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# INSTITUTIONAL COMMUNICATION FACILITATORS FOR THE REDUCTION OF EXPERIENCE PRODUCTS UNCERTAINTY IN E-MARKETPLACES – THE INITIAL INTERACTION PERSPECTIVE

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# INSTITUTIONAL COMMUNICATION FACILITATORS FOR THE REDUCTION OF EXPERIENCE PRODUCTS UNCERTAINTY IN E-MARKETPLACES – THE INITIAL INTERACTION PERSPECTIVE

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## Abstract

*The negative influence of consumer perceived product uncertainty on buying intention has long been found and studied by marketing researchers and practitioners. Identifying uncertainty mitigators hence has drawn extensive attention from traditional and digital market researchers. This study extends this line of study by exploring the effect of various e-commerce website facilities from a novel perspective – the communication theory view. Drawing on the Initial Interaction Theory (IIT) from communication literature, we view buyer-seller interactions as an initial communication process that aims to acquire information in order to reduce description uncertainty and performance uncertainty. In line with IIT, we propose a framework that incorporates perceived effectiveness of product descriptions, perceived media richness, and perceived effectiveness of feedback systems as the facilitators of passive, interactive, and active communication strategies in order to reduce product uncertainty. Research hypotheses are tested based on a survey of 325 subjects. Our findings confirm the saliency of these facilitators in mitigating buyer perceived uncertainty towards tourism products. Theoretical and practical implications of the findings are discussed.*

*Keywords: E-Retailing, product uncertainty, initial interaction theory, experience products.*

# 1 INTRODUCTION

While e-Commerce helps the market participants to overcome geographical and temporal constraints, it inherently involves higher perception of uncertainty than making transaction in a brick-and-mortar store since Internet shopping is a “virtual” experience in nature (Lim et al. 2004). This uncertainty introduced by e-marketplaces, in turn, becomes a critical barrier of the deeper penetration of Internet retailing (Teo et al. 2004; White et al. 2000). Uncertainty is formally defined as the difficulty of market participants to anticipate the outcome of the prospective purchase (Akerlof 1970), and has been shown to have a major impact on various success indicators of e-commerce (Dimoka et al. 2012).

Yet the majority of extant empirical studies on uncertainty focus on search goods such as vehicles, books, and consumer electronics, but only paid much less attention to another category of product – experience goods (Dimoka et al. 2012). Experience goods are products that their performance and quality can hardly be diagnosed by information collected before actually acquiring and using it (Shapiro 1983; Nelson 1974). Typical experience goods include perfume, wine, and various tourism products. On the other hand, the evaluation of search goods based on obtained information during information seeking stage of a purchase process is relatively easier (Xu et al. 2015). Examples of search goods include microwave oven, laser printer, and the like. With the rising of “experience economy”, there has been an increasing desire in the e-commerce community to investigate the impact of uncertainty on experience goods. Understanding viable mitigators of experience goods’ uncertainty in online settings is particularly relevant, since the nature of experience goods leads to distinctive buyer perception and behaviour from that of typical search goods.

In particular, we discuss the following research questions. First, what are the effects of different types of product uncertainty on the online consumers’ intention to purchase experience goods? Second, what kind of mechanisms can be employed by an e-retailing website to relieve the buyer’ s perception on product uncertainty towards experience goods?

Most extant research efforts view uncertainty from economic perspective (Dimoka et al. 2012; Pavlou et al. 2007; Teo et al. 2004). In the present paper, we take a novel view from communication theories and posit that online buyers and ordinary initial communicators both have uncertainty aversion tendency and use the similar uncertainty coping strategies. Particularly, we employ Initial Interaction Theory (IIT, also known as Uncertainty Reduction Theory) in communication literature as the theoretical lens to investigate the impact of product uncertainty in e-marketplaces. In correspondence to the passive, interactive, and active strategies proposed in IIT, we propose three communication-related factors – Perceived Effectiveness of Product Descriptions (PEPD), Perceived Media Richness (PMR), and Perceived Effectiveness of Feedback Systems (PEFS) – that may facilitate consumers’ prepurchase information acquisition and hence relieve their uncertainty perception towards the experience products to buy. These factors are conceptualized as Institutional Communication Mechanisms (ICM) collectively in this paper.

