A Study on Consumers' Willingness to Practice Name Your Own Price Based on Technology Acceptance Model

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Abstract: The idle and waste of resources, especially some time-sensitive travel resources, such as hotels and airline tickets, has always been a difficult problem for enterprises to solve. Priceline, a US-based company, sells unused and wasted travel resources to consumers at low prices through Name Your Own Price to reduce idle and wasted resources. However, consumers need to bear more time costs, frictional costs, and the risk of failed transactions when using Name Your Own Price than when using the regular pricing model. So how willing are Chinese consumers to use the new pricing model of Name Your Own Price? In this paper, self-efficacy and perceived risk are selected as external variables in the structural equation model. Based on the technology acceptance model, we investigate Chinese consumers' willingness to use Name Your Own Price.

Keywords: Name Your Own Price; Technology Acceptance Model; Self-Efficacy; Perceived Risk; Shopping Orientation

1. Introduction

The rapid development of tourism e-commerce is accompanied by increasingly fierce competition in the market. A more effective use of tourism resources will not only benefit tourism development, but also contribute to better meeting the consumption needs of tourists. Name Your Own Price (NYOP) is an innovative pricing mechanism proposed by Priceline, the largest online travel company in the United States and the world. Consumers quote a price for their preferred product on Priceline's website, and if a supplier accepts the price, then the transaction will be completed in a short time. NYOP focuses on "perishables, " or items that are time-sensitive, including hotels and airline tickets in online travel products.

The idle and waste of resources, especially some time-sensitive travel resources, has always been a difficult problem for enterprises to solve. Priceline sells unused and wasted travel resources to consumers at low prices through NYOP. Therefore, how willing are Chinese consumers to use the new pricing model of Name Your Own Price?

2. Literature Review and Related Theoretical Foundations

2.1 Literature on Name Your Own Price (NYOP)

With the rise of Priceline website, Name Your Own Price (NYOP) has also received more and more attention from scholars, and the forms of NYOP are constantly changing. Previous research on Name Your Own Price model (NYOP) is mainly divided into two aspects, the one about the design of NYOP mechanism, i. e., how suppliers and platforms can maximize profits through NYOP, and the other concerning the offer strategy and bidding behavior of consumers.

2.1.1 Overview of research on mechanism design in NYOP

The characteristics of NYOP mechanism summarized from relevant descriptions are as follows: (1) buyer's offer, (2) non-repeatable offer, (3) incomplete information about the goods before the transaction, and (4) reserve price setting.

Regarding the offer method, Chernev (2003) [1] studied consumer preferences for both autonomous and selective offers in an online payment environment, and his results showed that consumers prefer to select a price from several given prices. In NYOP pricing model, consumers are not able to repeat the offer because repeated quotation makes consumers try out the supplier's bottom price. Fay (2004) [2], however, argues that Repeat offers are more likely to encourage consumers to pass on the benefits, and the increased revenue for suppliers under a repeat offer model depends

on the percentage of experienced offerors. Martin Spann and Bernd Skiera (2004) [3] introduce into the study the friction of consumers' use of NYOP. Friction cost is defined as the consumer's investment in search. the friction cost of NYOP is higher than that of markup method and the choice price method.

With respect to commodity information, Scott Fay (2009) [4] argues that consumers do not have access to all information about the commodity, such as the specific location of the hotel and the specific name of the hotel, when making offers through the NYOP pricing model. Therefore, competition among suppliers is less fierce in the NYOP pricing model, and suppliers are not informed of competitors' lowest transaction price settings until the transaction is concluded and such price settings are subject to change.

2.1.2 Overview of research on consumer behavior in Name Your Own Price

Name Your Own Price enable consumers to obtain goods at low prices, and consumers can access a great deal of information about goods and services via the Internet, as well as learn what other consumers have to say about the product or service. Martin Spann and Gerard J. Tellis (2006) [5], however, argue that consumers are not less impulsive because of the increased amount of information about the product or service purchasing behavior. In that case, consumers still make impulse purchases because of low prices. Consumers have access

to price information in a variety of ways when making offers, and play an important role in reference prices when making offers (Agnieszka Wolk, Martin Spann, 2008)[6].

The NYOP pricing mechanism is an interactive pricing mechanism where the success of the transaction depends on whether the buyer's final offer is higher than the seller's undisclosed limit price. If multiple offers from buyers are allowed, buyers can test the seller's limit price by increasing the offer in small increments so that the buyer can offer successfully at the lowest price. In this case sellers can defend their interests by charging buyers for additional offers, and the additional fees paid by buyers for repeated offers can be considered as expenses for obtaining offer information (Martin Bernhardt and Martin Spann, 2010)[7].

