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# Do the public treat online and offline equally? An explorative study

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# Do the Public Treat Online and Offline Equally? An Explorative Study

Completed Research Paper

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## Abstract

*Online shopping has become a common shopping channel. Consumers can freely choose their preferred shopping channels. However, will the public treat online and offline channel equally? Based on confirmation bias theory, the current study attempt to explore whether there is a prejudice toward online shopping and how prejudice influence consumers' channel selection behavior. An explorative experiment was conducted with 124 subjects. The results indicate that prejudice toward online shopping does exist and significantly influence consumers channel selection behavior. Furthermore, the uncertainty of online shopping may induce consumer's prejudice perception through confirmation bias and lead to both seller and product prejudice. Theoretical and practical implications are discussed.*

**Keywords:** uncertainty, prejudice, shopping channel selection

## Introduction

One of the most dramatic trends in the shopping environment has been the proliferation of channels (Neslin et al. 2015). The Internet, mobile networks, as well as bricks-and-mortar stores, are now commonplace means by which consumers shop. Most firms have initiated their online businesses from expanding their existing traditional offline businesses (Kwon and Lennon 2009; Yang et al. 2013). There are also some e-commerce companies extends their business to offline, such as developing offline experience centres or even shopping malls. Consumers can freely buy most kinds of products from either online or offline channel.

Since online shopping has become a common shopping channel, do consumers treat online and offline channel equally? For instance, you received two Christmas gifts from your two close friends, such as two neckerchiefs. The two neckerchiefs look similar and you are informed that the brand and price of the neckerchiefs are the same. The key difference is that one is bought from an online store and the other one is purchased from an offline store. How do you feel about the two gifts? Will you evaluate these two neckerchiefs exactly the same? Similar situations often occur in our daily life. You bought two bottle of red wine at a same price. One was bought from an online retailer and the other one was purchased from an offline wine chateau. Will the purchase channel affect your evaluation?

Prejudice or discrimination is not an uncommon phenomenon, such as racial discrimination, gender discrimination, and regional discrimination. With a certain label, some people are believed to be incompetent than others. Extended to shopping context, is there a prejudice among online and offline shopping channels? Is there any bias exists in your mind when evaluating and selecting shopping channels? Although a great deal of past research was devoted to understand consumers' online channel adoption, most of them have generally viewed the online channel as isolated from the offline channel (Neslin et al. 2015; Yang et al. 2013). Since consumers can freely choose shopping channels to fulfil their shopping purposes, it is important to understand their channel selection behaviour.

A recent study by Neslin et al. (2015) summarized six basic determinants of consumer channel choice: marketing effort (e.g., promotion strategies), channel attributes (e.g., ease of use, price, enjoyment, information quality, risk, privacy, etc), channel integration (e.g., ease moving from channel A to channel B), social influence, shopping task, and individual differences. The premise is that each channel has competitive advantages in different aspects and consumers' channel selection behaviour can be determined by the evaluation of the impact factors.

However, transactions in online markets need to deal with information asymmetry (i.e., partial information and imperfect information) (Dimoka et al. 2012; Pavlou et al. 2007) which causes uncertainty in buyer-seller relationship about the product and about the seller (Ghose 2009; Pavlou and Dimoka 2008). Confirmation bias may occur in consumer's subjective evaluation toward online market due to uncertainty. Confirmation bias refers to a tendency of humans to overweight information that confirms (versus disconfirms) their initial beliefs and positions (Forde 2016; Nickerson 1998). Under information asymmetry situation, consumers' evaluation may be biased due to confirmation bias, such as overweight confirmatory instances (Pyszczynski and Greenberg 1987), seeing what is looking for (Neslin et al. 2015), and the primacy effect (Lingle and Ostrom 1981; Sherman et al. 1983), etc. Consumers' evaluation tends to reinforce their original beliefs and may enlarge the deviations from real situation. Thus, we intend to explore how confirmation bias affect consumers' channel selection behavior.