Despite the opulent literature on the effects of rich media and consumer reviews on Internet buyers’ behavior (Pavlou et al. 2007; Ou et al. 2014), this study proposes the integration of these factors from a novel theoretical perspective – uncertainty coping strategies during initial interaction. These factors are framed to highlight their different effects in correspondence to the three main communication strategies proposed in IIT. We examine their distinctive roles in facilitating the reduction of different types of uncertainty on product level, which in turn, may pose different influences on purchase intention. This perspective extends IIT and the understanding of the role of media and feedbacks mechanism in digital market, hence constitutes theoretical contribution to the literature on online consumer behaviour.

The research setting of this paper is the e-retailing of tourism products. Like many other industries, tourism products retailing is a market under profound impact of Internet commerce (Buhalis 1998). Such a research setting is ideal for examining product uncertainty and its antecedents and consequences in the online transaction of experience goods.

## **2 LITERATURE AND THEORETICAL DEVELOPMENT**

### **2.1 The Effects of Product Uncertainty**

Product uncertainty is the degree to which a buyer cannot evaluate a product's features/attributes, quality, future performance, and value because the seller is unable to perfectly describe or unaware of the potential defects or issues (Dimoka et al. 2012). Traditionally, product uncertainty has drawn great deal of research attention in marketing and economics for a long time (Arrow 1963; Akerlof 1970). Recent e-commerce literature usually theorizes product uncertainty as a concept with two facets: description uncertainty and performance uncertainty (Dimoka et al. 2012). The former refers to the inability or unwillingness of the seller to accurately and thoroughly describe the product online, whereas the latter focuses on the difficulty of the consumer to predict to what extent that the product will meet the buyer's expectation after purchasing, which is due to the seller's unawareness of possible hidden defects (Huang et al. 2009).

Product uncertainty has been recognized as one of the major obstacles of online retailing. Recent research has provided empirical and anecdotal evidences about the negative impact of product uncertainty on purchase intention (Pavlou et al. 2007). In the case that the perception of description uncertainty on an experience product is high (for instance, items offered by a tourism product are not described with sufficient accuracy and details; chargeable and free items are not clearly indicated in the e-retailer websites), the buyer's purchase action may potentially render negative outcomes, such as monetary or time loss (Teo et al. 2004). Therefore, the intention of the buyer to purchase could be decreased. Likewise, if the consumer has doubt about the actual quality or offerings of the experience product in real use, or feel that it may not perform as expected, his/her perception of risk may rise, leading to attenuated purchase intention. We hence hypothesize

- H1. A consumer's intention to purchase a product is negatively associated with his/her perceived  
(a) description uncertainty and (b) performance uncertainty towards the product.

### **2.2 Product Uncertainty of Experience Goods**

Products can be categorized into two search goods and experience goods based on how much product information can be known prior to purchase for determining its suitability and quality. Prior studies have already shown that buyers' purchase behavior may vary across different types of goods (Bloch and Richins 1983). Particularly, the way that a consumer use Internet as the tool for prepurchase information acquisition is conditioned by the type of products (Girard et al. 2002). Since buyers are normally aware of the fact that the actual performance of experience goods can often deviate from the product information acquired before purchase as different customers' preferences can be heterogeneous (Nelson 1974). As a result, description uncertainty of the goods is may not exert very strong influence on the buyer's perception of risk and anticipated outcomes. We hence argue that the ability of description uncertainty to attenuate the buyer's intention in purchasing an experience product will be relatively weaker. On the other hand, the buyer's confidence towards the actual performance of the goods, which is mainly shaped from institutional structures, the seller's ability, reputation and various signals received during communication (Constantinides 2004), plays the key role in persuading him/her to engage in the online transaction. Based on the above, we hypothesize:

- H2. A consumer's intention to purchase an experience product is more influenced by perceived performance uncertainty than by perceived description uncertainty.

### **2.3 The Communication Theory View of Uncertainty Reduction in e-Marketplaces**

While uncertainty has been widely recognized as a critical factor for explaining online buyer behavior, most extant research efforts scrutinize uncertainty through the lens of economic theories (Dimoka et al.

2012). Given the fact that sell-buyer interpersonal interaction and information exchange are indispensable components in a trading process (Solomon et al. 1985), we posit that the communication theory view constitutes a unique lens to understand the mitigation of uncertainty via using heterogeneous communication strategies. The theoretical framework we draw on from is the Initial Interaction Theory (IIT) developed by Berger et.al. (Berger 1979, 1995). It is reasoned that, in a communication episode of initial encounters, people are essentially information seekers who always attempt to gain information for eliminating as much encountered ambiguity as possible. In acquiring such information, an individual can anticipate the other's behaviour and possible outcomes (West and Turner 2006). The information acquisition nature of the prepurchase activities allows us to extend IIT to Internet transaction making, as suggested by Heath et.al (2013) that "(IIT) operates in all contexts to help explain why people communicate as they do".

