

A Study on the Factors Influencing the Willingness to Allocate Internet Money Market Fund Products Based on PLS-SEM Method

Lingling Zeng, Ke Liu*, Zhonghao Li

School of economics, Wuhan University of Technology, Wuhan, China

*Corresponding author: liukeyoke@163.com

Abstract. This paper combines behavioral finance, TRA Theory of Rational Behavior and TAM Technology Acceptance Theory to construct a research model of willingness to allocate money market funds in the context of the Internet, and proposes hypotheses about perceived usefulness, perceived risk, sustained trust, subjective norms, individual-level and platform-level characteristics. A questionnaire survey was conducted with customers using fund products, and finally 906 valid samples were collated and collected to test the hypotheses by PLS-SEM method and Bayesian network, while the moderating effects of external factors such as education level and income were analyzed exploratively. Overconfidence and behavioral inertia are found to significantly enhance the perceived usefulness, persistent trust, and subjective norms of investors in Internet money market fund products, and attenuate individuals' perceived risk of the products, which in turn increases product allocation intentions.

Keywords: Internet money market funds; Product allocation intention; PLS-SEM method; Perceived risk.

1. Introduction

The convenience, efficiency and contactlessness of Internet money market fund products are highlighted in the investor community, not only making many people who have not been exposed to financial management aware of it, but ordinary investors often receive different levels of information when purchasing Internet financial products. This information may come from product web pages, intermediaries pushing, others recommending, etc. [1] And when faced with the complicated market information, investors are usually in a vulnerable position. Therefore, based on the combination of consumer behavior and behavioral finance theory, this paper constructs a comprehensive model of willingness to allocate Internet money market fund products around persistent trust and perceived risk, taking money market fund products on Internet platforms as representatives, and explores the relationship between factors and the moderating effect of external variables on the model mechanism. The common characteristics of the current investment group and the role of the mechanism influence among the characteristics are studied.

2. Model design and survey sampling

2.1 Model design of fund allocation intention study

Based on the consumer behavior framework of "perceived risk - trust - willingness to act" and behavioral finance theory, this paper refines the different stages of trust based on the TRA and TAM models, and selects continuous trust as the focus of this paper. At the same time, the variables of TRA and TAM models are adjusted according to the real development of Internet money market funds, and the research model of this paper is formed. It is shown in Figure 1 below.[2]

