

Research on Willingness to Pay a Premium for Adaptive Internet Agriculture Based on SPSS Analysis

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Abstract: In the context of rural revitalization, some areas began to explore the practice of entity agriculture, Internet, and e-commerce combined with Internet adaption of agriculture mode. To explore consumers' willingness to pay a premium for this new adaptive agricultural product, this paper carries out reliability and validity test on the data based on SPSS software. It adopts a structural equation model to conduct a path check. The results show that interactivity positively affects consumers' premium payment for Internet adaptive agricultural products, and psychological ownership plays a partial mediating role. Therefore, online platforms should use visualization and big data technology to improve consumers' interaction with adaptive products.

Keywords: Adaptive internet agriculture; Interactivity; Psychological ownership; Pay a premium; SPSS analysis

1 INTRODUCTION

The mode of traditional adaptive agriculture is that consumers choose a particular field or crop to agricultural base and participate in labor or entrust producers to plant and manage according to their requirements. Adaptive agriculture mode is entertaining, a strong sense of experience, and guaranteed product quality. Hence, a significant number of consumers are willing to take part in adaptive agriculture activities [1]. In recent years, with the government's strong support under the rural revitalization strategy and the popularization of Internet technology, the adaptive internet agriculture model is considered one of China's critical models of agricultural transformation. Adaptive internet agriculture is that consumers adopt crops or livestock remotely through an e-commerce platform and check the growth status of adopted products through real-time monitoring. Panjin has successfully implemented adaptive agriculture as the breakthrough point of agricultural transformation and supply-side structural reform [2]. Adaptive agriculture combined with the Internet allows consumers to control remotely, saving time and effort. However, adaptive agriculture has some problems, such as high product prices, "three-minute enthusiasm" of consumers [3], and inadequate infrastructure [4]. Therefore, this paper investigates consumers' willingness to pay a premium for adaptive Internet products from the interactive characteristics of the adaptive Internet agricultural model.

2 LITERATURE REVIEW

2.1 Adaptive internet agricultural model

Adaptive agriculture originated in Germany as a model of tourism [5]. In recent years, based on learning from the foreign adaptive agricultural tourism model, China has tried to explore an adaptive agricultural model with Chinese characteristics, in line with China's agricultural transformation and development. As the concept of "sharing" is deeply rooted in people's hearts, the practice of the idea of "sharing" is in full swing. Combined with the Internet mobile technology and the linkage cooperation with e-commerce platforms, adaptive agriculture has changed from a single offline mode to an online mode [6]. The Internet adoption mode combines big data, artificial intelligence, VR and connects consumers with physical farms through e-commerce platforms. The terminal consumers can place orders to select their favorite crops or livestock or fruit trees through e-commerce platforms. After receiving orders from the platform, physical farmers will operate according to the requirements of consumers and upload real-time monitoring of adopted products for the adopters to watch. Internet adoption agriculture is interactive, that is, online experience mode [6]. Consumers can feed or fertilize their adopted products online and watch other adopters' comments on the real-time monitoring interface. This paper argues that interactivity will affect consumers' psychological response and willingness to pay based on consumer response.

2.2 Psychological ownership

Psychological ownership refers to the psychological state that consumers regard enterprises, brands, products, services, and other objects or part of them as their own, emphasizing customers' sense of ownership of the object [7]. Pierce found that the more people understand things, the deeper and more thoroughly they can feel them, and in this process, they can establish self-connection with things [8]. Research shows that product touching can induce consumers' psychological ownership and promote a higher evaluation of the touched product. Even the imagined touch will have the same effect as the actual touch because of the degree of control provided by the individual [9]. Ownership by imaginary contact is personal ownership. Reb and Connolly argue that there is a difference between actual and personal ownership. A study showed that only when people felt they owned something psychologically did they rate it as more attractive than when they did not own it and the actual ownership without a sense of psychological ownership did not lead to higher-value judgments in subsequent product evaluations [10]. The psychological ownership of the product will make the customers show a higher willingness to pay and purchase the designed product. Sinclair and Tinson found that psychological ownership can also be positively affected by enhancing customers' sense of control over digital products, such as editing and moving [11].