In the settings of Internet transaction, while numerous factors can lead to online buyers' uncertainty perception, it has been widely accepted that website characteristics can be key antecedents (Glover and Benbasat 2011), or can be salient factors that moderate the influences of uncertainty (Luo et al. 2012). Marketing researchers asserted that the consequences of the buyer-seller communication is determined not only by the communication content itself, but also by the style of communication (Sheth 1976).

IIT contends that individuals may vary significantly in terms of their communication goals and hence a range of strategies (passive, interactive, and active) can be adopted for reducing interpersonal uncertainty during their interaction process. Introducing such a communication theory view into online transaction-making settings, we argue that similar tactics can be employed by different buyers to cope with uncertainty. In line with IIT, this research focuses on three crucial media facilitators could be used to support the aforementioned communication strategies. These facilitators include Perceived Effectiveness of Product Descriptions (PEPD), Perceived Media Richness (PMR), and Perceived Effectiveness of Feedback Systems (PEFS), respectively. We postulate that the three e-retailer characteristics may facilitate the gain of product knowledge and hence render alleviated uncertainty perception on the product been considered. Notably, since the perception of the effectiveness of these facilitators may vary across different individuals, we consider perceptual rather than objective effects in the present paper. Our conceptual framework is presented in Figure 1.

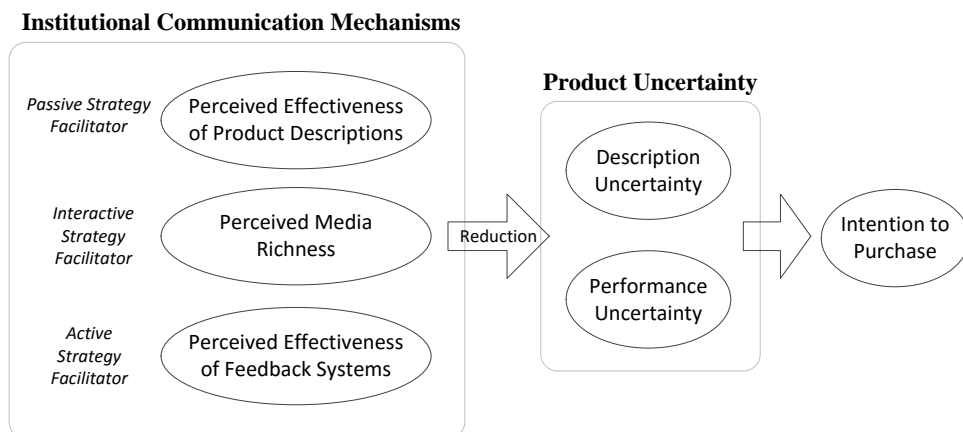


Figure 1. Research framework – Facilitation of Product Uncertainty Reduction

- *PEPD's Effects as a Passive Strategy Facilitator*

Sellers in online market usually provide basic descriptions about the product, such as specifications, payment methods, and third-party safeguards. Regardless the inherent difficulty of assessing the true quality of an experience product before purchase, consumers often conduct information search before decide to make the transaction (Huang et al. 2009). Marketing researchers have found that some online

shoppers often employ the passive communication strategy in the prepurchase stage, in attempt to acquire product information but avoid direct interaction with the seller for relieving the sense of commitment or saving time (Spiggle and Sewall 1987). By browsing and studying product descriptions, buyers build the initial impression towards products and the sellers, update their beliefs and form a set of choices for further actions (Spiggle and Sewall 1987). Therefore, we herein conceptualize PEPD as the subjective effectiveness of the one-way media in describing the details of the products. They may include textual, pictorial or video descriptions of the product, and lack the communication/negotiation capability.

We argue that the effective use of Internet technologies may assist the seller to convey an experience product's true characteristics, allowing the consumers to observe the offerings in a "passive" manner and help him familiarize the offerings. Such descriptions reduce information asymmetry, enabling the buyers understand the offerings and reinforce his/her belief in the seller's ability to communicate clearly about the product.