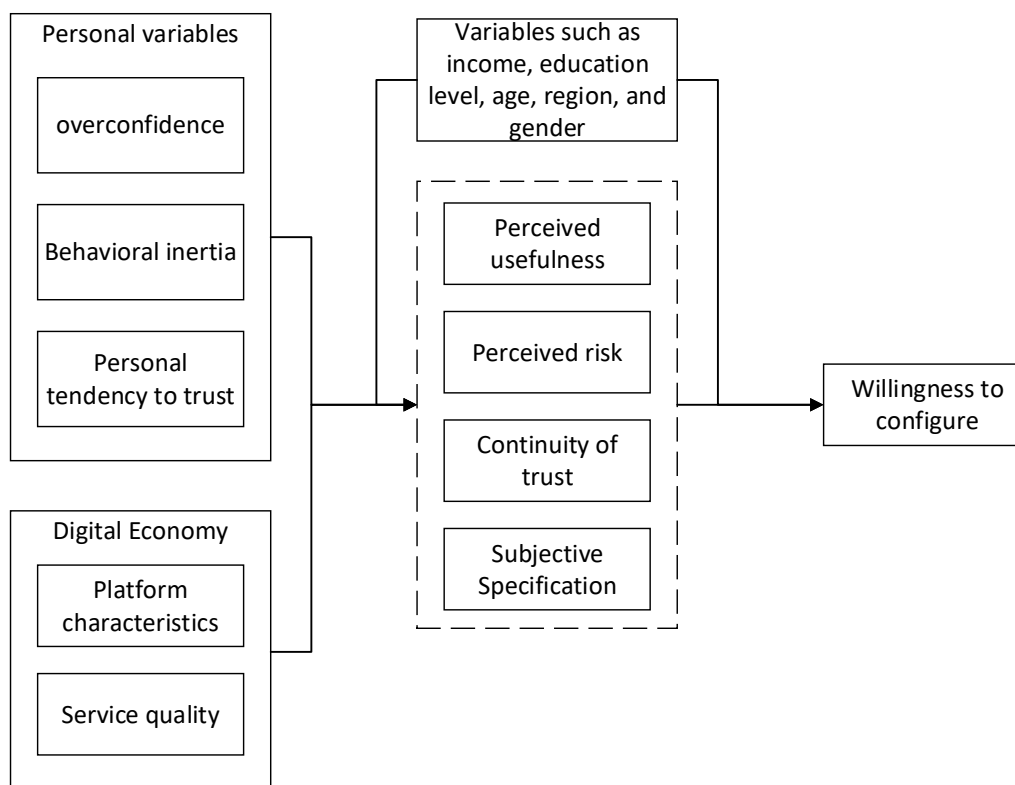


Figure 1. Research model of allocation intention of Internet money market funds

Throughout the research model, this paper argues that the allocation intention of Internet money market fund products is influenced by the variables of perceived usefulness, perceived risk, persistent trust, and subjective norms as the final variable. Meanwhile, based on previous studies, this paper argues that the four variables affecting allocation intention are influenced from the individual level and the platform level. Among them, the individual level mainly includes investor overconfidence, behavioral inertia and personal trust tendency based on behavioral finance. The platform level mainly includes platform characteristics and service quality.

2.2 Survey questionnaire design and recovery

From the perspective of the scale of Internet money market funds, Wind data shows that in 2020, the top ten "baby" money market fund products involving Internet platforms mainly include Ali Balance, WeChat Wealth Management, Jingdong Small Vault, Suning Zero Money and Du Xiaoman Balance. Therefore, this paper mainly focuses on these six types of money market fund products for the interview and survey. In terms of the content of the questionnaire, the whole questionnaire contains the previous description and three main subjects.

In order to improve the validity and reliability of the questionnaire, the preface of the questionnaire explains the research purpose of this survey, emphasizes the way of filling out the questionnaire and the time of data preservation confidentiality and deletion, and declares the data usage on the basis of the clear survey main contents. In addition, the reference knowledge can supplement the respondents' knowledge background and be used to improve the quality of the questionnaire.

For the sample size, the sample size for model analysis should be maintained at more than 10 to 15 times the number of observed variables, and a sample size below 150 will make the observed data of model parameters unsatisfactory. Combining data from similar research projects in the past, this paper chooses to complete the sample interview task of 1050 questionnaires collected within the planned time. At the end of the actual survey process, this paper summarized all the collected survey data to obtain the status of questionnaire return as shown in Table 1 below, and the valid number of samples in the formal survey was 906.

Table 1. Questionnaire survey

Survey method	Recovery sample number	Effective sample number	Recovery efficiency
Pre-survey	125	98	78.4%
Formal survey	1050	906	86.3%

2.3 Questionnaire statistics and analysis

In this part, descriptive statistical analysis was conducted on the data of 906 samples.

In terms of gender characteristics, the proportion of men and women in the samples of the platform is basically equal, and women are slightly more than men. Among the collected samples, 49.5% were male and 50.5% were female. This means that women's financial awareness is slightly stronger than men.

In terms of age distribution, the sample group of 31-35 years old is the largest, accounting for 33.5% of the total number of people. This is followed by the sample group in the age group of 36~40 years old, accounting for 24.9%. This feature is basically in line with the age structure of Internet users in the statistical report on the development of the Internet in China. From the perspective of reality base, the post-80s and post-90s are more receptive to new things, and at the same time have accumulated a certain amount of wealth, making the demand for financial management more urgent and becoming the main users of Internet finance.

In terms of monthly income, users of Internet money market funds are dominated by middle-income groups. Among the collected samples, the largest number of people with monthly income of 5,000~10,000, accounting for 45.5% of the total number. This indicates that Internet money market fund investors generally have higher income, and wealth accumulation and Internet investment behavior are closely related.

In terms of distribution regions, the number of users in the eastern and central regions is similar, accounting for 36.0% and 37.3% of the total number of users, respectively. Regions with developed economies use relatively more Internet money market fund products.