Based on previous research on psychological ownership, combined with the interactive characteristics of adaptive internet agriculture, the psychological ownership in this study is the psychological state generated by consumers through an all-around visual and interactive experience, thus a sense of psychological ownership of adopted crops, livestock or fruit trees.

3 HYPOTHESIS

3.1 Interactivity and pay a premium

Embeddedness theory holds that economic behavior is embedded in social relations [12]. Consumers' premium for adopted products is economic behavior. Moreover, the online feeding (fertilization) and real-time monitoring interaction provided by the Internet adoption platform promote consumers to establish a stable and intimate relationship with the adopted products and bring them certain satisfaction. Therefore, to maintain dignity based on this interaction, consumers will continue to adapt the product even with additional payment costs. Therefore, this paper proposes hypothesis 1.

H1: Interactivity positively affects consumers' willingness to pay a premium for adopted products.

3.2 Interactivity and psychological ownership

The online feeding (fertilization) service and real-time monitoring provided by the Internet adoption platform are interactive to a certain extent, making up for the defect that consumers on the screen cannot personally take care of and adopt the products on the farm. Studies have shown that imagined touch also has the same impact as actual touch because of the degree of control perceived by individuals [8], thus enhancing psychological ownership of products. In addition, the more people know about things, the more deeply and thoroughly they can feel them, and in this process, establish self-connection with things [9]. Consumers watching real-time monitoring while feeding or fertilizing on the screen will feel that they are taking care of products themselves. Therefore, hypothesis 2 proposes in this paper.

H2: Interactivity positively affects customers' psychological ownership of adopted products.

3.3 Psychological ownership and pay a premium

Previous studies from the perspective of endowment effect and possession psychology show that consumers show higher willingness to pay for they are afraid of losing something or want to possess something. Zhao et al. found that consumers' psychological ownership of social media platforms would make them willing to spend more time and energy and have a higher willingness to pay a premium for paid services [13]. Therefore, when consumers invest a lot of time and energy in their adopted products or out of loss aversion or possession psychology, they will enhance their willingness to pay a premium. Therefore, this paper proposes hypothesis 3 and hypothesis 4.

H3: Customers' psychological ownership of adopted products positively affects their willingness to pay a premium.

H4: Psychological ownership mediates interactivity and willingness to pay a premium.

To sum up, the theoretical model of this paper shows in Figure 1:

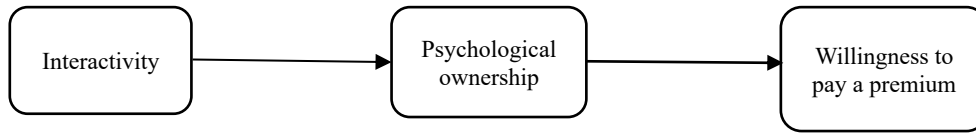


Figure 1 The Conceptual Model

4 RESEARCH METHODS AND DATA ANALYSIS

4.1 Variable measurement

Interactivity includes two items, and psychological ownership contains three items, refer to Peck [14] and Pierce [8]. Willingness to pay premium consists of two questions, referring to Zhang J (2008) [15]. The questionnaire adopted a 7-level Likert scale, and respondents rated each item as required, with one indicating that they strongly disagree and seven indicating that they strongly agree.

4.2 Reliability and validity test

SPSS was used for reliability and validity tests, as shown in Table 1. Cronbach's alpha of all variables was above 0.8, and combined reliability (CR) was above 0.7, indicating good reliability of the scale. In terms of validity test, factor loads of all items were above 0.7, indicating that the scale had high convergence validity. AVE values are all above 0.6, and their square root is greater than the absolute value of the correlation coefficient (Table 2), indicating that the discriminant validity of each variable is good.