Prior studies suggested that the extrinsic cues such as website quality conveys strong signals about the information content and validity, which in turn render heuristics that may help buyers assess the quality of commodity when complete information is unavailable (Wells et al. 2011). Though clear and detailed product descriptions may not directly decrease performance uncertainty of an experience goods by facilitating the appraisal of its quality, they may take effects from a distinctive mechanisms known as "differential cost" (Rao and Monroe 1989). That is, a buyer tends to believe that products with clear and thorough description is credible, because signalling for a bad product is costly (Dimoka et al. 2012). Therefore, PEPD can be a reasonable extrinsic cue to mitigate performance uncertainty perception. Thus we have:

H3a. Description uncertainty towards an experience product is negatively associated with the Perceived Effectiveness of Product Descriptions.

H3b. Performance uncertainty towards an experience product is negatively associated with the Perceived Effectiveness of Product Descriptions.

- *PMR's Effects as an Interactive Strategy Facilitator*

In accordance with IIT framework, the *interactive communication strategy* of a buyer is to directly approach the vendor and request as much information as possible in order to eliminate dubieties and build confidence. In digital market, since CMC is unable to fully replicate the face-to-face interactions due to its technical limitations, online traders perceive even higher uncertainty than transacting in offline settings in general (Koppius et al. 2004). Therefore, the reciprocal seller-buyer communication tools, such as instant messenger, email, and web-based message tool, are critical in helping the buyers to reduce uncertainty and encourage them to engage into transaction.

The construct "media richness" is defined in the Media Richness Theory (MRT) as "the capability of a medium in conveying conversational cues in the context of interpersonal communication" (Daft and Lengel 1986). A great deal of e-commerce research linked the level of media richness with the capability to alleviate equivocality, which ultimately confirms the seller's ability to clearly describe the product and hence raises purchase intention (Ou et al. 2014). Reciprocal communication tools complement product descriptions by allowing vendors clarify ambiguous issues of the experience goods on sell.

In addition, rich media enable communicators process subjective, complex messages to achieve mutual understanding in a timely manner. For online sellers of experience goods, media-rich communication tools could be particularly useful, due to the ambiguous nature of experience product. To alleviate the buyer's doubt about the quality of product, for instance, "the sanitary condition of the hotel swimming pool", which may not be described in detail on webpages, reciprocal CMC facilities are preferable for seller-buyer interaction. Hence:

H4a. Description uncertainty towards an experience product is negatively associated with the Perceived Media Richness.

H4b. Performance uncertainty towards an experience product is negatively associated with the Perceived Media Richness.

- *PEFS's Effects as Active Strategy Facilitator*

Marketing literature establishes that consumers are often in favor of seeking information from third parties, rather than to immediate contact with the vendor (Bone 1995). This tactic is consistent with the *active communication strategy* in IIT. For instance, online buyers usually attempt to search and process WoM information such as numerical product ratings, text comments, and user experience to eliminate dubieties towards the products and hence build confidence before the purchase decision can be made. Anecdotal evidences show that such information is usually believed more credible than that provided by sellers, especially when buyer-perceived uncertainty level is high (Nielsen 2007). We maintain that an effective mechanism that offers useful, reliable feedback information complement possibly incomplete seller-provided product descriptions (due to their inability or unawareness to describe the potential defects), hence leads to alleviated perception of description uncertainty towards the experience goods.

Extant literature has also found that buyers would still attempt to acquire and process various types of WoM (Huang et al. 2009). Consequently, the feedback information of the experience goods can be consolidated, abstracted, and restructured to make it comparable and assessable (Coupey 1994). An effective feedback system hence facilitates the buyers to engage into this process, therefore their perception of performance uncertainty is reduced. We thus hypothesize:

H5a. Description uncertainty towards an experience product is negatively associated with the Perceived Effectiveness of Feedback Systems.

H5b. Performance uncertainty towards an experience product is negatively associated with the Perceived Effectiveness of Feedback Systems.

