid product returns. We propose the following research questions:

RQ1: What are the dimensions of product uncertainty? Are they distinct from each other? How do they relate to each other?

RQ2: Is product uncertainty associated with a higher possibility of product returns?

RQ3: How can IT-related mechanisms in online marketplaces reduce product uncertainty?

THEORY DEVELOPMENT

Uncertainty in Online Marketplaces

Uncertainty has been defined differently across contexts. Environmental and behavioral uncertainties have been proposed as two major types of uncertainty (Rindfleisch and Heide, 1997). Uncertainty can originate either from the environment (environmental uncertainty) or from the transaction partners in an economic exchange (behavioral uncertainty). Within this distinction, Pfeffer and Salancik (1978) defined environmental uncertainty as the degree to which the future states of the environment cannot be accurately predicted due to imperfect information, while Michael (1973) viewed behavioral (psychological) uncertainty to arise from the individual losing control of the environment. Integrating these two dimensions, Duncan (1972) explained that uncertainty may arise from multiple characteristics that affect a party's uncertainty perceptions. In the context of online marketplaces from the buyer's perspective uncertainty would arise from the sellers and the products. This is because buyers cannot control the behavior of sellers and they do not have perfect information regarding products. Pavlou et al. (2007) defined buyer's uncertainty as the degree to which the outcome of a transaction cannot be accurately predicted due to seller and product related factors. Following Pavlou et al. (2007), uncertainty in online marketplaces arises from the complexity of the environment related to the sellers' behavior and the product's characteristics. Accordingly, uncertainty in online marketplaces is herein defined as the degree to which a buyer does not have complete information of the seller's future behavior (seller uncertainty) and the product characteristics (product uncertainty).

The IS literature has implicitly assumed that seller and product uncertainty form a unitary construct, even if some recent work distinguishes between product uncertainty and seller uncertainty (Dimoka and Pavlou, 2008; Ghose, 2009, Kim et al., 2009). Seller uncertainty arises from information asymmetry that prevents buyers from assessing the seller's future behavior, while product uncertainty prevents them from assessing the product's characteristics. We herein focus on product uncertainty.

Dimensions of Product Uncertainty in Online Marketplaces

We propose product uncertainty to have two distinct dimensions – *product description* and *product fit* uncertainty.[2]

Product Description Uncertainty

Description uncertainty arises from the difficulty in assessing the product's objective characteristics, due to the seller's misrepresentation of the product and due to her inability to clearly represent the product online. Description uncertainty is defined as the degree to which a buyer does not have complete information of the product's actual characteristics.

Product Fit Uncertainty

Buyers in online marketplaces can only visually see how products look like, and only speculate whether the product will fit their requirements and tastes. Fit uncertainty arises because buyers cannot easily assess whether the product experience characteristics match their requirements, tastes, and needs. It is herein proposed as a distinct dimension of product uncertainty. Following Kim et al. (2009), fit uncertainty is defined as the degree to which a buyer does not have complete information of whether the product's characteristics match her needs.

Description Uncertainty & Fit Uncertainty

Description uncertainty and fit uncertainty are proposed to be distinct constructs, but since information about fit can be inferred from the product description, buyers can assess whether the product's characteristics match their requirements. Thus, buyers with lower description uncertainty are likely to also experience lower fit uncertainty.

H1: Product description uncertainty is positively correlated with product fit uncertainty.

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[2] Dimoka and Pavlou (2008) also proposed *performance uncertainty* as a dimension of product uncertainty. In this study, however, we do not examine performance uncertainty because long-term performance defects, such as those for used cars examined by Dimoka and Pavlou, are unlikely to influence short-term product returns (our dependent variable) due to negative immediate reactions to the product.

Consequences of Product Uncertainty

Product Returns

Buyers are likely to return a product if they are dissatisfied with the purchase, either because the product was incorrectly described or does not match their requirements. As description uncertainty and fit uncertainty increase, there is a higher chance that the product will be returned.

H2a: Product description uncertainty is negatively correlated with product returns.

H2b: Product fit uncertainty is negatively correlated with product returns.

