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A Study on the Influence of Personality Factors on Intention to Use of Robo-Advisor

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Abstract: Recently, in accordance with the fourth industrial revolution and emerging Fin-Tech environment (Financial+Technology, big data, IT convergence, algorithms, learning machine, etc.). Computer asset management techniques using statistical analysis techniques have greatly developed. In order to obtain more advanced asset management services, this study investigate the characteristics of the Robot-advisor and the characteristics of the individual which influence the intention of the individual to use the Robot-advisor service. investigate the technical characteristics of robo-adviser through researching data on the Robo-adviser, develop a research model for technology acceptance theory and establish a hypothesis. The study model is based on the Technology Acceptance Model (TAM). The independent variables were selecting cost, reliability, convenience as the characteristics of the Robot-advisor, selecting personal innovation, self-efficacy and social impact as the characteristics of the individual, selecting the use of easy and usefulness as characteristic variables, using experience and prior knowledge as controlling variables, analyzing the effect on intention to use. The study result show that convenience, self-efficacy, social impacts affect the ease of use and that all variables and availability of service characteristics and personal characteristics affect usability. And use of easy and usability affected the intent to use the Robo-advisor. The results of using experience to controlling variables were not significantly different due to short using duration of domestic service, low use experience and low respondents. This study analyze that investors in the early stages of the Robo-advisor service use the Robo-advisor service regardless of time and place and use to easy the technical service and high efficiency and it is important to provide safe and reliable the Robo-advisor services.

Key words: Robo-advisor, technology acceptance model, service specific variable, personal specific variable, usability, regardless

INTRODUCTION

Until now, the operational portion of each individual's investment assets has generally been determined by the fund manager's selection of portfolios how to select the stocks and to allocate the assets by human judgment. However, in recent years, Robo-advisor technology which combines technologies such as big data, machine learning and algorithms using finance technology (FinTech) has emerged and it is worth noting that computers manage assets instead of human judgment as a compound of robot and advisor, Robo-advisor technology is an automated asset management service that advises robots to manage and manage personalized assets.

It is expected that the Robo-advisor in the US will be able to contribute to the popularization of wealth management services in Korea as it is activated by the advantages such as convenience and low cost after the financial crisis. The needs for asset management services are expanding both domestically and internationally. Above all while the average life expectancy is getting longer, the public pension for old age is not a perfect guaranteed income source, so, demand for services such as asset management service is gradually being increased. In Korea, data and analytics, quarterbacks, Automated Investment Management (AIM), December and Company, Weberple and many other companies are providing Robo-advisor services.

In this study, we first examine the characteristics of Robo-advisor and analyze whether the user who wants to use Robo-advisor is influenced by the characteristics of Robo-advisor and finally uses it and also tried to analyze how each user using Robo-advisor influences on intention to use according to personal characteristics.

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Literature review

Overview of Robo-advisor: The Robo-advisor service selects questions such as age, income, investment orientation and investment objectives by asking questions to identify each customer's investment objectives and propensity. Through these questions, it serves customers in a way that suggests a recommended portfolio to customers. Though Robo-advisor is based on Information Technology (IT) technology in the early stage of the market and has been focused on simple advisory services to select stocks or provide portfolio composition information, since then it has evolved into a service for entrusting investment to Robo-advisor with placing orders on behalf of people.

According to the study by Youngmi (2014), Robo-advisor service can be classified into three types-operational type, consultative type and hybrid type according to each business model. Operational model provides optimal asset allocation through algorithm-based software, direct management and re-balancing of customer assets and optimal taxation strategies. The consultative model provides only the customer portfolio monitoring service through the algorithm-based software and the hybrid model uses the Robo-advisor service as a means to communicate with the customer while conducting consulting and management tasks based on the judgment of the real investment advisor.

Also, Robo-advisor proceeds through the asset management process as follows. In the first stage, the current market situation is judged and investment assets such as stocks and bonds are set according to the investment tendency of each customer. In the second stage, the appropriate Exchange Traded Funds (ETF) are selected for each asset established. Here, ETF screening is selected through filtering such as leverage, exclusion of inverse, securing of liquidity and maintenance limit with few tracking errors. In the third stage the appropriate portfolio variability is set by classifying each customer's propensity as a risk factor. Based on this, this study applies the modern portfolio theory to implement asset allocation in four stages. Finally, in the 5th stage, results are analyzed through monitoring and re-balancing to aim increase of yield rate.

