

Summer 6-30-2018

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Recommended Citation

Peng, Hong and Mi, Jun, "A Research about Consumer's Usage Intention to Green Finance Products ---- Taking the Alipay's Ant forest as the Example" (2018). *WHICEB 2018 Proceedings*. 19.

<http://aisel.aisnet.org/whiceb2018/19>

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A Research about Consumer's Usage Intention to Green Finance Products

---- Taking the Alipay's Ant forest as the Example

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¹**Abstract:** This paper taking the Alipay's ant forest as an example builds the consumer's usage intention model of green financial products from the perspective of perceived value, collecting data by the questionnaire. The model is verified by SPSS19.0. The research shows that function value, social value and emotional value have significant influence on the consumer's usage intention to green financial products. Green value and perceived cost have no significant influence on the consumer's usage intention to green financial products.

Keywords: green financial products; perceived value; usage intention; ant forest.

1. INTRODUCTION

With the increasingly serious destruction of ecological environment and the increasing consumption of resources, how to achieve sustainable development of economy and society has become an important issue faced by human society. The financial industry can effectively transform the mode of economic growth and the consumption habits of residents through the allocation of financial resources, the guidance of market investment and the consumption of residents in the process of economic and social development. Therefore, taking the financial way to improve the predicament has become a universal choice for all countries in the world. The public have put forward an important idea of the green finance in the research and practice.

In recent years, with the rapid development of Internet and the increasing awareness of citizens' environmental protection, the participants of green finance have expanded from traditional finance industries such as the banks, insurance companies to enterprises and citizens. All kinds of green financial products are also becoming richer with the expansion of the participants. In January 2017, the Green Digital Finance digital Alliance was launched by the "ant gold service" and the United Nations Environment Programme in Davos. The alliance would build a world's leading financial technology companies, searching a new way to promote global sustainable development. This has also opened the prelude to the participation of enterprises and consumers in the development of green economy. In early August 2016, the ant payment service under the Alipay platform build personal carbon account named as "ant forest" to consumers. At the end of April 2017, the ant forest had over 220 million users, contributing carbon emission reduction of 5,000 tons per day. It has planted a total of 8.45 million trees, reducing more than 2,500 tons of carbon emissions every day ^[1]. The green financial product of ant forest can attract such a huge number of users to use the product in more than half a year. The reasons behind it are worth discussing. The current researches on green finance are focused on green finance theory, the classification of the green financial products, national policy. There are little researches on green financial products from the consumer's perspective. Taking the ant forest as an example, this paper researches the consumer's usage intention based on the consumer perceived value theory to provide a useful reference for the marketing of green financial products.

2. REVIEW

2.1 Green Finance

The green finance is also known as the environmental finance and the sustainable finance, which has not yet reached a consensus on the definition. The American English Dictionary defines the green finance as dealing with the environmental

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crisis, and studying how to use diverse financial tools to protect the environment. The official's definition of green finance at home is an economic activity to support environmental improvement, coping with climate changing, resource conservation and efficient utilization. In academia, Salazar believes that green finance is a great innovation of financial industry, which can achieve a balance between the economic development and environmental protection^[2]. Labatt and White believe that green finance is a financial tool for improving the environmental quality and transferring environmental risks on the basis of market research^[3]. Li points out that green finance is a financial activity aimed at promoting the coordinated development of economy, resources and environment for credit, insurance, securities, industrial funds and other financial activities^[4]. Although different views have been proposed on the concept of green finance, its core concept does not deviate from the concept of environmental protection and sustainable development. At present, the main body of green finance has expanded from traditional finance industries such as the banks, insurance companies to enterprises and citizens with the development of practice. Referring to the research results and the actual development situation of green finance both at home and abroad, this paper thinks that the late definition of green finance in China's official department is more realistic.