### **3 METHODOLOGY**

#### **3.1 Procedures and Participants**

Online purchase of tourism products were chosen as our study context, because travel goods are known as typical experience products that often involve substantial uncertainty (Hsieh et al. 2005). We invited the tourists who had bought travel products on line in one famous scenic attraction in Macau and the students in one university in Macau who had the experience to participate in our study. Finally, a total of 325 responses were received. The participants comprised 41.0% men and 59.0% women. Most of the participants were below 35 years old, with 55.4% aged 18-24 years and 40.9% aged 35-34 years, 3.1% aged 35-44 years old, 0.3% aged 45-54 years and 0.3% aged 55-64 years. The participants included those who finished middle school (4.6%) or had a college degree (7.1%); remaining participants had a university graduate degree or above. The monthly income were 2500 Macau Pataca (26.4%), 2501-5000 (18.9%), 5001-8000 (22.3%), 8001-12000 (16.7%), 12001-20000 (10.1%) and more than 20000 (5.7%). The hours of daily web use included 0-1 hour (3.1%), 2-4 hours (34.7%), 4-6 hours (31%), and more than 6 hours (31.3%).

Since the participants came from two sources (tourists and students), we conducted Independent-sample T-tests to examine whether the two groups of participants responded differentially to the key variables in the studies. Results show that none of the t-statistics for difference in means was statically significant. Therefore, the two groups of participants were combined together for further analyses.

#### **3.2 Measurements**

Participants were asked to recall a most recent purchase of travel product through one on-line retailer that they had not used before. Then they evaluated the website of the on-line retailer in terms of PEPD, PMR and PEFS, and assessed the uncertainty about the travel products provided by the on-line retailer, and intention to purchase. Most of the measures were adapted from previously validated questionnaire

when possible. When developing the measures of PEPD, PMR, and PEFS, we followed the advice in (De Vaus 2013) and consulted with domain experts to assure content validity. Participants responded to all the measurement items on 7-point Likert scales with anchors ranging from strongly disagree (1) to strongly agree (7).

- **Perceived Effectiveness of Product Descriptions (PEPD)**

Five items were developed to measure PEPD. Sample items included “The media descriptions in this website (including text, pictures, or video) are detailed”, “The media descriptions in this website (including text, pictures, or video) are comprehensive and thorough”. The Cronbach’s  $\alpha$  of this scale is .95.

- **Perceived Media Richness (PMR)**

We measured PMR using Dennis and Kinney’s (2000) four-item scale which focused on the effectiveness of the system that supports the two-way communication between buyer and seller. The sample item is “The communication conditions help buyers to inquire seller quickly”. The Cronbach’s  $\alpha$  was .79.

- **Perceived Effectiveness of Feedback Systems (PEFS)**

We assessed PEFS with four items adapted from (Pavlou and Gefen 2004) (e.g., “I feel confident that this website's Ratings & Feedback mechanism gives accurate information about the product”). The reliability of this scale was satisfactory ( $\alpha = .87$ ).

- **Description Uncertainty (DU) and Performance Uncertainty (PU)**

The measurement items for description uncertainty and performance uncertainty were all adapted from Dimoka, Hong et al. (2012). We measured description uncertainty with three items (e.g., “I doubt that this type of product has not been thoroughly described to me on the website description”) and performance uncertainty with four items (e.g., “I am afraid that this type of product may not perform as I think”). Note that the items of DU differ from those of PEPD in that they emphasize more on the subjective doubtfulness perceived by the buyer. The Cronbach’s alphas for the scales of description uncertainty and performance uncertainty were .73 and .72, respectively.

- **Intention to purchase (ITP)**

We measured intention to purchase using three items adapted from Verhagen and van Dolen (2009) (2009) and Jarvenpaa, Tractinsky et al. (2000), including “I intend to continue to buy this type of product in this website in the future”, “I will consider purchasing this type of product from this website in the longer term”, and “I will return to this website to buy this type of product”. The Cronbach’s  $\alpha$  of this scale is .93.

Because this study collected data from a single source (i.e., the respondents), we used Harman’s single-factor test (Podsakoff et al. 2003) to diagnose the potential common method bias. All the twenty-three items for the key variables in the study were put into exploratory factor analysis. Results showed that more than one single factor emerged from the factor analysis. In fact, there were six factors with eigenvalues over 1.0 which collectively explained 75.3 percent of the variance. The analysis suggested that the threat of common method bias was minimal.

### **3.3 Results**

- **Measurement Model**

We first tested the measurement model by examining the internal consistency of constructs, and their convergent and discriminant validity (Fang et al. 2014). As shown in Table 1, the internal consistency reliabilities of all the latent variables exceeded .70, indicating satisfactory reliability.

The convergent validity was tested using the square root of average variance extracted (AVE), which should be greater than the recommended level of .5 (Fornell and Larcker 1981). Table 1 shows that the square root of AVE for each construct exceeded .5.