IT-Enabled Uncertainty Mitigation Mechanisms

Since seller uncertainty is an information asymmetry problem, following signaling theory (Spence, 1973), seller information signals were used to reduce seller uncertainty, such as feedback ratings (Ba and Pavlou, 2002), feedback text comments (Pavlou and Dimoka, 2006), and third-party escrows (Pavlou and Gefen, 2004). However, seller information signals cannot mitigate the uncertainty due to the difficulty in inferring true product characteristics (description uncertainty) and matching buyer needs with product characteristics (fit uncertainty). Three IT-enabled uncertainty mitigation mechanisms are proposed: (1) *online product presentations*, (2) *communication between buyer and seller*, and (3) *communication among buyers*.

Communication between Buyer and Seller and Product Description Uncertainty

The seller's ability to perfectly describe product characteristics in online marketplaces is constrained by the lean nature of the Internet interface. By using Instant Messaging (IM) technology, sellers are able to take advantage of interactive IT tools to engage in direct communication with buyers to describe their products better. It is to the seller's best interest to describe the product's characteristics and provide more information than the website provides to avoid costly product returns. Therefore, direct online buyer-seller communication is proposed to reduce the buyer's product description uncertainty.

H3: Communication between buyers and sellers is negatively correlated with description uncertainty in online marketplaces.

Communication between Buyer and Seller and Product Fit Uncertainty

To reduce fit uncertainty, buyers need to infer the match between their needs and the product's characteristics. Besides, sellers can match product offerings to buyer requirements by engaging in personal selling (Weitz and Bradford, 1999). With personal selling, seller caters to each buyer's need by matching her heterogeneous needs with the product's characteristics. While buyers cannot "kick the tires" in online marketplaces, it is possible to compensate for the physical separation between buyers and products with virtual personal selling with the aid of IT. With IT tools in online marketplaces (such as IM), it is possible for sellers to engage in virtual personal selling. Direct buyer-seller communication helps reduce fit uncertainty by helping buyers identify the product that fits them, which may also avoid psychological contract violation (Pavlou and Gefen, 2005). On the other hand, it is impossible for a seller to cater to every buyer's needs since these are heterogeneous and there is not enough space to fully describe all product characteristics on her website. IM helps sellers cater to each buyer's needs by matching product characteristics with the buyers' needs with direct online communication, thus reducing fit uncertainty.

H4a: Communication between buyers and sellers is negatively correlated with product fit uncertainty in online marketplaces.

Communication among Buyers and Product Fit Uncertainty

When buyers are not sure whether the product fits their needs, they naturally resort to people who have purchased and experienced the product. According to social network theory (Wellman, 1983), people with similar tastes are more likely to gather together. Therefore, in online marketplaces, other buyers serve as trusted third-parties for product-related information (Pavlou and Gefen, 2004), and this information from online buyer-buyer communication is proposed to reduce fit uncertainty.

H4b: Communication among buyers is negatively correlated with product fit uncertainty in online marketplaces.

Online Product Presentation Formats

Jiang and Benbasat (2007) proposed how online presentation formats impact website diagnosticity and product knowledge, which in turn impact buyers' intentions to repurchase a product. Jiang and Benbasat (2004) used *product diagnosticity* to capture a website's ability to convey useful product information and examined the role of various online presentation formats on buyer's product knowledge, showing that both video and virtual product experience lead to higher product diagnosticity than static pictures. The authors also showed that pictures are more effective in conveying messages than text. In Taobao, four product presentations modes are available - text, one-dimensional picture (picture taken from one direction), multi-dimensional picture (picture taken from different angles, e.g. interior, exterior, top-down), and video (Table 1). Since product presentation formats with higher media richness enhance product diagnosticity, they can also reduce description uncertainty.

Thus, we hypothesize:

H5a: Text presentation is negatively correlated with product description uncertainty.

H5b: One dimensional picture is negatively correlated with product description uncertainty.

H5c: Multi-dimensional picture is negatively correlated with product description uncertainty.

H5d: Video is negatively correlated with product description uncertainty.

H5e: Compared with text, one dimensional picture has a stronger negative correlation with description uncertainty.