Characteristics of Robo-advisor: Robo-advisor is characterized by the fact that most services are automated by computer without human consultation. There are already technologies in the financial market that provides services through systems or programs, rather than by people providing consulting services. Typical examples are system trading and algorithmic trading. It is characterized by analyzing the price, transaction volume, technical indicators, etc. of the assets using a computer and performing program trading through a computer, eliminating arbitrary judgments and prejudices of people and consistently trading by using certain trading principles. Robo-advisor and system trading have some similarities in that each investor decides whether or not to buy or sell if the investor enters certain conditions into the program. However, Robo-advisor is different in terms of achieving goals and algorithms. Robo-advisor is not completed with a simple trading but it provides various strategies to optimize global asset allocation and investment strategy for each investor from a long-term perspective. By choosing the optimal algorithm according to the investor's tendency, it can provide asset management service more organically than system trading through big data analysis and machine learning considering market change.

Robo-advisor has several advantages because it can perform these service and asset allocation strategies on-line or on smartphones, rather than face-to-face. First, compared with traditional asset management services, Robo-advisor service can reduce the related expenses such as personnel expenses and commissions through automation of services and asset management centered on passive funds, resulting in availability for an average service cost of 0.5%. Second, profitability is an important factor in asset management but it has a lot of correlation with risks. In this study, rather than questions about direct yield rate in reference to previous researches, we intent to examine customer's expectation for profitability by including it into reliability variables with survey on the reliability of information provided by Robo-advisor service, the stability of information, the transparency of information and the reliability of existing asset management services.

In asset management, profitability comes from the right information and the trust in Robo-advisor information means trust in profitability. Since, Robo-advisor service is provided by robots, it is possible to design more reliable products because it is rational and clearer than humans had much concern about how much more efficiently people would make profits than composing portfolios with their direct asset management but recently many Robo-advisor services have gained credibility through the government's test bed phase and according to Sangmi (2016), compared with the returns between robot funds and human funds this year, the returns of robot funds are higher than those of human funds at certain intervals and it has shown that Robo-advisor services can be trusted by showing stable returns compared to human funds even in the economic crisis situation like the Brexit. Third, since, robo-advisor service is provided in real time through non-facing channel such as internet or mobile, customer can use

advisory service quickly regardless of time and place. In traditional asset management services, Robo-advisor provided customized services based on the customer's situation through face-to-face interviews. However, after surveying the customer's tendency through the questionnaire, Robo-advisor can provide question/answer service via. online. In addition, due to the low investment limit, the asset management service which had been focused on high-value assets has been extended to the general public, resulting in a very good accessibility to Robo-advisor service.

This study analyzed the characteristics of Robo-advisor service and tried to investigate the effect of these features on users who want to use Robo-advisor service by dividing them into cost, reliability and convenience.

Advanced researches on technology acceptance: Cheolwoo (2012) conducted an empirical study on the influence of personal characteristics and system characteristics on the acceptance of technology innovation products. They have developed a research model for empirical analysis focusing on TAM Models and established hypotheses about system characteristics, utilization characteristics, personal characteristics and acceptance, respectively and use behavior of cloud computing.

In order to derive the factors affecting on the intention to use SmartWatch in the empirical study on the effect of personal and device characteristics on the intention to use smart watch, Jungwoo *et al.* (2014) conducted a research by adding variables of instrumental characteristics and personal characteristics. Functionality, aesthetics and wearability were used for the instrumental variables and the social image, innovation and costs were adopted for the individual characteristics. This suggests implications about some aspects of smart watch operator's emphasis on product design and production.

Pilgoo *et al.* (2008) used Technology Acceptance Model (TAM) in a study about acceptance impact factors of online banking service to select variables of the viewpoints for online banking service, social impact and user (usefulness, ease and innovative characteristics). They used online banking service type as a controlling variable to compare mobile service in introduction and internet banking service in maturity. According to the results of the study, all variables of ease and usefulness, innovative characteristics, social impact, cost and service quality have a positive effect on the acceptance of online banking service and cost and social impact are different in influence between mobile banking and internet banking service.

Donggyu (2010) in the study of the effect of the quality factors of the home training system on the customer loyalty, set a research model composed of the quality factor (design, information and security quality) of the Home Trading System (HTS) reflecting the customer characteristics based on the Technology Acceptance Model (TAM), the relation between customer satisfaction and loyalty and empirically conducted the research.

Junghoon *et al.* (2016) verified in a study about influence that personal behavioral characteristics weigh on purchase intention based on the Technology Acceptance Model (TAM), what impact personal behavioral characteristics, called user experience, weighs on perceived usefulness as well as work performance expectation, user innovation, trade cost recognition, social impact on perceived usefulness. Also they examined how the perceived ease of use and perceived usefulness which are important technology acceptance factors in the Technology Acceptance Model (TAM), affect the intention to purchase mobile applications.