In summary, the current paper focuses on two research questions. First, under equal conditions (e.g., same price, same package, same information, etc), will the public treat online and offline channel equally? Second, how confirmation bias affect consumers' channel selection behavior. In order to explore the research questions, experiment was conducted with 124 participants. Results indicated that prejudice do exist toward online shopping channel. Furthermore, based on confirmation bias theory, a research model is developed to explore the mechanisms of online prejudice.

## **Theoretical Background**

Consumer's channel preference or selection is determined by their own evaluation of optional shopping channels. Neslin et al. (2015) summarized six types of basic determinants of consumer channel choice, such as promotion strategies, channel attributes, social influence, individual differences, etc. The premise is that each channel has competitive advantages in different aspects and consumers' channel selection behaviour can be determined by the evaluation of the impact factors.

However, transactions in online markets need to deal with partial information and imperfect information (Dimoka et al. 2012; Pavlou et al. 2007) and consequently cause uncertainty in buyer-seller relationship about the product and about the seller (Ghose 2009; Pavlou and Dimoka 2008). Uncertainty is induced by partial information (Garner 1962) and described as "neither entire ignorance nor complete and perfect information but partial knowledge (Knight 1921)". In our context,

uncertainty is defined as the buyer's difficulty in predicting the outcome of an online transaction due to buyer-seller information asymmetry (Dimoka et al. 2012). Uncertainty differs from risk. While both uncertainty and risk deal with partial information, uncertainty deals with subjective probabilities, whereas risk is estimated with a priori calculable probabilities. Following Dimoka et al. (2012), we focus on uncertainty because transactions in online markets do not come with objective calculable probabilities.

A confirmation bias occurs when conducting subjective evaluation with imperfect information. The primacy effect is a well-known example. When a person must draw a conclusion on the basis of information acquired and integrated over time, the information acquired early in the process is likely to carry more weight than that acquired later (Lingleand Ostrom 1981; Sherman et al. 1983). Confirmation bias refers to a tendency of humans to overweigh information that confirms (versus disconfirms) their initial beliefs and positions (Forde 2016; Nickerson 1998). There is evidence in many contexts that humans tend to prefer information that confirms their initial beliefs, hypotheses, and conjectures (Klaymanand Ha 1987; Tropeand Bassok 1982; Yin et al. 2016).

In the evaluation of online versus offline shopping channel, confirmation bias may induce subjective deviations due to information asymmetry. For consumers, the essence of a transaction is the maximization of customer utility or customer value (Chenand Dubinsky 2003; Guptaand Kim 2010; Lee et al. 2007). Consumers often try to reveal cheats, flaws, or potential problems in order to avoid losses. Thus, negative information will confirm what they want to see, especially when consumers lack experience and start to build initial belief. Confirmation bias makes us more and more concerned with the negative news or reviews of online shopping which is uncertain. We may further tend to seek information that the online product is not as good as sold in offline channel and/or online sellers maybe more likely to conduct opportunistic behavior. This negative reinforcement caused by uncertainty may further develop to cognitive prejudice: in general, the products/sellers are not as good as offline.

In this study, we define two types of prejudice toward online shopping: seller prejudice and product prejudice. Seller prejudice refers to consumers' biased belief that online sellers are not as good as offline, while product prejudice refers to consumers' biased belief that the products sold online are not as good as the ones sold offline. The uncertainty of online shopping will induce confirmation bias and lead to seller and product prejudice. Thus, we propose that:

H1a: Uncertainty is positively related with seller prejudice;