H5f: Compared with text, multi-dimensional pictures have a stronger negative correlation with description uncertainty.

Presentation Format	Text	One-dimensional Pictures	Multi-dimensional Pictures	Video
Description	Textual description	Pictures taken from one angle	Pictures taken from different angles, i.e. interior, exterior, top-down, details	Description video

Table 1. Product Presentation Modes in Taobao

Product Type

Products can be categorized into search and experience goods. Search products are those whose characteristics can be easily assessed before purchase without the need to experience them directly. Experience products, in contrast, have characteristics that need to be experienced in person to evaluate. The difficulty associated with the evaluation of experience products makes buyers feel uncertain about their characteristics and whether the products will meet their requirements (Spiekermann, 2001). Furthermore, since experience products have more complex characteristics than search goods, buyers are less certain about their choice, thus they are more likely to return them.

H6a: Experience goods are correlated with higher product description uncertainty than search goods.

H6b: Experience goods are correlated with higher product fit uncertainty than search goods.

H6c: Experience goods are correlated with a higher number of product returns.

Control Variables

The following variables are controlled for: First, buyer's shopping experience indicates her familiarity with online shopping, thus potentially affecting the buyer's product uncertainty. Second, third-party escrow services protect buyers from fraud, thus affecting buyers' product uncertainty and their product returns. Third, trust in sellers is controlled for on product uncertainty and returns. Finally, buyers' age and gender are also controlled for.

RESEARCH METHODOLOGY

Research Context: Taobao.com

Established in 2003 by Alibaba, Taobao is the largest online marketplace in Asia. Until 2008, Taobao had more than 100 million registered users and annual transaction value of over 100 billion RMB (about $14.7B).

Interviews and questionnaire design

20 interviews with Taobao buyers were undertaken in September 2009 to acquire a deeper understanding of buyers' uncertainty and how IT tools mitigate product uncertainty. The clarity of the questionnaire items was discussed with 20 Taobao buyers and four MIS researchers (two PhD students and two professors). Several variables were modified or discarded after these interviews. The questionnaire was originally developed in English, then translated into Chinese by two Chinese students.[3]

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[3] After the questionnaire was translated into Chinese, it was further translated back into English by another Chinese student to ensure translation accuracy.

Sample

Respondents were Taobao buyers in China. Survey invitation was posted on the largest student forum in China as a sticky thread. Respondents clicked on a hyperlink to the web-based survey instrument. Respondents were informed that the results would be reported in aggregated to ensure their privacy. Respondents were also informed that they could receive a copy of the study's report, and there would be a draw of five 100 dollars prizes for their participation.

The survey was live in December 2009. Overall 952 people viewed the thread and 152 surveys were obtained, out of which 8 were deleted for incompleteness, and 144 valid questionnaires were collected, resulting in a response rate of 15.7%. There was no significant difference between early and later respondents. The respondent's demographics are shown in Table 1.

Variable	Age	Gender	Education	Experience (year)
Mean (STD)	22.5 (2.8)	66.6% Female	College	2.65 (1.73)

Table 2. Sample Demographics

Measurement Development and Operationalization

Measurement items were adapted from the literature, and new measures were developed following standard psychometric scale development procedures (Bagozzi and Phillips, 1982). The domain of each construct was initially specified, and the items were developed based on the conceptual definition. The preliminary instrument was reviewed by faculty and PhD students for clarity. The items were modified several times following Churchill (1979).

There were three multi-item variables - description uncertainty, fit uncertainty, trust in seller, and effectiveness of third party escrows. All perceptual measurement items were measured on 5-point, Likert-type scales anchored at "1=strongly disagree," "2=disagree," "3=neither agree nor disagree," "4=agree," and "5=strongly agree." Since the multi-item variables showed good reliability, good convergent and discriminant validity, they were operationalized as single-item variables using:

New Variable= (item1+item2+…+itemN) / N

The principal-component analysis (omitted for brevity) showed that as two dimensions of product uncertainty - description uncertainty and fit uncertainty – were distinct constructs and had a small correlation (r=0.43).