In summary, the sample data of this survey study has a certain degree of randomness in terms of demographic characteristics such as age, gender, education level, occupation, income and region. The groups covered are relatively broad, which can reflect the behavioral characteristics of different social group classes in using Internet money market fund products. In addition, sophisticated Internet money market fund investors make up the majority of respondents. This means that the data filling for the attitudinal Richter scale has research value, which makes the conclusions of the subsequent in-depth factor study more reliable and ensures the applicability and accuracy of this study.

3. Empirical Analysis of PLS-SEM for the Willingness to Configure Model

3.1 Confidence test and validity test

In this paper, Cronbach's alpha reliability coefficient method is used. According to the SPSS software, the reliability results of specific factors are shown in Table 2 below.

Firstly, the overall structural validity of the data was tested. The results of the KMO statistic test and Bartlett's sphere test yielded a KMO statistic value of 0.920, which is greater than 0.8; the p-value also meets the requirement of 5% significance level. The overall structural validity of the study data was very good.

Next, convergent validity was verified by examining the standardized factor loading (STD), combined reliability (CR), and average variance extracted (AVE) of the measure items. The reference standards were levels exceeding 0.7, 0.8, and 0.5, respectively. According to the data calculated in Table 5, all of them satisfy the test level of convergent validity, thus the research data of the model can be judged to have good convergent validity.^{[3][4]}

Finally, the differential validity needs to be examined. By standardizing and calculating the Pearson factor correlation coefficients and AVE values of the data, the comparison of the data

calculated for both is obtained in Table 2 as follows. It can be seen that in this model, the square root value of AVE of each factor is greater than the correlation coefficient. Therefore, the model has good discriminant validity.

In summary, the survey data and model of this study passed the tests of reliability and validity, and further analysis of the structural equation model can be conducted.

Table 2. Distinct validity test: correlation coefficient and AVE square root value

	PU	PR	CT	SN	OC	INB	PT	CP	QS	BI
PU	0.817									
PR	0.397	0.838								
CT	0.454	0.384	0.814							
SN	0.348	0.270	0.249	0.816						
OC	0.558	0.391	0.361	0.171	0.842					
INB	0.260	0.269	0.472	0.249	0.248	0.824				
PT	0.533	0.187	0.541	0.460	0.171	0.244	0.834			
CP	0.269	0.274	0.456	0.550	0.578	0.263	0.269	0.843		
QS	0.471	0.299	0.578	0.081	0.393	0.365	0.586	0.293	0.838	
BI	0.428	0.570	0.226	0.250	0.239	0.430	0.123	0.244	0.265	0.838

3.2 Equation Model Construction

The PLS-SEM model has a higher priority in predicting the structure of key variables and for exploratory or extensions to existing models. At the same time, the PLS-SEM approach has inherent advantages for model parameter estimation for the complexity of the sample, as demonstrated by better robustness and superior statistical power, with no requirement for normal distribution characteristics of the measured variables in the solution process. However, the PLS-SEM method is less capable of reasoning and diagnosing conclusions between variables at large ranges. Therefore, this study is complemented by adding Bayesian networks in the next section to achieve the complementarity of the two methods. Here, this study constructs a PLS-SEM structural equation model based on different question items of hypotheses and variables as shown in Figure 2 below.