2.2 Technology Acceptance Model

Davis et al [8] proposed the Technology Acceptance Model (TAM) in 1989 based on Theory of Reasoned Action to explain and predict individuals' willingness to accept and use information systems, as shown in **Figure 1**. the technology acceptance model derived from the theory of rational behavior further introduces two variables, perceived usefulness and perceived ease of use, and brings the external variables affecting perceived usefulness and perceived ease of use into the model.
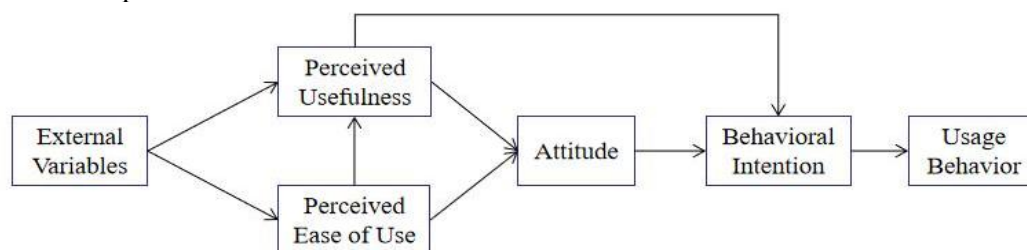

Figure 1: Technology Acceptance Model

The TAM model is mainly composed of the following elements:

Usage Behavior: the actual usage behavior of individuals towards information technology that has occurred or will occur.

Behavioral Intention: the individual's willingness to use the new information for the desired behavior and the future behavior of the consumer.

Attitude: the positive or negative evaluative statements that individuals show about the new information technology, which reflects a

person's subjective feelings or the user's evaluation of the desirability of using the system.

Perceived Usefulness: the user's "subjective probability that using a particular application system will improve his or her work performance in the organizational context.

Perceived Ease of Use: the degree to which a person believes that using a particular system is effortless and that the user expects the target system to be effortless.

3. Research Design

3.1 Construction of a Model of Consumers' Willingness to use Name Your Own Price

3.1.1 Self-efficacy

Self-efficacy refers to "an individual's belief in his or her ability to mobilize motivation, cognitive resources, and action to satisfy a specific situational need" (Wood & Bandura, 1989) [9]. Self-efficacy differs from perceived behavioral control in that the former is directed at a specific behavior. It is not related to the skills that an individual has already mastered, but rather to the beliefs that an individual has about what he or she can do in various environments or situations. Accordingly, the following hypothesis is proposed in this paper.

H$_{1a}$: *Consumer's self-efficacy is significantly and positively related to perceived NYOP usefulness*

H$_{1b}$: *Consumer self-efficacy is significantly and positively related to perceived NYOP ease of use*

H$_{1c}$: *Consumer self-efficacy is significantly and positively related to willingness to use NYOP*

3.1.2 Perceived risk

Bauer (1960) introduced the concept of "perceived risk" into the marketing literature and defined perceived risk as "all actions by consumers that have consequences that they cannot accurately foresee on their own. Dan (2007) [10] argued that the perceived risk of online consumers is an important barrier that online consumers face when considering whether to make an online purchase. Perceived risk or uncertainty affects consumer confidence in making decisions Il Im (2008) [11]. In the NYOP pricing model, the reserve price set by the retailer is not transparent, which can result in a failed transaction due to the rejection of the consumer's offer. As a result, consumers who use NYOP to shop bear the risk of a failed transaction and the resulting frustration. Therefore, consumers need to bear the risk of purchasing products that do not meet their expectations. Accordingly, this paper proposes the following hypothesis:

H$_{2a}$: *Consumer perceived risk is negatively related to perceived NYOP usefulness*

H$_{2b}$: *Consumer perceived risk is negatively related to perceived NYOP ease of use*

3.1.3 Perceived ease of use

According to the technology acceptance model theory, individual perceived ease of use of information systems and individual perceived usefulness of information systems have a positive effect on individual attitudes toward using information systems. Davis argues that, all else being equal, applications that are perceived to be easier to use will be more likely to be accepted by users. Accordingly, we propose the following hypothesis:

H$_{3a}$: *Consumers' perceived ease of use of NYOP is positively related to perceived usefulness of NYOP*

H$_{3b}$: *Consumers' perceived ease of use of NYOP is positively correlated with their willingness to use NYOP*