The scholars' mainly researches about the green finance focus on the structure system and the impact on the sustainable development so far. Weng and Ge sum up China's green financial products based on a large number of cases and data research, including environmental protection industry index products, environmental protection and energy saving financing products, and carbon financial products. The foreign green financial products are divided into four categories: retail banks, enterprises and investment banks, asset management and insurance^[5]. Jiang sums up the green financial system, including green credit, green securities, government funds and so on, through a lot of research on the development of green finance in developed countries^[6]. Marcel has discussed the relationship between the banking industry and the sustainable development of the economy^[7]. Panayotou thinks that carbon emissions and economic growth are in a "U" shape in the long run^[8]. Li systematically studies the existing green financial activities in China, and believes that green finance is an important way to raise the sustainable development of economy. China's financial industry should establish the concept of developing green economy and support the development of green industry. The Southwestern University of Finance & Economics and the Ministry of environmental protection analyzes the relationship between green finance and economic sustainable development from the level of policy and practice, and put forward some policy recommendations to improve China's green financial system. Wang analyzes the contribution of green finance to the economic development from the aspects of green finance optimizing the macroscopic and microcosmic economy^[9].

To sum up, the scholars at home and abroad have more researches on green finance from its concept, structure and the impact on sustainable development. There are few researches on green finance and products from the perspective of consumers.

2.2 The theory of perceived value

The perceived value is considered to be the ultimate motivation to the user's behavior. It plays a decisive role in consumer's adoption, acceptance or use and purchase. The scholars don't define the perceived value in the early. Zenithal (1988) is the first scholar who proposes the customer perceived value theory from the customer perspective. She defines the customer perceived value as the customers' overall evaluation to the products or service after they weigh the benefits and payments. From the view of relations, Gronroos stresses on the effect of relationship on customer value. He argues that the trade-off between gains and losses cannot be confined to single scenario but should be extended to the value of the process of the entire relationship episode. Woodruff puts forward that customer value is the consumer's preference or evaluation when the products or service helps (impedes) them to achieve their goals under specific usage scenarios by the empirical research^[10].

The scholars have studied the composition of perceived value from different aspects. Zeithaml systematically analyzes the composition of perceived value from two aspects of gains and losses. She divided the gains into product attributes, perceived quality and other related high-level attributes, and the profits and losses included two levels which are monetary and non-monetary^[11]. Sheth divides the customer value into five elements including functional value, social value,

emotional value, cognitive value, situational value. Wang holds that the price reflects the value function of consumers to purchase goods or services but not fully reflect the cost to consumers when he studies the Sweeney's perceived value model of construction. He takes the financial industry as the research background and establishes a consumer perceived value model which is composed of functional value, perceived loss, social value and emotional value^[12]. Zhou is the first scholar who finds green value is one part of the customer perceived value when they buy green cosmetics and divides the customer perceived value into five factors which are functional value, emotional value, social value and green value and perceived sacrifice^[13]. Her finding enriches the composition of the customer perceived value.

2.3 Usage intention

The usage intention refers to the relatively permanent cognitive and emotional orientation of consumers for a product or service, that is to say the consumers' psychological activities whether they will use or purchase the products. Jillian & Geoffrey make a conclusion that emotional value, social value, functional value and cognitive value from the perspective of perceived value theory have different effects on consumption intention under different consumer behavior situations^[14]. Kim & Chan establish the consumer perceived value acceptance model (VAN) based on the technology acceptance model (TAM) and the perceived value theory proposed by predecessors^[15]. The model divides consumer perceived value into two parts: perceived benefit and perceived cost. Perceived benefit includes perceived usefulness and perceived entertainment. Perceived cost includes perceived risk and specificity. Perceived risk refers to the risk of the cost of money and the specificity refers to the non-monetary costs including the time, effort, psychology which can't be evaluated by money. Zeng finds that perceived risk has a significant negative impact on the user's willingness to use the online bank in the study of the perceived risk of users' online bank^[16]. Yu researches the consumer's willingness to buy green food on the basis of the theory of customer perceived value. His research concludes that functional value, social value and green value had a significant positive impact on consumers' purchase of green food, and emotional value and perceived cost had little effect on consumers' purchase of green food^[17].

3. HYPOTHESES AND MODEL

The independent variable of this study is the perceived value of the consumer to the green financial products, and the dependent variable is the consumer's usage intention. This paper quotes the research results from the domestic and foreign scholars and determines functional value, social value, emotional value, green value and perceived cost as the five dimensions of the customer perceived value.

3.1 Functional value

Functional value is the value to meet the needs of the consumer's functional properties. It is the key factor for users to choose and purchase products. Consumers can experience functional benefits, social benefits, personal benefits and experience gains when they buy or use some kind of products or service. Wang points out that the functional value of financial products has a positive impact on the purchase of financial products. Therefore, we believe that the functional value of ant forest has a positive impact on the consumer's usage intention.