Several constructs were measured with objective data collected with this survey, including the length of the communication between buyers and sellers and among buyers, and how a seller displayed the focal product. Product return was operationalized as a binary variable (0 for not return, 1 for return). Purchase experience is measured in number of years. The normality of all variables was tested, and the Q-Q plots of "Communication with seller" and "Communication among buyers" did not follow a normal distribution. Thus, they were log transformed to achieve a normal distribution.

Product type reported by the respondents was categorized as either experience or search, which was coded by two students (1= experience goods; 0=search goods). The experience goods included clothing products, skin care products, bags, food; search goods included books, PC accessories, digital products, and gift cards.

In summary, variables are operationalized as described in Table 2, and descriptive statistics are offered in Table 3:

Notation	Variable Operationalization
FIT	Fit uncertainty (1-5 Likert type)
DES	Description uncertainty (1-5 Likert type).
Return	Dummy variable indicating whether the product is returned.
lnSeller	Log transformation of "Time of communication between seller and buyer".
lnBuyers	Log transformation of "Time of communication among buyers".
TEXT	Dummy variable indicating text.
ONE	Dummy variable indicating one dimensional picture.
MUL	Dummy variable indicating multiple pictures from several angels.
VIDEO	Dummy variable indicating video.
TYPE	Dummy variable indicating product type.
THIRD	Effectiveness of third party escrow service (1-5 Likert type).
TRUST	Buyer's trust in the seller (1-5 Likert type).
GENDER	Dummy variable indicating gender.
EXP	Buyer's online shopping experience.

Table3. Notations for Variables

Variable	Mean	STD	FIT	DES	RETURN	lnBuyers	lnSeller	TEXT	MUL	ONE	VIDEO	TYPE	THIRD	TRUST	GENDER	EXP
FIT	**2.90**	**1.23**	1.00													
DES	**2.91**	**1.07**	.43**	1.00												
RETURN	**0.14**	**0.35**	.43**	.43**	1.00											
lnBuyers	**1.08**	**1.27**	-.42**	-.16	-.27**	1.00										
lnSeller	**2.35**	**1.00**	-.45**	-.34**	-.28**	.36**	1.00									
TEXT	**0.80**	**0.40**	-.08	-.01	-.05	.02	-.04	1.00								
MUL	**0.50**	**0.50**	-.15	-.43**	-.20*	.11	.20*	-.12	1.00							
ONE	**0.43**	**0.50**	.13	.20*	.14	-.08	-.05	.05	-.79**	1.00						
VIDEO	**0.06**	**0.24**	-.09	-.28**	-.02	.03	.15	.06	.14	.01	1.00					
TYPE	**0.64**	**0.48**	.28**	.18*	.26**	-.12	-.11	.13	-.12	.16	-.22**	1.00				
THIRD	**4.10**	**0.80**	-.10	-.11	.01	.03	.07	.03	.06	-.07	.11	-.02	1.00			
TRUST	**2.84**	**0.79**	.02	.15	-.01	.09	-.09	-.02	-.06	.11	-.04	-.01	-.18*	1.00		
GENDER	**0.33**	**0.47**	.16	.08	.11	-.03	-.16	.02	-.07	.02	.07	-.03	-.04	.07	1.00	
EXP	**27.82**	**20.53**	-.38**	-.07	-.19**	.30**	.18*	.02	.19*	-.18*	.12	-.22**	.06	.05	.00	1.00

** Correlation is significant at *5% level, or **1% level.

Table 4. Descriptive Statistics

The Econometric Model[4]

Effects of product uncertainty on product returns

Since the dependent variable RETURN is a binary variable, logit regression is used.

Model (1): Pr(Return=1| DES, FIT, TYPE, THIRD, TRUST, GENDER, EXP)=

$$\frac{1}{1+e^{-(\beta 0+\beta 1*DES +\beta 2*Fit +\beta 3*Type +\beta 4*THIRD +\beta 5*TRUST +\beta 6*Gender +\beta 7*EXP)}}$$

Dependent Variable: Actual Product Return	
Regressor	
Description Uncertainty	**1.464***
(DES)	(.413)
Fit Uncertainty	**1.148***
(FIT)	(.461)
Product Type (Experience Vs Search)	**2.779***
(TYPE)	(1.235)
Third Party Escrow Services	.249
(THIRD)	(.509)
Trust in Seller	-.047
TRUST	(.418)
Gender (Men Vs Women)	.900
GENDER	(.692)
Buyer's Past Experience	-.003
(EXP)	(.026)
Constant	-7.552***
	(2.134)
Cox & Snell R^2	**.317**
Nagelkerke R^2	**.574**

Coefficient is significant at *.05 level, **.01 level, or ***.001 level.