3.1.4 Perceived usefulness

Perceived usefulness is a key factor influencing consumer acceptance of information technology or innovative approaches, and it directly affects individual attitudes and intentions to use information technology. As a new pricing model, NYOP will be accepted only when consumers perceive it to be effective in helping them complete a transaction. Consumers perceive NYOP as useful because through this model they can indeed get the goods they want at a lower price (Florentin Krämer, 2017) [12]. Therefore, we propose the following hypothesis:

H$_{4a}$: *Consumers' perceived NYOP usefulness is positively related to willingness to use NYOP*
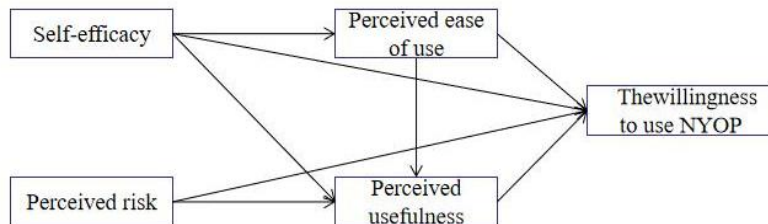
3.2 Presentation of the Model

Figure 2: Model of consumers' willingness to use NYOP

Technology acceptance model is used not only for information technology but also for explanation and prediction of individual willingness to accept innovative mechanisms

and methods. Therefore, we adopt the technology acceptance model to construct a model of consumers' willingness to use NYOP and uses it as a research framework to analyze the effects of influencing consumer self-efficacy and perceived risk on consumers' willingness to use NYOP. As shown in **Figure 2**.

4. Data Collection and Analysis

4.1 Formal Survey Procedures and Sample Size Determination

500 questionnaires were distributed through online survey and the valid questionnaires were 474. In this study, we will use 231 questionnaires as a sample for exploratory factor analysis and 243 questionnaires as a sample for validation factor analysis.

4.2 Exploratory Factor Analysis

The KMO value for this study was 0.843, which is greater than 0.5. Bartlett's spherical test reached a significant level (Sig=0.000), indicating that it is suitable for factor analysis, **in Table1**.

Table 1 KMO and Bartlett's Test of the Questionnaire

KMO test		0.843
Bartlett's spherical test	Approx. Chi-Square	3907.395
	df	210
	Sig.	0.00

The reliability test value (Cronbach's Alpha) of

the full questionnaire was 0.820, and the internal consistency reliability test value (Cronbach's Alpha) of the five factors ranged from 0.884 to 0.992, and the alpha coefficient of each dimension was greater than 0.6(Table 2). This indicates that the reliability of each dimension performs well, so the questionnaire has a high internal consistency reliability.

Table 2 Alpha Coefficients of Each Dimension

Dimension	Alpha factor
Self-efficacy	0.914
Perceived risk	0.922
Shopping orientation	0.920
Perceived ease of use	0.884
Perceived usefulness	0.915
Willingness to use	0.891

4.3 Validation Factor Analysis

In this paper, the internal consistency reliability was still used to determine the reliability level of the questionnaire during the formal testing process, the Alpha coefficient of self-efficacy, perceived risk, perceived ease of use, perceived usefulness and intention of use are respectively 0.894, 0.705, 0.913, 0.839 and 0.899.

The average variance extractions for each latent variable of the Name Your Own Price willingness to use questionnaire in this paper are greater than 0.5(Table 3), which indicates that the public participation willingness questionnaire has good convergent validity.

Table 3 Comparison of AVE Square Root and Correlation Coefficient Between Latent Variables

Factors	Self-efficacy	Perceived risk	Perceived ease of use	Perceived usefulness	Willingness to use
Self-efficacy	0.947				
Perceived risk	0.319**	0.955			
Perceived ease of use	0.548**	0.202**	0.957		
Perceived usefulness	0.448**	0.205**	0.476**	0.950	
Willingness to use	0.567**	0.293**	0.680**	0.629**	0.947

Note: ** indicates significant correlation at the 0.01 level; the diagonally bolded data are the square root of AVE for each latent variable.