H1: the functional value of ant forest affects the consumer's usage intention positively.

3.2 Social value

Social value refers to the social identity and social self-concept produced by consumers in the use of the product. The users will be affected by friends around their Alipaies or in real life when they use the ant forest. The ant forest has the function of collecting friend's energy and sending energy to friends which integrates the interaction way of social network and increases the connection between friends virtually. Owing to being benefit to break the barriers that users encounter in traditional interpersonal communication, this function has an important impact on attracting consumers to use ant forest. In addition, the consumers can also improve their social images by using ant forest. Therefore, this paper believes that the social value of ant forest will affect the consumer's usage intention.

H2: the social value of the ant forest has a positive effect on the consumer's usage intention.

3.3 Emotional value

Emotional value is the level of emotional identity that consumers can obtain after using (buying) products or services. They will get great psychological satisfaction and joy through their efforts to transform virtual trees into a real tree after they use ants' forests. Therefore, this paper puts forward the hypothesis.

H3: the emotional value of the ant forest positively affects the consumer's usage intention.

3.4 Green value

Green value is the ecological utility of the consumer from the product or service. Consumers collect the energy by online payments, green trips, green parcels and so on. On the one hand, it can reduce environmental pollution and carbon emissions. On the other hand, these ways can collect energy to turn virtual trees into reality trees, so as to achieve the purpose of environmental protection. Xie finds that the green value has a positive impact on the consumer premium purchase of agricultural products^[18]. Therefore, this paper believes that the green value of ant forest will affect the consumer's usage intention.

H4: the green value of ant forest has a positive impact on the consumer's usage intention.

3.5 Perceived cost

Perceived cost refers to the monetary or non-monetary costs of a consumer when he wants to obtain a product or service, such as money, time etc. Consumers need to pay money online or offline by Alipay in the process of using ant forest trees need to spend time collecting their own or their friends' energy at a particular time every day. Will these help consumers to increase their consumption and time? Yu (2012) makes a conclusion that perceived cost has a negative impact on the consumer's purchase of green products. Therefore, this paper puts forward the hypothesis.

H5: the perceived cost of the ant forest has a negative impact on the consumer's usage intention.

Based on the above hypothesis, we obtain a hypothesis model for the consumer's usage intention on the ant forest. As shown in Figure 1.