Alshehri *et al.* (2012) developed a research model and conducted empirical studies using the UTAUT Model in the study of website quality factors in adopting e-Government services. As a result of analyzing the relationship between e-Government service use intention by making performance expectation, effort expectation, social impact, promoting condition and website quality as independent variables, all of them, except social impact, showed significant influence.

Tai and Ku (2013) designed a research model by adding benefit-risk theory based on the UTAUT Model in a study of intention to use mobile stock trading. Three positive factors (performance expectation, effort expectation, social impact) and three negative factors (security risk, economic risk and functional risk) were found to have a significant effect on behavioral intentions. they also conducted controlling effect analysis for gender difference and age difference.

Based on the preceding studies, this study is going to divide the characteristics of the Robo-advisor service are into three categories: cost, reliability and convenience and to investigate the effect of personal characteristics of users who want to use Robo-advisor service on the intention of using Robo-advisor service by dividing them into three types of personal innovativeness, self-efficacy and social impact.

MATERIALS AND METHODS

Research model and hypothesis setting

Research model: This study set independent variables according to the characteristics of Robo-advisor and the

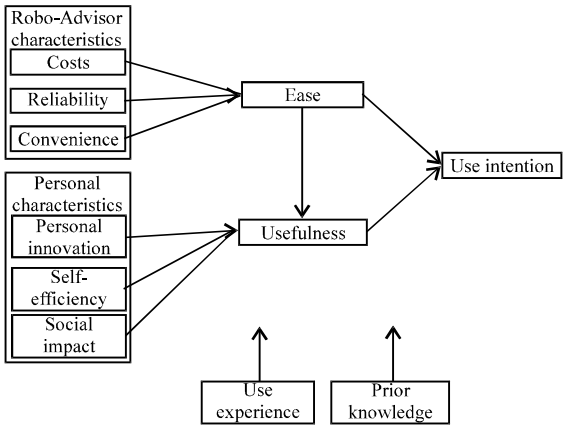

Fig. 1: Research model

individual characteristics of users. The characteristics of Robo-advisor were classified into three categories: cost efficiency, reliability and convenience and individual characteristics were also classified into three categories: individual innovation, self-efficacy and social influence. Also, this study intended to analyze the effect of using the Technology Acceptance Model (TAM) on the intention to use the Robo-advisor service by setting the perceived ease and perceived usefulness of the parameters in addition to see if there is a moderating effect on the use of Robo-advisor services according to the experience of each individual Robo-advisor, indirect experience and prior knowledge level use experience and prior knowledge factor were set as control variables and the research model was set up as shown in the following Fig. 1.

Hypothesis setting; Service and personal characteristics variables:

- H_1: costs will have a positive effect (+) on perceived ease
- H_2: costs will have a positive effect (+) on perceived usefulness
- H_3: reliability will have a positive effect (+) on perceived ease
- H_4: reliability will have a positive effect (+) on perceived usefulness
- H_5: convenience will have a positive effect (+) on perceived ease
- H_6: convenience will have a positive effect (+) on perceived usefulness
- H_7: personal innovation will have a positive effect (+) on perceived ease
- H_8: personal innovation will have a positive effect (+) on perceived usefulness
- H_9: self-efficiency will have a positive effect (+) on perceived ease
- H_{10}: self-efficiency will have a positive effect (+) on perceived usefulnes
- H_{11}: social impact will have a positive effect (+) on perceived ease
- H_{12}: social impact will have a positive effect (+) on perceived usefulness

Hypothesis setting; Technical acceptance model characteristic variable:

- H_{13}: perceived ease will have a positive effect (+) on perceived usefulness
- H_{14}: perceived ease will have a positive effect (+) on intention to use
- H_{15}: perceived usefulness will have a positive effect (+) on intention to use

Hypothesis setting; Controlling variables: By analyzing the differences between groups with and without experience, the difference between groups with low and high levels of prior knowledge can be used to determine which factors are more influential among groups.

- H_{16}: the use experience will control the relationship of the factors that influence on the intention to use
- H_{17}: the prior knowledge will control the relationship of the factors that influence on the intention to use

RESULTS AND DISCUSSION

Empirical analysis: Characteristics of the sample-Currently, Robo-advisor service is in the early stage of domestic introduction, commercialized service is very insignificant and each company's service is verified through Financial Services Commission. Therefore, the survey was conducted over the total of 330 males and females of institutional investor fund managers, corporation fund managers, FinTech employees and officers of financial companies, targeting customers of securities company branches having insufficient interest in the service or knowledge about general public.