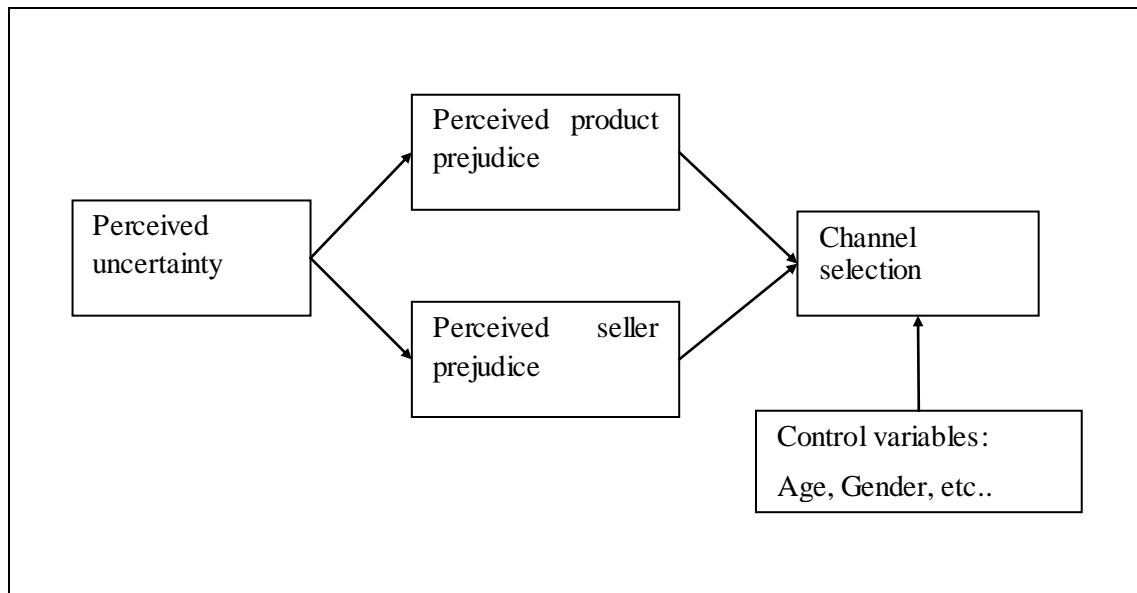
H1b: Uncertainty is positively related with product prejudice;

With equal conditions (e.g., same price, same brand, same package, etc), if prejudice exist, consumers may believe that online sellers are not as good as offline and the products sold online are not as good as the ones sold offline by default. Thus, they may prefer to choose offline channel. Therefore, we propose that:

H2a: Seller prejudice is negatively related with the selection of online channel;

H2b: Product prejudice is negatively related with the selection of online channel;

Figure 1 summarizes the research hypotheses.



**Figure 1. Research model**

## Research Methods

In order to test the hypotheses, an experiment was conducted. In summary, chocolate was selected as the target product and was claimed as purchased from two vendors: online versus offline store. Each subject was assigned to taste two pieces of chocolate and answer a short questionnaire. After that, subjects should choose another piece (either purchased online or offline) as a gift and leave the experiment. 124 subjects participated and 120 valid responses were used in the data analysis.

### *Manipulation and Experiment Processes*

After a round of pilot test, chocolate was selected as the target product in the main experiment. The reason is that, firstly, chocolate is a typical experience product. Taste is one of the main attributes of chocolate. Secondly, chocolate is common to the public especially to young people, who are the main consumers of online market. Besides, chocolate has been widely sold both online and offline. Finally, the price of chocolate is moderate to the subjects, neither experience nor too cheap. Participants may treat the experiment devotedly and relatively relaxed.

All the chocolate was purchased from an online vendor with same packages, price, and production date. In particular, each package comprised tens of individually packed small pieces without any signs of detailed product information such as production data or price. When conducting the experiment, we show the two packages of chocolate to the participants and claimed to them that one package was bought online and the other one was bought from an offline store. Except the purchase channel, we told them that the price, production data, and producing area were all the same.

Then, we distributed two small pieces of chocolate to each subject. One piece was labeled as online and the other one was labeled as offline. Each participant tasted the two pieces of chocolate in a random order. Then, a short paper-based questionnaire was delivered to measure their subjective feeling of the chocolate. Finally, each subject could take away one more piece from the online package or offline package freely as a gift, which actually reflects their channel selection. Research assistant recorded the questionnaire number and the gift choice.

### *Measurements*

The questionnaire consisted of three sections. The first part collected subjects' comparison of the two piece of chocolate. Measures were developed based on five-point Likert scale, ranging from "strongly

disagree” to “strongly agree”. Three questions were asked as follows. 1. In my opinion, the piece of chocolate bought online is more delicious than the other one. 2. The piece of chocolate bought online remains longer quality guarantee period than the other one. 3. The piece of chocolate bought online tastes like original packaging instead of fake product than the other one.