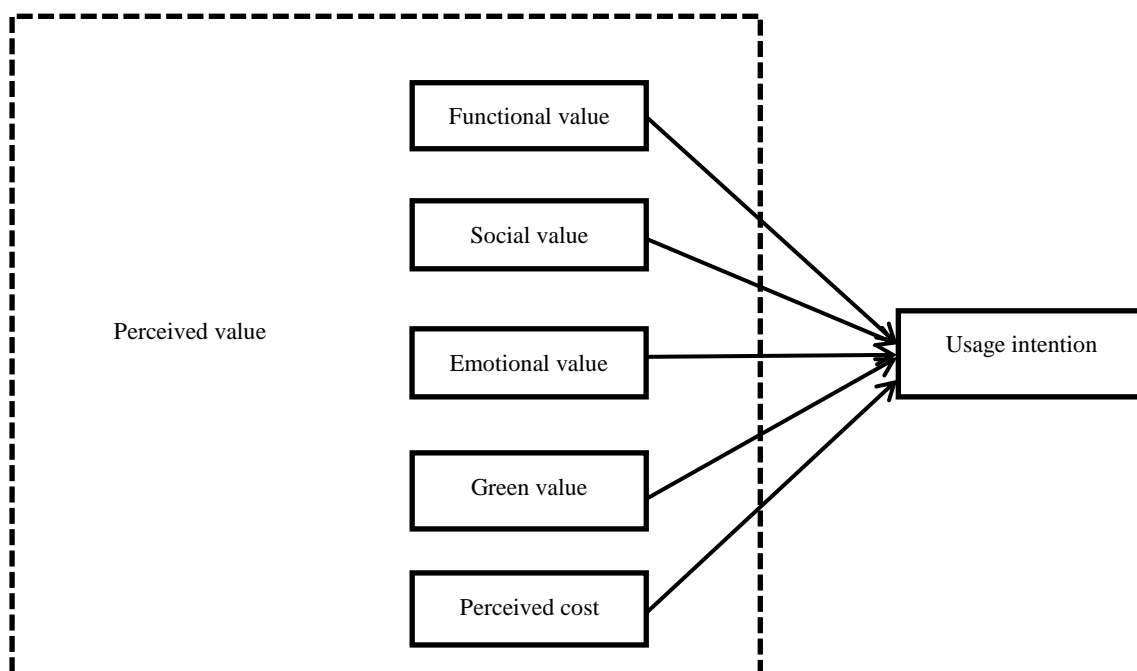


Figure 1. the research model

4. RESEARCH DESIGN

4.1 The questionnaire design and variable measurement

The measurement items of the independent variables and the dependent variables in the questionnaire are directly from the existing literature. In order to meet the present situation, the measurement items of each variable have been modified on the basis of the existing literature. The questionnaire is designed with the Likert 5 component scale. The reliability and validity of the questionnaire are tested by pre-investigation before the formal investigation. According to the results of the test, some items of the questionnaire are revised, and the final formal questionnaire is formed.

4.2 Data collection

There are 328 valid questionnaires are collected by the network. The proportion of males and females are 32.32% and 67.68% respectively in the survey and the females have a relatively high proportion. The respondents' age from 18 to 35 years old has a proportion of 98.47% and their degree is mainly undergraduate and master which occupies the proportion of 87.42%. Most of them are students(66.47%) and 20.12% of the total number of samples are employees. monthly disposable income in 1000 yuan and 1000-3000 yuan, which accounted for the total sample size of 71.65%, the main reason for this result is the sample proportion of college students is very high, and most of the students have no direct economic source, the main source of income in the family, so monthly disposable income is low. To sum up, the main features of the sample can be summarized as: the majority of women, the young, the higher education, and the less disposable income. This shows that the use of Alipay's ant forest users are mainly concentrated in the students and young enterprise staff.

According to the survey , 250 responders open the ant forest, accounting for 76.22% of the total numbers. It shows that the ant forest has a high degree of audience. Based on whether the opening of ant forest, investigators are divided into two categories, for the opening of ant in forest, the monthly electricity consumption amount, frequency of use of Alipay and ant forest energy source survey. In the sample, by the payment of Po consumption accounted for the largest amount, up to 72% yuan in 500-2000, and the main research object is students, the income level is not high correlation; weekly use of more than 1 forest ant consumers accounted for 77.6%, that consumers use ant forest frequency is relatively high; most of the three ways the forest energy comes from the payment of the next line (87.6%), green travel (72%), (67.6%) energy collection of friends. This reflects the use of ant forest to a certain extent promoted the online interaction between the development of Alipay and the consumer.

In this survey, there are 78 responders who have the Alipay but do not open the ant forest. The main reason for the users do not open the ant forest (62.82%) is that they do not comprehend it. It can be seen that the awareness of the users need to be improved although the introduction of ant forest has been recognized by most users and we need to strengthen marketing to improve the audience of the ant forest.

5. DATA ANALYSIS AND RESULTS

5.1 The reliability and validity analysis

The reliability and validity of the data are analyzed by SPSS19.0. The results show that the alpha coefficients of all variables are above 0.8, and the overall reliability is 0.902, indicating that the reliability of the research scale is perfect, and the reliability and stability of the questionnaire are reliable. This paper adopts factor analysis in KMO and Bartlett sphericity test for statistical analysis, the results show that the KMO value is 0.948. The probability of significant chi square Bartlett sphericity test statistic value of 0, less than 0.001, indicating the validity of the inventory can be further analyzed

5.2 Regression analysis

In order to verify the causal relationship between the independent variables and the dependent variable, we make a

regression analysis of the data and obtain the results as follows.

model	R	R2	The adjustment of R2	Standard estimation error
1	.792 ^a	.627	.625	.5421910
2	.826 ^b	.682	.679	.5018525
3	.831 ^c	.691	.687	.4956774

1. Predictive variable: Emotional value. 2. Predictive variables: Emotional value, functional value. 3. Predictive variables: Emotional value, functional value, social value.