Exploratory factor analysis: SPSS 18 was used for exploratory factor analysis and the data analysis were determined considering the criteria of more than 1.0 for eigenvalues of over 0.60 load in each factor, items of over 0.5 communality. In this exploratory factor analysis, questionnaire reliability 4, self-efficacy 5 and ease 1 and 2 items were removed as they do not tie together.

In order to check the reliability of the measurement items used in this study, the Cronbach-α coefficient was

Table 1: Cronbach's alpha

Usefulness	Social Impact	Prior knowledge	Innovation	Convenience	Cost	Reliability	Efficacy	Use Intention	Ease
0.941	0.916	0.91	0.933	0.914	0.886	0.869	0.9	0.945	0.842

Table 2: Model fit

χ^2 (p)	χ^2/df	RMSEA	GFI	AGFI	NFI	CFI
p≤0.05~0.1	1.0≤x²/df≤3.0	≤0.05~0.08	≥0.8~0.9	≥0.8~0.9	≥0.8~0.9	≥0.8~0.9
1084.895(p=0.000)	2.103	0.058	0.84	0.805	0.898	0.943

Table 3: Results of confirmatory factor analysis

Variables	Social impact	Cost	Self-efficacy	Convenience	Ease	Use intention	Usefulness	Reliability	Personalinnovation
CR	0.926	0.896	0.804	0.842	0.858	0.938	0.943	0.852	0.933
AVE	0.757	0.636	0.577	0.640	0.672	0.790	0.805	0.592	0.737

Table 4: Results of confirmatory factor analysis

Variables	Social impact	Cost	Self-efficacy	Convenience	Ease	Use intention	Usefulness	Reliability	Personal innovation
Social impact	0.870								
Cost	0.496	0.798							
Self-efficacy	0.339	0.423	0.760						
Convenience	0.492	0.575	0.504	0.800					
Ease	0.440	0.437	0.589	0.729	0.820				
Use intention	0.670	0.493	0.558	0.571	0.655	0.889			
Usefulness	0.583	0.546	0.534	0.671	0.702	0.806	0.897		
Reliability	0.609	0.590	0.326	0.619	0.515	0.660	0.694	0.769	
Personalinnovation	0.208	0.205	0.625	0.156	0.284	0.380	0.264	0.174	0.858

checked by exploratory factor analysis. Cronbach alpha is used as an index to measure the degree of internal consistency of a measurement item and is usually a suitable method for reliability verification because it mostly produces conservative figures.

As a result of the analysis, Cronbach's alpha coefficient of the measured items was 0.7 or more securing reliability.

Confirmatory factor analysis: To confirm the validity of the variables used in the research model, discrimination validity, convergent validity and conceptual validity were verified through confirmatory factor analysis.

The discriminant validity means that there is no similarity or overlap between the concepts composed of two or more latent variables and the convergent validity means that the latent variable explanatory power validity of the observational variables constituting the variables. Concept validity is a validation test that confirms if the observational variables that make up the variables in the confirmatory factor analysis are created with proper definitions and concepts (Anderson *et al*., 1988). The conceptual validity is judged to be valid if the standardized coefficient value is 0.5 or more, the convergent validity is at least 0.6 of concept reliability, the Variance Extraction index (AVE) is 0.5 or more and the discrimination validity is greater than the square of the correlation coefficient in the value of variance extraction index.

Also the suitability index of the study model was χ^2 p = 1084.895 p = 0.000, χ^2/df = 2.103, RMSEA = 0.058, GFI = 0.84, AGFI = 0.805, PGFI = 0.688, NFI = 0.898, NNFI = 0.935, CFI = 0.943, PNFI = 0.779 and PCFI = 0.818. With all items being satisfactory within the threshold criterion the overall research model was considered appropriate.

The results showed that the AVE value was greater than the latent variable and the correlation coefficient between the other variables, so, the discrimination validity of measurement tools used in this study was secured (Table 1-4).

Hypothesis verification: As a result of the hypothesis test, the three hypotheses-cost>ease, reliability>ease, personal innovation >ease were rejected and the remaining hypotheses were adopted.

Also, this study conducted a control variable analysis to see the difference of Robo-advisor service acceptance according to prior knowledge. Multiple-Group Structural Equation Modeling (MSEM) was also conducted to see the difference between the two groups of high prior knowledge and low prior knowledge.

In the multi-group analysis, χ^2 of the non-constraint model was 1482.484 and χ^2 of the constraint model appeared as 1560.749. The results of the difference analysis of χ^2 are as follows: χ^2 = 78.265, p = 0 with P value being less than 0.05 which is statistically significant (Table 5-7).