The second part measured our key constructs including product prejudice, seller prejudice, and perceived uncertainty. Our dependent variable, channel selection was measured by subjects’ actual choice of gift, either online piece or offline piece. The measurement for product prejudice was developed based on Atuahene-Gima and Li (2004)’s scale for product quality. Seller prejudice was measured by the scale adapted from Ghosh and John (2013). Perceived uncertainty was measured using the instrument in Pavlou et al. (2007). The third part collected subjects’ demographic information such as age, gender, etc.

## Results

### Measurement Model Test

A total of 124 undergraduate students participated in the experiment. Due to missing data, 120 valid responses were used to test the hypotheses. The demographics of the valid respondents are presented in Table 1.

**Table 1. Demographics Statistics**

Characteristics	Distribution	Characteristics	Distribution
<i>Gender</i>		<i>Age</i>	
Male	22.5%	<=18	3.3%
Female	77.5%	19	24.2%
<i>Online shopping experience</i>		20	45.0%
<2 year	40.0%	21	25.8%
3~4 years	46.7%	>=22	1.7%
>5 years	13.3%		

The validity of the constructs was established by examining their reliability, convergent validity, and discriminant validity. First, construct reliability was assessed by checking composite reliability, Cronbach’s alpha, and individual item loadings. As shown in Table 2, all the values for composite reliability and Cronbach’s alpha were greater than the threshold of 0.70, indicating good construct reliability (Hair et al. 1998). Second, convergent and discriminant validity were assessed by a confirmatory factor analysis (CFA). As shown in Table 2, all the individual item loadings were greater than the threshold of 0.60 (Barclay et al. 1995; Chin 1998b), indicating an acceptable convergent validity (Comrey 1973).

**Table 2. Descriptive Statistics for the Scales**

Item	Mean	Standard deviation	Item-to-total correlation	Alpha	C.R.	AVE
UNC1	3.483	0.820	0.771	0.857	0.907	0.710
UNC2	3.617	0.822	0.872			
UNC3	3.650	0.806	0.834			
UNC4	3.817	0.869	0.889			
PPR1	3.225	0.893	0.866	0.843	0.887	0.613

PPR2	3.708	0.854	0.803			
PPR3	3.167	0.863	0.738			
PPR4	2.942	0.748	0.775			
PPR5	2.625	0.800	0.723			
SPR1	3.325	0.811	0.832	0.874	0.906	0.660
SPR2	2.700	0.816	0.719			
SPR3	2.742	0.884	0.842			
SPR4	2.792	0.878	0.815			
SPR5	3.275	0.970	0.846			
<i>Note:</i>						
a. UNC: perceived uncertainty; PPR: product prejudice; SPR: seller prejudice;						
b. Alpha: Cronbach's Alpha; C.R.: Composite Reliability; AVE: Average Variable Extraction						

Furthermore, discriminant validity was assessed based on two methods: (1) checking whether the item loadings on their respective construct were greater than the loadings on other constructs, and (2) checking if a construct's square root of AVE was greater than its correlation with other constructs (Fornell and Larcker 1981). The results in Tables 2 and 3 indicate good discriminant validity.

**Table 3. Correlations and AVEs**

	Mean	S.D.	AVE	1	2	3
1.UNC	3.642	0.707	0.685	<b>0.812</b>		
2.PPR	3.133	0.652	0.822	.210	<b>0.809</b>	
3.SPR	2.967	0.712	0.726	.567	.178	<b>0.783</b>
<i>Note:</i>						
a. S.D.: Standard Variance; AVE: Average Variable Extraction and values in the diagonal are the square roots of AVE						
b. UNC: uncertainty; PPR: product prejudice; SPR: seller prejudice;						

In addition, a threat of common-method bias (CMB) may exist due to the questionnaire method. A well-established rigorous analysis proposed by Podsakoff et al. (2003) and tailored to the PLS analysis by Liang et al. (2007) was further employed to test for common method bias. The results indicate that trait factors (e.g., the proposed constructs) explained 75.46% of the variance, whereas the method factors explained only less than 1% of the variance, indicating that common method bias was not likely to pose a problem for the present study.