Fig 2. The summary of the model

model	Non standardized coefficient		Standard coefficient	t	Sig.
	B	Standard error	Trial Edition		
1	.865	.146		5.938	.000
EV	.771	.039	.792	19.533	.000
2	.280	.164		1.702	.090
EV	.561	.050	.577	11.317	.000
FV	.358	.057	.318	6.242	.000
3	.244	.163		1.498	.135
EV	.500	.054	.514	9.201	.000
FV	.321	.058	.285	5.486	.000
SV	.122	.047	.130	2.582	.010

a. the dependent variable: usage intention

Fig 3. The coefficient

We can find that the third regression model is better than the first and second regression model from the results. From the third models, the R is 0.831 and R² is 0.691 in the third model and the third model is obviously better than the two models before from the fitting degree. Therefore, emotional value, functional value and social value have a significant positive impact on consumer's usage intention. The degree of the influence is emotional value, functional value and social value and we can verify the hypothesis 1, 2, and 3 are supported.

The T value of green value is 1.439, and the F value of the model is 0.152 which is greater than 0.05. Therefore, green value has no significant impact on the consumer's usage intention and we can draw that the hypothesis 4 is not supported. The T value of perceived cost is -1.673, and the F value of the model is 0.096 which is greater than 0.05. Therefore, perceived cost has no significant negative impact on the consumer's usage intention and we can assume that the hypothesis 5 is wrong.

6. DISCUSSION

6.1 The conclusions

This paper puts forward the model of consumer's usage intention to ant forest, and verifies the validity of the model from the view of empirical. We draw some conclusions as follows. Firstly, emotional value, functional value and social value have a significant positive impact on consumer's usage intention to ant forest. The degree of the influence is emotional value, functional value and social value. This is consistent with the influence effect of previous scholars on the emotional value,

functional value and social value of other products. Secondly, green value and perceived cost have no significant influence on consumer's usage intention to the ant forest. Green value has no significant influence on consumers' willingness to use, which is inconsistent with previous research hypotheses. The possible reason is that the lack of authenticity causes users to not fully feel the actual effect of their actions on environmental protection. The ant forest is a virtual product so that the forest users only see a virtual tree after collecting energy. In addition, owing to lack of timely and effective information feedback makes the users unable to know their actions whether making practical improvements to the environment. Another important reason is that the green value of products cannot significantly affect consumers. As a large domestic mobile payment platform, the Alipay can provide a guarantee for the safety of consumer accounts and consumers need not have too much to consider the safety cost in the use of ant forest. The energy acquisition way of ant forest is quite diverse. Consumers can not only get energy through walking, collecting friends' energy, but also getting energy through online payment. They do not need to pay more time cost and capital cost in this product, so the perceived cost has no significant impact on the consumer's willingness to use.

6.2 The significance of the research

From the level of theoretical, the articles on the study of green financial products from the consumer perspective are relatively absence. This paper studies the consumer's usage intention to green financial products from the perspective of customer perceived value theory, and expands the scope of the research on green financial products. At the same time, this paper adds green value to customer perceived value theory based on the specific research subjects and previous studies, enriching the content of customer perceived value theory.

From the level of practical, this paper studies the factors of consumers' usage intention to green financial products, which has a certain guiding significance for the financial industry to develop and spread green financial products. At present, more and more financial companies begin to develop and spread green financial products, but they don't know what factors they should consider when they develop green financial products. This paper based on the theory of customer perceived value provides directions for enterprises to focus on product's functional value, social value and emotional value when develop green financial products.

6.3 limitations and Prospects

There are some limitations although the author has made a lot of efforts. Firstly, the object of the responders in this paper is mainly about the university student so that the conclusions should be tested for other occupation groups. Therefore, the future researches can expand the range of sample selection to improve the credibility of the study conclusion. Secondly, this paper does not test the individual characteristics of the consumer, such as sex, age, degree of education and income whether have an impact on the usage intention. In the future, we can introduce control variables such as age, sex and occupation to test whether they have an impact on the usage intention to the ant forest. Thirdly, this paper limited to the scope of the study does not consider the others factors whether affect the consumer's usage intention to green financial products. Some responders indicate that the ant forest can attract them in the early stage, but they cannot produce sustained use effect during the process of the investigation. It is worth exploring in future research.

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