	ICR	Mean	SD	ITP	DU	PEFS	PEDS	PU	PMR
ITP	0.96	5.50	1.06	<b>0.94</b>					
DU	0.83	3.37	1.13	-0.30	<b>0.79</b>				
PEFS	0.91	5.26	0.97	0.33	-0.32	<b>0.84</b>			
PEDS	0.96	5.38	1.00	0.44	-0.43	0.54	<b>0.91</b>		
PU	0.80	3.50	1.03	-0.34	0.70	-0.30	-0.45	<b>0.71</b>	
PMU	0.89	4.81	1.18	0.14	-0.23	0.30	0.35	-0.16	<b>0.82</b>

Table 1. Construct Correlation, Internal Consistency Reliability and the Square Root of AVE  
ICR = internal consistency reliabilities; Diagonal elements represents square-root of AVE (average variance extracted)

	ITP	PEFS	PEPD	PMR	DU	PU
ITP1	<b>0.94</b>	0.32	0.43	0.14	-0.31	-0.35
ITP2	<b>0.94</b>	0.31	0.39	0.14	-0.27	-0.28
ITP3	<b>0.93</b>	0.29	0.41	0.14	-0.28	-0.32
PEFS1	0.30	<b>0.83</b>	0.51	0.22	-0.30	-0.30
PEFS2	0.30	<b>0.86</b>	0.48	0.32	-0.31	-0.27
PEFS3	0.23	<b>0.87</b>	0.39	0.29	-0.20	-0.21
PEFS4	0.27	<b>0.82</b>	0.39	0.17	-0.25	-0.20
PEPD1	0.39	0.49	<b>0.91</b>	0.34	-0.39	-0.40
PEPD2	0.41	0.51	<b>0.92</b>	0.31	-0.40	-0.39
PEPD3	0.37	0.46	<b>0.91</b>	0.29	-0.39	-0.43
PEPD4	0.41	0.46	<b>0.90</b>	0.33	-0.40	-0.40
PEPD5	0.42	0.52	<b>0.87</b>	0.30	-0.37	-0.40
PMR1	0.14	0.27	0.32	<b>0.92</b>	-0.21	-0.14
PMR2	0.10	0.26	0.31	<b>0.91</b>	-0.18	-0.08
PMR3	0.07	0.30	0.33	<b>0.90</b>	-0.21	-0.15
PMR4 R	0.18	0.11	0.13	<b>0.74</b>	-0.14	-0.15
DU1	-0.24	-0.20	-0.29	-0.13	<b>0.76</b>	0.47
DU2	-0.15	-0.18	-0.26	-0.11	<b>0.81</b>	0.57
DU3 R	-0.29	-0.33	-0.42	-0.27	<b>0.80</b>	0.61
PU1 R	-0.33	-0.33	-0.46	-0.23	0.58	<b>0.76</b>
PU2	-0.20	-0.21	-0.30	-0.10	0.50	<b>0.73</b>
PU3	-0.16	-0.06	-0.16	0.09	0.41	<b>0.66</b>
PU4	-0.18	-0.10	-0.18	-0.07	0.45	<b>0.69</b>

Table 2. Item Loadings and Cross Loadings

We use multiple techniques to assess discriminant validity (Chin 1998). First, cross-loading results (Table 2) show that all indicators, without exception, loaded more highly on their corresponding construct than on other constructs. Second, as seen in Table 1, the inter-construct correlations were all smaller than the square root of the AVE, suggesting that all construct share more variance with their indicators than with other constructs.

To further test whether the constructs are conceptually distinct, we used AMOS to compare different Confirmatory Factor Analysis models with various combinations. Table 3 shows the results for model comparison. In the baseline model, twenty-three items for six constructs (i.e., PEPD, PMP, PEFS, DU, PU, and Intention to purchase) were included in the measurement model and allowed to load on their intended latent variables. The six factors were allowed to freely correlate. Results indicate that the six-factor model yielded an acceptable model fit ( $\chi^2 = 748.47$ ,  $df = 215$ , comparative fit index (CFI) = .90, incremental fit index (IFI) = .90, and RMSEA = .088), and that it fitted the data better than all other comparison models. Therefore, the conceptual distinction between two types of uncertainty and that between three independent variables were supported.