Table 5. Logit Regression Analysis

All hypotheses on product returns were supported (H2a, H2b and H6c) since description uncertainty, fit uncertainty, and experience goods are associated with product returns.

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[4] We assume the independence of errors among equations in this paper due to limitation of the dataset.

Product uncertainty mitigation mechanisms

Model (1)

$$DES = \beta_0 + \beta_1 * lnS + \beta_2 * lnB + \beta_3 * TEXT + \beta_4 * ONE + \beta_5 * MUL + \beta_6 * VIDEO + \beta_7 * TYPE + \beta_8 * EXP + \beta_9 * THIRD + \beta_{10} * GENDER + \varepsilon$$

Model (2)

$$FIT = \beta_0 + \beta_1 * lnS + \beta_2 * lnB + \beta_3 * TEXT + \beta_4 * ONE + \beta_5 * MUL + \beta_6 * VIDEO + \beta_7 * TYPE + \beta_8 * EXP + \beta_9 * THIRD + \beta_{10} * GENDER + \beta_{11} DES + \varepsilon$$

As Model (1) in Table 6 attests, buyer-seller communication ($p<.05$), one-dimensional picture ($p<.05$), multi-dimensional pictures ($p<.001$) and experience goods ($p<.10$) have a significant effect in reducing description uncertainty, supporting H3, H5a, H5b and H6a, respectively. Text and video do not reduce description uncertainty (failing to support H5a and H5d), perhaps because the other presentation formats are adequate in describing the product or due to the small number of video presentations in our sample (less than 6%). One dimensional picture does not have a stronger effect than text ($p<.3165$ level), thus failing to support H5e; still, multi-dimensional pictures have a stronger effect than text on description uncertainty ($p<.0042$ level), thus supporting H5f.

As Model (2) attests, online communication between buyers and sellers, online communication among buyers, and experience goods have significant effects ($<.01$ level) on fit uncertainty, supporting H4a, H4b and H6b, respectively. Description uncertainty has a strong effect on fit uncertainty, supporting H1.

Finally, the fact that description uncertainty and fit uncertainty are mitigated by different mechanisms (product presentations versus communication among buyers) further supports their distinction.

Variables	*Product Description Uncertainty*	*Product Fit Uncertainty*
Regressor	(1)	(2)
Communication with Seller	**-.213***	**-.286****
(lnSeller)	**(.086)**	**(.090)**
Communication among Buyers	-.041	**-.188****
(lnBuyers)	(.067)	**(.068)**
Text Presentation	-.234	-.229
(TEXT)	(.195)	(.200)
One Picture Presentation	**-.595***	.329
(ONE)	**(.263)**	(.273)
Multiple Pictures Presentation	**-1.250****	.531+
(MUL)	**(.266)**	(.292)
Video Presentation	-.521	.421
(VIDEO)	(.342)	(.351)
Product Type	**.284+**	**.369***
(TYPE)	**(.171)**	**(.176)**
Buyer's Past Experience	.004	-.015***
(EXP)	(.004)	(.004)
Third-Party Escrow Services	-.092	-.049
(THIRD)	(.096)	(.099)
Gender (Men Vs. Women)	.047	.258
(GENDER)	(.166)	(.169)
Description Uncertainty		**.405***
(DES)		**(.088)**
Constant	4.615***	2.653***
	(.531)	(.677)
F statistic	6.446***	10.849***
R^2	**.326**	**.475**
Adjusted R^2	**.276**	**.431**

Coefficient are significant at the +.1 level, *.05 level, **.01 level, or ***.001% significance level.