For the proposed validity structure of the questionnaire, the validation factor analysis using AMOS software was conducted to examine it in this paper. the results showed that the five-factor model fit indicators were fair

($CMIN/DF=2.694<3$; $CFI=0.940>0.9$; $GFI=0.901>0.9$; $IFI=0.941>0.9$; $TLI=0.925>0.9$; $RMR=0.082>0.05$; $RMSEA=0.074<0.074$, **Table 4**)

Table 4 CFA test Results for the Overall Measurement Model

Title	Standardized factor loadings	CR	AVE	Goodness-of-fit index values
SE1	0.797			CMIN/DF=2.694
SE2	0.901	0.744	0.897	CFI=0.940
SE3	0.886			GFI=0.901
PR1	0.853	0.727	0.912	IFI=0.941
PR2	0.854			TLI=0.925

PR3	0.804			RMR=0.082
PR4	0.898			RMSEA=0.074
PEU1	0.819			
PEU2	0.914	0.782	0.915	
PEU3	0.916			
PU1	0.876			
PU2	0.890			
PU3	0.859	0.702	0.903	
PU4	0.615			
IU1	0.835			
IU2	0.857	0.745	0.897	
IU3	0.896			

4.4 Hypothesis Testing

The TAM-based model of consumers' willingness to use online reverse auctions was proposed in this paper(Figure 2), and the purpose of the path analysis in this section is to verify whether the hypothesis in this research model can be supported.

Model path analysis results show that self-efficacy ($r=0.540$, $t=8.432$, $p<0.01$) significantly affects perceived ease of use, ($r=0.385$, $t=3.709$, $p<0.01$) significantly affects perceived usefulness, ($r=0.126$, $t=2.286$, $p=0.022$) i. e. hypotheses H_{1a}, H_1b, H1c are supported; the effect of perceived risk ($r=0.078$, $t=1.452$, $p=0.147$) on perceived ease of use was not significant and ($r=-0.064$, $t=-0.868$, $p=0.385$) on perceived usefulness was not significant, i. e. hypotheses H_{2a}, H_{2b} were not supported.; perceived ease of use ($r=0.521$, $t=4.981$, $p<0.01$) significantly influenced perceived usefulness, ($r=0.378$, $t=5.837$, $p<0.01$) significantly affects the intention to use, i. e. hypotheses H_{3a}, H_{3b} are supported. Perceived usefulness ($r=0.357$, $t=7.543$, $p<0.01$) significantly affects willingness to use, i. e. hypothesis H_4 is supported(Table 5).

Table 5 Path Coefficients and T-values

Path Relationships	Hypothesis testing		
	Path coefficient	T-value	Support or not
Perceived ease of use <--Self-efficacy	0.540**	8.432	Yes
Willingness to use <--Self-efficacy	0.126*	2.286	Yes
Perceived ease of use<---Perceived risk	0.078	1.452	No
Perceived usefulness <-- Perceived ease of use	0.521**	4.981	Yes
Perceived usefulness<--Sense of self-efficacy	0.358**	3.709	Yes
Perceived usefulness <-- Perceived risk	-0.064	-0.868	No
Willingness to use<--perceived ease of use	0.378**	5.837	Yes
Willingness to use<--perceived usefulness	0.357**	7.543	Yes
Note:* p<0.05 (T>1.97); ** p<0.01 (T>2.58); NS: Non-significant			

Synthesizing the results of the data analysis above, we summarized the results of the validation of each research hypothesis with Table 6 below.

Table 6 Summary of Findings from the Study Hypothesis Testing

No.	Research Hypothesis	Conclusion
H1a	Consumer self-efficacy is significantly and positively related to perceived NYOP usefulness	true
H1b	Consumer self-efficacy is significantly and positively correlated with perceived ease of use of NYOP	true
H1c	Consumer self-efficacy is significantly and positively related to willingness to use NYOP	true
H2a	Consumer perceived risk is negatively related to perceived usefulness of NYOP	false
H2b	Consumer perceived risk is negatively related to perceived ease of use of NYOP	false
H3a	Consumer perceived ease of use of NYOP is positively related to perceived usefulness of NYOP	true
H3b	Consumer perceived ease of use of NYOP is positively related to willingness to use NYOP	true
H4	Consumer perceived NYOP usefulness is positively related to willingness to use NYOP	true

5. Research Findings

Consumer self-efficacy has a significant positive effect on perceived ease of use, perceived usefulness, and willingness to use. Consumer willingness to make an effort positively influences both consumer perceived usefulness and ease of use, and self-efficacy positively influences willingness to use in situations where consumers have not been exposed to NYOP.

The effect of perceived risk on perceived ease

of use and perceived usefulness was not significant. For consumers, Name Your Own Price do carry certain risks such as the risk of failed offers and the risk of trading goods that do not match expectations, and consumers' risk perceptions of online reverse auctions have been confirmed in previous studies. However, the hypothesis of the negative impact of perceived risk on perceived usefulness and perceived ease of use is not valid, probably because most of the respondents do not know about NYOP and have little experience in using NYOP, and it is difficult for them to understand the risks of NYOP only through textual descriptions and presentations.

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