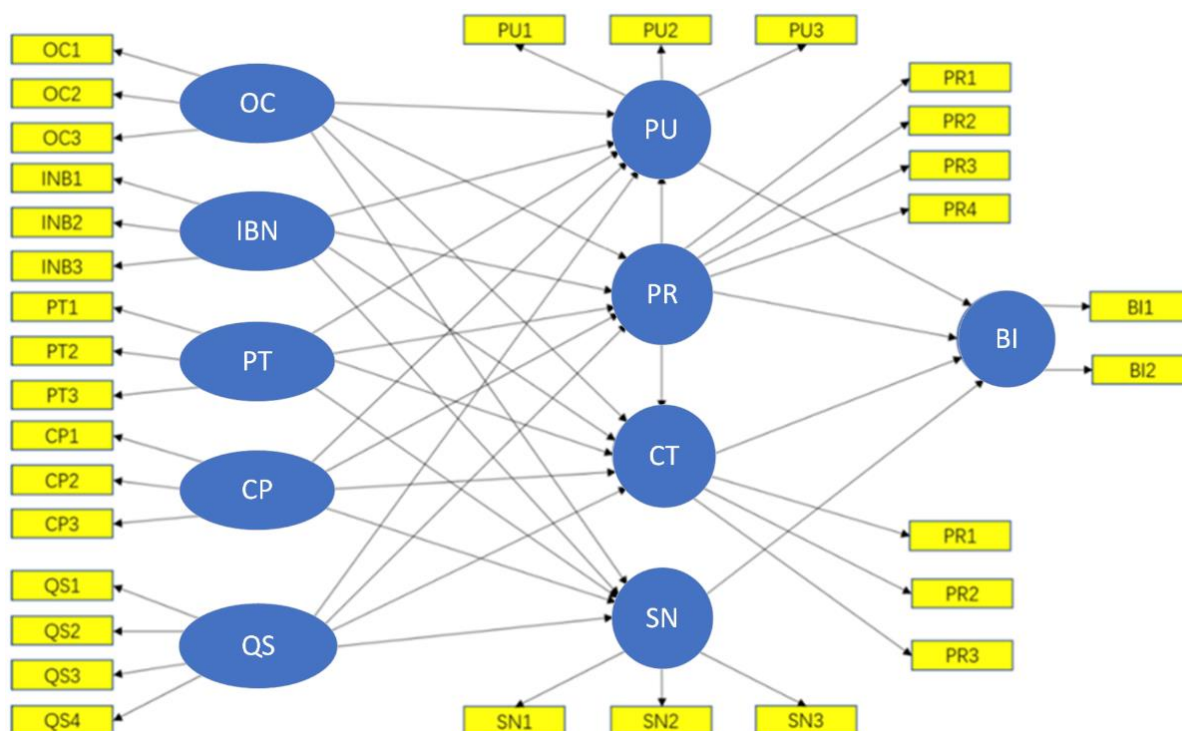


Figure 2. PLS-SEM structural equation model construction

In this paper, SmartPLS software is used to verify the main model fitness indicators. The computational results are shown in Table 3 below. According to this table, it can be seen that although the fit results of the model are not optimal, it still has a good analytical basis and can be used for the subsequent path analysis.

Table 3. Model fit index test

Fitting index	Recommended valuer	Fitted value
SRMR	<0.08	0.036
Chi ²	The smaller the better	1807.836
NFI	>0.9	0.865
RMS_theta	<0.12	0.142

3.3 Path analysis

The path coefficients of the model and their significance levels are shown in Table 4. The data in the table shows that most of the hypotheses passed the significance level test. Among them, the path hypotheses of personal trust propensity (PT) to perceived usefulness (PU) and sustained trust (CT); platform characteristics (CP) to subjective norms (SN), perceived risk (PR) and sustained trust (CT); and perceived risk (PR) to perceived usefulness (PU) lack significance. Therefore, the factors of these path hypotheses do not constitute an influential relationship with each other. In addition, the paths of influence of behavioral inertia and overconfidence confirm the significant irrational characteristics of investors' behavior in purchasing Internet money market fund products.[5]