Table 6. Regression Analysis on Description Uncertainty and Fit Uncertainty

Both types of online communication have a strong effect on description and fit uncertainty. Descriptive statistics (Table 7) reveal that out of the 144 respondents, 130 (more than 90%) used the Taobao IM tool to communicate with sellers, while 74 (more than 50%) used IM to communicate with other buyers. Table 6 suggests that Taobao's IM tool is widely used by buyers, stressing the importance of online communication for mitigating product uncertainty in online marketplaces in China.

Total 144[*] Respondents	Taobao WangWang	Email	Website message system	Offline	Other instant messengers (such as QQ, MSN)	Did not communicate
Communication with seller	130	10	15	0	0	4
Communication among buyers	74	17	0	19	27	44

Table 7. Descriptive Statistics for Communication Methods in Taobao

CONTRIBUTIONS AND IMPLICATIONS FOR THEORY AND PRACTICE

First, extending the literature on online marketplaces from seller uncertainty to product uncertainty, this study formally defines and measures two distinct, yet inter-related dimensions of product uncertainty. Second, antecedents and consequences of product description and fit uncertainty are theorized and tested. Third, three distinct uncertainty mitigating mechanisms in online marketplaces are proposed and empirically supported. Online communication is shown to decrease fit uncertainty, while online product presentation formats - multi-dimensional pictures and one dimensional pictures - are shown to reduce product description uncertainty.

Chinese online marketplaces are developing with great momentum. As predicted by the former vice president of Microsoft and later former president of Google's Asia Pacific business Kaifu Li, China's online business will still expand more than 250 times in the next 10 years. Understanding the success factors of China's online marketplace Taobao may have important implications for companies that want to expand into China's online marketspace. Moreover, this study supports and expands Ou et al. (2008)'s explanations for Taobao's defeat of eBayCN in 2006, as online communication enabled by Taobao's embedded IM tool not only builds trust and guanxi in sellers, but it also prevents product returns by mitigating fit uncertainty. Given that product returns are costly and contribute to buyer dissatisfaction, online marketplaces should focus on reducing buyer's product uncertainty with emphasis on both description and fit uncertainty.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

First, because of the survey format, we used multiple methods to reduce common method bias (Podsakoff et al. 2003), such as collecting objective data and using reverse scales for the perceptual measures. Second, while students make a good percentage of buyers in Taobao, the data collected from a student forum could jeopardize the generalizability of our results; thus, future research could use a more generalizable sample with older buyers. Third, we collected data only about Taobao. Future research could examine other online marketplaces to explore additional mechanisms for reducing product uncertainty, such as liberal product return policies and superior reverse supply chain capabilities that could differently overcome the fundamental problem of product uncertainty.

CONCLUSION

IT-enabled mechanisms for reducing product uncertainty are becoming important components of today's online marketplaces given the increasing number of experience products transacted in online marketplaces. By specifying unique dimensions of product uncertainty, the paper has implications for designing novel IT-enabled mechanisms that specifically target each unique dimension of product uncertainty. Accordingly, we aim to entice IS researchers to approach product uncertainty as an IT problem that can be mitigated by specific IT-enabled solutions.

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APPENDIX A. Measurement Items

Constructs	Measurement Items
Product Presentation	Type of product presentation? (Text, one picture, multi-dimensional pictures, video)
Communication with Seller	How much time approximately did you spend on your last purchase with the vendor online? (in minutes)
Communication with Buyers	How much time approximately did you spend on your last purchase with other buyers online? (in minutes)
Description Uncertainty	Based on the description of the product, I am sure if the product is genuine. Based on the description of the product, I am sure if the product is of good quality. I am clear about the information about the product on the website.
Fit Uncertainty	I am not certain whether the product matches my requirements. I am not certain whether the product matches my tastes.
Product Return	I returned the product after it was delivered.
Product Type	What did you buy last time.
Control Variables	
Purchase Experience	How many years have you been purchasing products on the internet.
Third-party Escrows	The escrow service protects me from an inappropriate behavior of sellers. The escrow service decreases uncertainty about whether the seller will cheat. I think the escrow service decreases the chance of seller opportunism.
Trust in Seller	I think he seller is credible. I think the seller is capable. I think the seller is benevolent.