	$\chi^2$	df	CFI	IFI	RMSEA
6-factor model	748.47	215	0.9	0.9	0.088
5-factor-combining DU and PU	794.84	220	0.89	0.89	0.09
5-factor-combining PMR and PEPD	1532	220	0.75	0.75	0.136
5-factor-combining PMR and PEFS	1541.24	220	0.75	0.75	0.136
5-factor-combining PEPD and PEFS	1169.08	220	0.82	0.82	0.115
4-factor-combining PMR, PEPD, and PEFS	1942.08	224	0.67	0.68	0.154

1-factor model	3033.48	230	0.46	0.47	0.194
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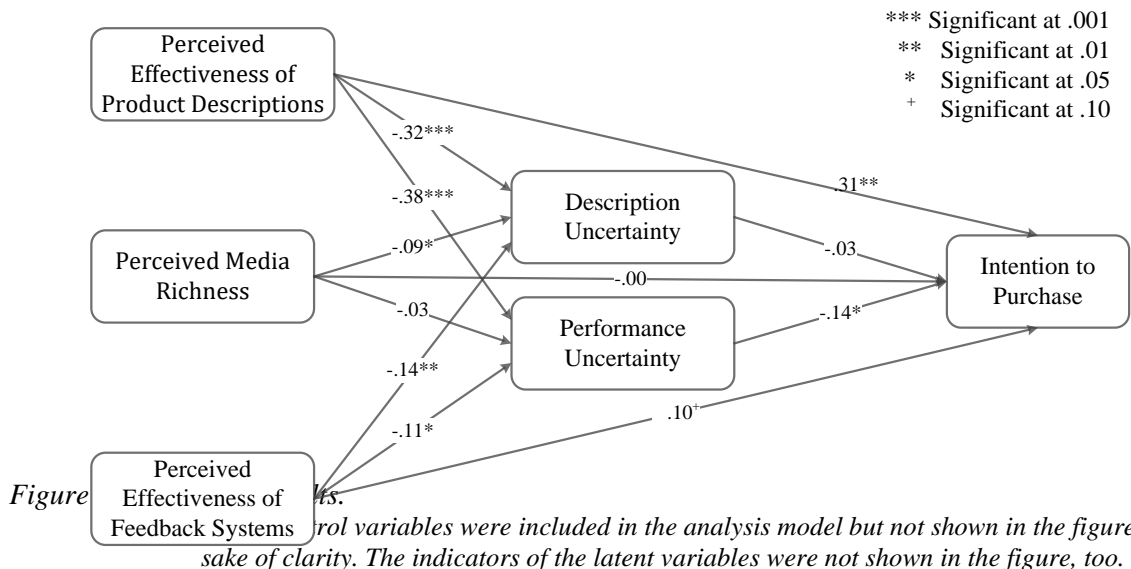
Table 3. Results for Model Comparison

• The Structural Model

The research model was tested using partial least squares (PLS). Bootstrapping with 1000 resample and 325 cases per sample was used to assess the significance of path coefficients. The control variables (age, gender, education level, hours of daily web use, and income) were included in all the models in the subsequent analyses. Because all the hypotheses are directional, one-tailed tests were used in all the analyses.

Figure 2 presents the results of the structural model in which three antecedents (PEPD, PMR and PEFS) were linked to two types of uncertainty (DU and PU) and intention to purchase, and two types of uncertainty were linked to intention to purchase. The model explains 25 percent of the variance in intention to purchase, and 21 percent of the variance in description uncertainty and 21 percent of the variance in performance uncertainty. Results show that performance uncertainty was negatively related to intention to purchase ( $\beta = -.14$ ,  $SE = .07$ ,  $p < .05$ ), but description uncertainty was not ( $\beta = -.03$ ,  $SE = .09$ , ns.), indicating that performance uncertainty was more important than description uncertainty in reducing intention to purchase in the study context. Hypothesis 1 was partially supported, and Hypothesis 2 was well supported.

Perceived effectiveness of product description was negatively related to both description uncertainty ( $\beta = -.32$ ,  $SE = .05$ ,  $p < .001$ ) and performance uncertainty ( $\beta = -.38$ ,  $SE = .06$ ,  $p < .001$ ), supporting Hypotheses 3a and 3b. Similar results were found for Perceived effectiveness of feedback systems. Its relationship with description uncertainty ( $\beta = -.14$ ,  $SE = .06$ ,  $p < .01$ ) and performance uncertainty ( $\beta = -.11$ ,  $SE = .06$ ,  $p < .05$ ) were both negative and significant. Therefore, Hypotheses H5a and 5b were also supported. Perceived media richness was negatively related to description uncertainty ( $\beta = -.09$ ,  $SE = .06$ ,  $p < .05$ ) supporting Hypothesis 4a. However, unexpectedly, the relationship between perceived media richness and performance uncertainty was significant ( $\beta = -.03$ ,  $SE = .07$ , ns).