Table 4. Path coefficients and significance levels of model assumptions

Hypothetical path	Standard path coefficient	O/STDEV	P-value	Hypothesis support or not
H1: Perceived usefulness → Willingness to configure	0.176	3.763	0.000	Yes
H2: Sustained trust → Willingness to allocate	0.126	3.675	0.000	Yes
H3a: perceived risk → willingness to configure	-0.405	7.499	0.000	yes
H3b: perceived risk → sustained trust	-0.274	4.216	0.000	yes
H4: subjective norm → willingness to configure	0.284	5.722	0.000	yes
H5a: overconfidence → perceived usefulness	0.169	3.295	0.001	yes
H5b: overconfidence → perceived risk	-0.237	4.972	0.000	yes
H5c: overconfidence → sustained trust	0.125	2.315	0.021	yes
H5d: overconfidence → subjective norm	0.254	4.959	0.000	yes
H6a: behavioral inertia → perceived usefulness	0.261	5.218	0.000	yes
H6b: behavioral inertia → perceived risk	-0.188	4.181	0.000	yes
H6c: behavioral inertia → persistent trust	0.286	5.143	0.000	yes
H6d: behavioral inertia → subjective norms	0.193	4.156	0.000	yes
H7a: personal trust tendency → perceived usefulness	0.013	0.638	0.524	No
H7b: personal trust tendency → perceived risk	-0.231	5.151	0.000	yes
H7c: personal trust tendency → persistent trust	0.004	0.077	0.939	No
H7d: personal trust propensity → subjective norm	0.185	3.605	0.000	yes
H8a: platform characteristics → perceived usefulness	0.232	4.668	0.000	Yes
H8b: platform characteristics → perceived risk	-0.083	1.677	0.094	No

H8c: platform characteristics → persistent trust	0.071	1.563	0.119	No
H8d: platform characteristics → subjective norms	0.048	0.903	0.367	No
H9a: Quality of service → perceived usefulness	0.199	3.189	0.002	Yes
H9b: Quality of service → perceived risk	-0.246	4.898	0.000	Yes
H9c: Service quality → continuous trust	0.206	3.368	0.001	Yes
H9d: Service quality → subjective specification	0.280	4.852	0.000	Yes

First, the standard path coefficient of perceived risk is -0.405, the largest in absolute value, among the factors that influence the willingness to allocate. This is followed by subjective norms with a path coefficient of 0.284. This suggests that risk and the views of the surrounding group are the main factors that investors consider when allocating to Internet money market fund products. Persistent trust also possesses some influence, although not the most important path, but its influence is equally significant.

Second, overconfidence, behavioral inertia and personal trust tendency all have negative and significant effects on perceived risk and positive effects on perceived usefulness and persistent trust. Among the platform factors, there is a positive correlation between firm size and reputation only and perceived usefulness. In contrast, service quality has a significant effect on perceived usefulness, perceived risk, ongoing trust and subjective norm. This implies that investors currently value service more. Combined with the findings of Tian, Zifang (2020) on collectivist culture, the findings on subjective norms can be explained by the fact that social network, social inclusion and emotional expression indicators strengthen the social network effect and significantly increase the subjective norm effect of residents. On the other hand, collective culture also raises the threshold of risk taken by individuals. This makes the overconfidence and behavioral inertia generated based on the group negatively affect the perceived risk.[6]

Finally, perceived risk has a significant negative effect on persistent trust, and it can also be seen that the findings of persistent trust and overall trust are consistent in this regard.

4. Conclusion

In this paper, we found that groups that are not sensitive to the perception of investment behavior are more vulnerable to irrational factors. Meanwhile, overconfidence, behavioral inertia and personal trust tendency have a stronger degree of influence on subjective norms than other factors. That is, individual investors' illusion of control over information, path dependence of previous investment experiences and susceptibility to external information all reinforce the herding effect of the investment population. Most investors will consider the size and social influence of the platform when purchasing fund products. Perceived risk is an antecedent of sustained trust and is negatively correlated with allocation intentions, implying that the risk factor of allocation intentions for Internet money market fund products is valued by investors.

References

- [1] Gefen D, Heart T H. On the need to include national culture as a central issue in e-commerce trust beliefs [J]. *Journal of Global Information Management (JGIM)*. 2006, 14 (4): 1 - 30.
- [2] Pavlou P A. Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model [J]. *International journal of electronic commerce*, 2003, 7 (3): 101 - 134.
- [3] He F. Decision factors for the adoption of e-finance and other e-commerce activities [M]. Southern Illinois University at Carbondale, 2009.

- [4] Gervais S, Heaton J B, Odean T. The positive role of overconfidence and optimism in investment policy [J]. The Wharton, 2002.
- [5] Madrian B C, Shea D F. The power of suggestion: Inertia in 401 (k) participation and savings behavior [J]. The Quarterly journal of economics, 2001, 116 (4): 1149 - 1187.
- [6] Russell J A. Core affect and the psychological construction of emotion [J]. Psychological Review, 2003, 110 (1), 145 - 172.