**Structure Model Results**

T-test was used to test subjects' perception of taste, producing area, and remaining quality guarantee period. Objectively, the two pieces of chocolate are exactly the same and thus the answers for the questions should equal to 3 (i.e., neutral). However, the single sample t-test results are shown in Table 4.

**Table 4. Comparison T-test**

	t	df	Sig.	CI(L)	CI(H)
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Taste	-3.711	119	.000	-.49	-.15
Producing area	-3.461	119	.001	-.39	-.11
Quality guarantee period	-1.194	119	.235	-.20	.05

Results indicate that subjects believe that the piece of chocolate purchased online is inferior to the offline piece. Specifically, the online piece tastes worse and the producing area more likely is faked. Considering the two pieces of chocolate are exactly the same, we can conclude that the purchase channel cues affected tasters' perception. The results also imply that there indeed is some prejudice toward online shopping channel.

More interestingly, 94 out of the 120 subjects chose the chocolate purchased offline as a gift in the end of the experiment. Only 29 participants selected the online channel pieces. This provides additional evidence that channel prejudice exist.

Due to the sample size limitation, PLS (Partial Least Square) was adopted to test the structure model. Results are summarized in Figure 2. Consistent with our hypotheses, results show significant positive effect of perceived uncertainty on product prejudice and seller prejudice ( $\beta=0.344$ ,  $p<0.01$  and  $\beta=0.360$ ,  $p<0.001$  respectively). Thus, hypothesis 1a and hypothesis 1b are supported. In addition, product prejudice and seller prejudice are found to be negatively related with online channel selection ( $\beta=-0.276$ ,  $p<0.01$  and  $\beta=-0.235$ ,  $p<0.05$  respectively), which support hypothesis 2a and hypothesis 2b.