### 3.4 Discussion

The premise of this paper was that customers' intention to purchase on the website was influenced by institutional communication mechanisms (ICM), including passive strategy facilitator (i.e. product descriptions), interactive strategy facilitator (i.e., media-rich CMC tools) and active strategy facilitator

(i.e., feedback mechanisms). Reduced uncertainty can account for the influence of institutional communication mechanisms on intention to purchase. In addition, description uncertainty and performance uncertainty are conceptually distinctive, and their relationships with the three types of facilitators and the intentions to purchase are differential.

Our results indicate that, for one typical experience product (i.e., travel product), performance uncertainty rather than description uncertainty was significantly related to intention to purchase. Three types of communication facilitators all influence description uncertainty significantly, but only passive and active strategy facilitators (i.e., effective product descriptions and feedback systems, respectively) were related to performance uncertainty.

The weak effects of rich media on performance uncertainty and intention to purchase were unexpected, but understandable in the context of experience commodities. A plausible explanation is that the buyer is aware of the fact that due to heterogeneous individual preferences, the performance of the experience goods may deviate from expectation. As a result, the vendor's clarification through communication media does not help solve such "idiosyncratic utility across consumers" (Nielsen 2007) Hence, rich media also fail to influence the intention to purchase.

Although our findings have important theoretical and practical implications, this study has some limitations that should be addressed in future research. First, the data were collected from a single cultural context geographically. It is commonly held that the tendency to avoid uncertainty varies across different cultures (Hofstede 1984). Hence, to generalize our findings, future studies should evaluate our findings in other cultures or take cultural factors into account. Second, the cross-sectional design of this study may limit the study's ability to make causal inference, because the temporal sequence of the relationship cannot be established. It also raises the concern of common method variance. Although our diagnostic test results and the differential relationships found in the study can reduce this concern to some extent, longitudinal designs or experimental designs are encouraged for future research.

## 4 IMPLICATIONS AND CONCLUSION

Though the main theme of this paper, product uncertainty, is not new to the literature of digital market research, most extant studies mainly focus their exploration of the antecedents and consequences of product uncertainty through economic lens. Anchored on Initial Interaction Theory in communication literature, our research introduces the concept of Institutional Communication Mechanisms (ICM) that emphasizes the role of PEPD, PMR, and PMS in facilitating a buyer's three different communication strategies (passive, interactive, and active), and studies their effects on product uncertainty. Such a communication theory view is novel and particularly relevant in studying the digital market of *experience goods*, since this type of product inherently sparks off substantially high product uncertainty. The research results ascertained our arguments that institutional communication mechanisms have salient effects on product uncertainty. The reduced description uncertainty and performance uncertainty, in turn, may effect elevated purchase intention.

This study offers several important implications for both researchers and practitioners. From a theoretical perspective, this research view transaction makers as interactants who strive to reduce uncertainty during their initial communication. To the best of our knowledge, this perspective is rarely recognized in existing e-commerce literature, possibly because online transactions are economic activities in which the theoretical assumptions of information asymmetry, fears of opportunism, and bounded rationality are inherently applicable (Pavlou et al. 2007). Our research integrates PEPD, PMR, and PMS under the framework of IIT and conceptualizes them as Institutional Communication Mechanisms. This view adds new understanding of why these ICT facilities adopted in a digital market may help attenuate buyers' perception of product uncertainty, which in turn, amplifies their purchase intention. For practitioners, our results strongly confirm the critical role of Institutional Communication Mechanisms in helping online buyers overcome the inherent high product uncertainty of experience goods. In particular, our empirical evidence also suggests that media-rich communication facilities such as real-time customer service via CMC tools, however, may only have limited effect on helping buyers reducing performance

uncertainty. This finding suggests online experience goods sellers the direction to optimize the allocation of technical and human resources for customer service.

This study focuses on the effect of ICM on two dimensions of product uncertainty, which is also found to have close tie with other variables that may reduce purchase intention, such as product complexity and perceived risk (Dimoka et al. 2012). We encourage future research to explore this direction in order to offer a more holistic view of the advantages and limits of various communication facilities.

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