Table1 Variable measurement items

Variable	measurement items	Factor Loading
Interactivity Cronbach's Alpha=0.897 AVE=0.606 C.R=0.753	IN1. Internet adaptive platform provides real-time monitoring.	0.711
	IN2. Internet adaptive platform has online feeding or fertilizing function.	0.841
Psychological Ownership Cronbach's Alpha=0.937 AVE=0.783 C.R=0.912	PO1. I am willing to take the time and effort to care about adopted products.	0.847
	PO2. I can feel it and imagine the product.	0.899
	PO3. For adaptive products, I feel like I own them.	0.907
Willingness to pay a premium Cronbach's Alpha=0.821 AVE=0.666 C.R=0.799	WPP1. I am willing to pay more than the regular market price for my adaptive products.	0.824
	WPP2. If the adaptive cycle has expired, I am willing to continue to adopt even if the adaptive product price increases.	0.808

Table 2 Correlation coefficients among variables

Variables	Mean	S. D	IN	PO	WPP
IN	5.47	1.31	0.778		
PO	5.39	1.82	0.677**	0.885	
WPP	5.66	1.26	0.633**	0.731**	0.816

4.3 Path check

The structural method equation model carries out path analysis. As shown in Table 3, CMIN/DF of the model =1.298<3, RMSEA=0.053<0.08, NFI=0.991, IFI=0.998, TLI=0.989, CFI=0.998, these indicators indicate that the model has good fitness. When interactivity affects the willingness to pay a premium, the standardized path coefficient value is 0.344>0, P <0.01, indicating that interactivity has a significant positive influence on the willingness to pay a premium, so hypothesis 1 is valid. When interactivity affects psychological ownership, the standardized path coefficient value is 0.663>0, P <0.01, indicating that interactivity significantly influences psychological ownership, so hypothesis 2 is valid. When psychological ownership impacts the willingness to pay a premium, the standardized path coefficient value are 0.503>0, P <0.01, indicating that psychological ownership has a significant positive impact on the willingness to pay a premium, so hypothesis 3 is valid.

Table 3 Path check

X→Y	Coef.	SE	z	p	Std. Estimate
IN→PO	0.666	0.072	9.203	0.000	0.663
PO→WPP	0.525	0.085	6.193	0.000	0.503
IN→WPP	0.361	0.085	4.232	0.000	0.344

CMIN/DF=1.298; RMSEA=0.053; CFI=0.998; NFI=0.991, IFI=0.998, TLI=0.989

4.4 Mediating effect test

The bootstrap function of SPSS was used to mediate the effect on the model, and the confidence interval was set as 95%. Table 4 shows that psychological ownership partially mediates between interactivity and willingness to pay a premium. That is, hypothesis 4 is valid.

Table 4 Mediating effect test

X→Y	Total effect	Mediator effect	Direct effect	Result
IN→PO→WPP	0.711**	0.350	0.361**	partial mediation

5 CONCLUSION

In recent years, adaptive internet agriculture has emerged as a new force and is one of China's essential modes of agricultural transformation. However, there are little researches on consumers' premium pay for Internet adaptive agriculture. Based on the interactive characteristics of its operation mode, this paper takes psychological ownership as the intermediary to explore consumers' willingness to pay a premium for adopted products. The

study found that interactivity positively affects consumers' willingness to pay a premium through empirical research, and psychological ownership plays a partial mediating role between them. Therefore, physical farms and e-commerce platforms can enhance consumers' psychological ownership of adaptive products by improving their interaction with adaptive products to improve consumers' satisfaction with adaptive products and their willingness to pay a premium. In addition, our survey shows that consumers have an average premium acceptance of 44% and a mode of 40% for adopted products, which shows that the price of adaptive internet products should not exceed 40% of the market price of their homogeneous products. This paper only studies the interactive characteristics of adopted agriculture on the Internet. In addition to this feature, the model also has traceability. Adaptive products have QR codes, and consumers can know the origin and growth status of adopted products by scanning the code. In addition, traceability and real-time monitoring can enhance consumer trust in adopted products. Therefore, future research can conduct from the perspective of consumers' perceived trust in traceability.

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