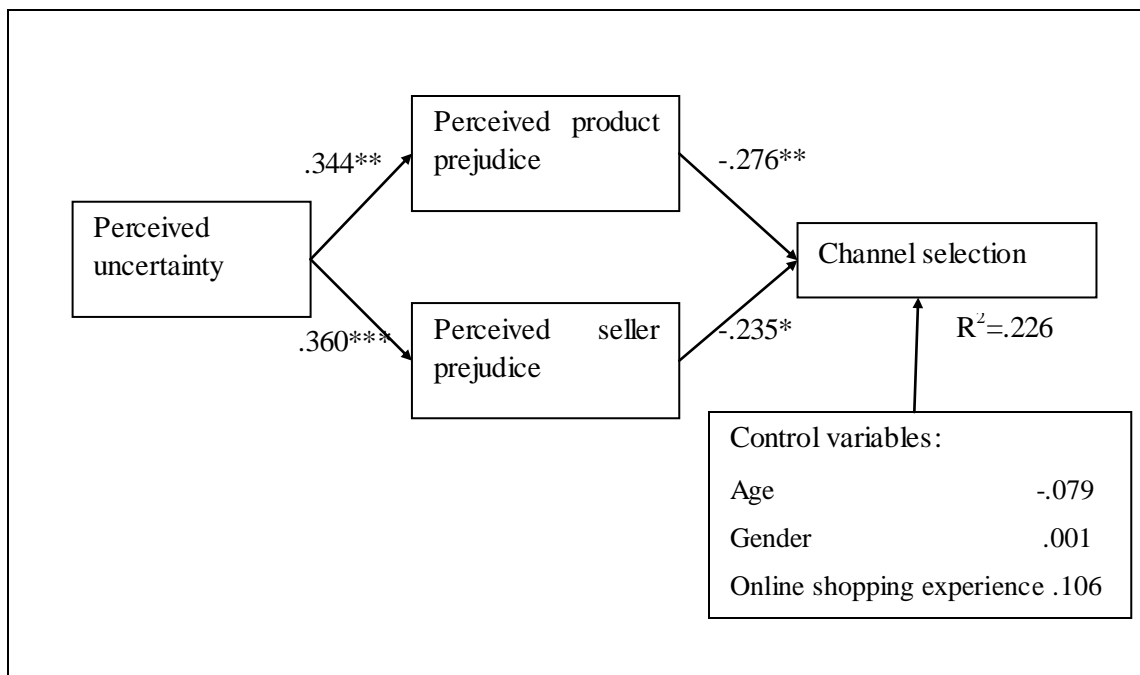


Figure 2. Structure Model Results

Furthermore, the direct effect of uncertainty on channel selection became insignificant ( $\beta$  change from  $-0.196^*$  to insignificant) after adding prejudice. Sobel-test was used to test the mediation effect of prejudice. Results are shown in Table 5 and indicate that the two mediation effects are all significant.

Table 5. Sobel Test for Mediation Effects

	IV-M	SE(IV-M)	M-DV	SE(M-DV)	Sobel z
Product prejudice	0.344	0.098	-0.276	0.085	-2.384



Seller prejudice	0.360	0.103	-0.235	0.076	-2.316
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## Discussion and Implications

### *Main Findings*

In this study, we investigate consumers' shopping channel selection behavior (online versus offline shopping channel). The results support that there is indeed some prejudice toward online shopping in consumers' subjective evaluation process. With equal conditions (e.g., same price, same brand, same package, etc), the cue of purchased online biased consumers cognitive evaluation and decrease the utility of a product. The results imply that although e-commerce has become a common shopping channel, consumers still treat online and offline channel unequally.

Furthermore, we identified two types of online prejudice: seller prejudice and product prejudice. The experiment demonstrates that not only online vendors, but also the products sold online are discriminated by consumers. If consumer has prejudice perception toward online shopping, she is more likely to purchase offline, with all equal conditions.

In addition, the prejudice is found to be induced by consumers' perceived uncertainty of online shopping. Although previous literature has demonstrated that uncertainty can directly influence consumers' online shopping intention by the mechanisms such as risk aversion (Dimoka et al. 2012; Pavlou et al. 2007), we enrich the mechanism by investigating the mediation effect of prejudice. In adoption stage, uncertainty may largely impact consumers' online shopping intention. However, after accumulated knowledge, uncertainty may induce biased evaluation of online shopping through the reinforcement of confirmation bias and finally develop to prejudice.

### *Theoretical implications*

Two theoretical implications can be draw from this study. Firstly, this study extends the online shopping adoption literature. Previous channel adoption literature mostly builds on isolated evaluation of either online or offline channel (Neslin et al. 2015; Yang et al. 2013). We move a step further and directly investigate consumers' choice from online and offline channel. More importantly, we found that prejudice toward online shopping significantly influence consumers' channel selection behavior.

Secondly, this study extends the channel selection literature by investigating the prejudice mechanism under information asymmetry. Previous channel selection literature focus on the evaluation of different channels (Neslin et al. 2015). Enriching this stream of literature, we specifically investigate the mediation effect of prejudice based on confirmation bias theory. This study implies that in adoption stage, uncertainty may largely impact consumers' online shopping intention (Dimoka et al. 2012; Pavlou et al. 2007). However, after accumulated knowledge, uncertainty may induce biased evaluation and finally develop to prejudice.

### *Practical implications*

This study also suggests several implications in practice. First, we emphasize on consumers' channel selection behavior, which echoes many companies' online-offline integration strategy. This study implies that consumers have prejudice toward online channel. Online and offline is not equally treated by the public at least in the current stage.

Second, this study identifies two types of online prejudice: seller prejudice and product prejudice. Companies should notice that not only the product sold online, but also online sellers are discriminated. Companies should try to reverse consumers prejudice perception by continuously increase the product quality and their service. It may take long time for online sellers to improve their reputations and requires the endeavor of the whole online market.

Third, based on confirmation bias theory, prejudice comes from uncertainty. Thus, companies should carefully design strategies to reduce consumer's perceived uncertainty. To be noticed that

confirmation bias involves in negative reinforcement process. Thus, continuance investments are needed to break the reinforcement process and avoid recurrence. A good issue is that, confirmation bias can also lead to positive reinforcement in certain situation. Although it is difficult to build, it is not possible in the future.

### Limitations and Future Research

There are some limitations of this study. First, this is the very first study to investigate online prejudice and also it is an explorative study. Future research could further explore the effects of prejudice in other research context.

Second, in the experiment design, chocolate was selected as the target product. It is an experience product. Future research could extend to other types of products/services to confirm the results of this study.

Third, the sample of the survey is limited to China online market. Culture and regional issue may influence consumer’s channel selection behavior. Therefore, the generalizability may be limited to China context. Future study could further test our model in other contexts.

### Conclusion

As the development of e-commerce, online shopping has become a common shopping channel. Consumers can freely choose their preferred shopping channel. However, we found that consumers do not treat online and offline equally. Based on confirmation bias theory, the current study investigates consumers’ shopping channel selection behavior (online versus offline shopping channel) from the prejudice perspective. The results indicate that prejudice toward online shopping does exist and significantly influence consumers channel selection behavior. Furthermore, the uncertainty of online shopping may induce consumer’s prejudice perception and lead to both seller and product prejudice. Therefore, technologically, we are ready for a new digital society. However, psychological, it seems that we are not so ready.

### Acknowledgements

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### Appendix I

**Table 6. Measurement Items**

Construct	Code	Item	Source
Perceived uncertainty	UNC1	I feel that online shopping involves a high degree of uncertainty.	(Pavlou et al. 2007)
	UNC2	I feel the uncertainty associated with online shopping is high.	
	UNC3	I am exposed to many transaction uncertainties if I purchase online.	
	UNC4	There is a high degree of product uncertainty (i.e., the product you receive may not be exactly what you want) when purchasing online.	
Perceived product	For products with same brand, series, and type		(Atuahene-Gima and Li
	PPR1	For products purchased online, the quality is not as	

prejudice		good as the ones purchased offline.	2004)
	PPR2	For products purchased online, the credibility is not as good as the ones purchased offline.	
	PPR3	For products purchased online, the quality is not guaranteed as the ones purchased offline.	
	PPR4	Products purchased offline provide better benefits than the ones purchased online.	
	PPR5	It is not worthwhile to purchase online because the quality is worse than offline	
Perceived seller prejudice	For products with same brand, series, and type		(Ghoshand John 2013)
	SPR1	Compared to offline store sellers, online sellers sometimes alter facts slightly in order to get what they wanted.	
	SPR2	Compared to offline store sellers, online sellers always carry out their duties without any supervision on our part.	
	SPR3	Compared to offline store sellers, online sellers sometimes promise to do things without actually doing them later.	
	SPR4	Compared to offline store sellers, online sellers feel it is OK to do anything within its means that will help further their own interests.	
	SPR5	Compared to offline store sellers, online sellers lie about certain things in order to protect their own interests.	

## Appendix II

**Table 7. Loadings-Cross Loadings**

	<b>UNC</b>	<b>PPR</b>	<b>SPR</b>
UNC1	<b>0.7710</b>	0.2475	0.2639
UNC2	<b>0.8724</b>	0.2904	0.2452
UNC3	<b>0.8340</b>	0.2189	0.2353
UNC4	<b>0.8885</b>	0.3434	0.4133
PPR1	0.2788	<b>0.8664</b>	0.4525
PPR2	0.3680	<b>0.8034</b>	0.4788
PPR3	0.1245	<b>0.7376</b>	0.3927
PPR4	0.3021	<b>0.7746</b>	0.4150
PPR5	0.2353	<b>0.7231</b>	0.5004
SPR1	0.2711	0.4844	<b>0.8318</b>
SPR2	0.3001	0.2988	<b>0.7191</b>
SPR3	0.2510	0.4415	<b>0.8421</b>
SPR4	0.3146	0.5184	<b>0.8150</b>
SPR5	0.3514	0.4958	<b>0.8461</b>

Note:

UNC: perceived uncertainty; PPR: product prejudice; SPR: seller prejudice;

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