Table 5: Results of hypothesis verification

Hypothesis	Estimate	SE	CR	p-value	Label
Ease←Cost	0.051	0.048	1.073	0.283	Rejected
Ease←Reliability	0.08	0.069	1.16	0.246	Rejected
Ease←Convenience	0.368	0.066	5.561	***	Adopted
Ease←Personal innovation	-0.006	0.052	-0.106	0.916	Rejected
Ease←Self-efficacy	0.269	0.076	3.543	***	Adopted
Ease←Social impact	0.153	0.045	1.19	0.036	Adopted
Usefulness←Cost	0.149	0.041	1.953	0.012	Adopted
Usefulness←Reliability	0.363	0.074	4.923	***	Adopted
Usefulness←Convenience	0.178	0.065	3.304	***	Adopted
Usefulness←Personal innovation	0.125	0.057	02.537	0.018	Adopted
Usefulness←Self-efficacy	0.184	0.081	02.274	0.023	Adopted
Usefulness←Social impact	0.16	0.047	03.41	***	Adopted
Usefulness←Ease	0.364	0.089	04.094	***	Adopted
Use intention←Ease	0.243	0.081	02.993	0.003	Adopted
Use intention←Usefulness	0.82	0.07	11.706	***	Adopted

**significant values

Table 6: Result of multiple cluster analysis

Division	Non-constrained model	Constrained model (structural weighted model)
χ^2	1482.484	1560.749
χ^2 difference	78.265	
χ^2 P-value of difference	0	

Table 7: Results of multi group analysis

	Low prior knowledge group			High prior knowledge group		
Result variables/Cause variables	CR	p-values	Label	CR	p-values	Label
Ease←Cost	0.75	0.453	Rejected	1.653	0.098	Adopted
Ease←Reliability	0.039	0.969	Rejected	0.475	0.634	Rejected
Ease←Convenience	4.293	***	Adopted	3.799	***	Adopted
Ease←Personal innovation	-0.772	0.44	Rejected	-0.429	0.668	Rejected
Ease←Self-efficacy	2.203	0.028	Adopted	2.275	0.023	Adopted
Ease←Social impact	0.757	0.149	Rejected	2.244	0.025	Adopted
Usefulness←Cost	1.283	0.199	Rejected	2.067	0.039	Adopted
Usefulness←Reliability	2.841	0.004	Adopted	2.481	0.013	Adopted
Usefulness←Convenience	0.257	0.197	Rejected	3.889	***	Adopted
Usefulness←Personal innovation	1.598	0.081	Adopted	1.919	0.055	Adopted
Usefulness←Self-efficacy	0.624	0.233	Rejected	2.803	0.005	Adopted
Usefulness←Social impact	2.509	0.012	Adopted	3.368	***	Adopted
Usefulness←Ease	2.768	0.006	Adopted	6.617	***	Adopted
Use intention←Ease	0.298	0.066	Adopted	2.002	0.045	Adopted
Use intention←Usefulness	10.149	***	Adopted	9.456	***	Adopted

**significant values

CONCLUSION

This study conducted an empirical research on the factors that influence on the intention to use Robo-advisor. The research model was designed based on previous studies related to acceptance of new Technology Based on TAM (TAM) after grasping the characteristics of Robo-advisor. Data were gathered by questionnaire method and each hypothesis of the research model was verified and the following conclusions were drawn based on the results.

First, only the convenience is adopted in the hypothesis that service characteristics (cost, reliability, convenience) affect on the ease of use. Cost and reliability were rejected. As noted earlier, according to Davis (1989), ease means the degree that it is a degree of awareness that users can easily apply and acquire new information technology or services without exerting effort.

Until now, the management of each individual's investment assets has been able to allocate by visiting the financial company, understanding the investment propensity and opening the account and receiving advice from PBs. They had to spent a lot of time and go through uncomfortable procedures.

In this study, the greatest influence on the intention of investors to use the Robo-advisor service that is in the early stage of domestic service is empirically proven that the convenience of the service means that the service can be used immediately, whenever needed without any time and place and to use various information conveniently. The hypothesis that cost and reliability will affect ease is dismissed which can be interpreted as the fact that the cost is not economical or the service is trustworthy.

Therefore, it implies that many financial companies preparing for Robo-advisor service should develop convenience with emphasis on convenience, so that,

various information can be conveniently used anytime and anywhere rather than cost and reliability at the beginning of service.

Second, the hypothesis that individual characteristics (Personal innovation, self-efficacy, social impact) affects on ease was adopted except for personal innovation. Unlike other information technology devices, the Robo-advisor service is a service that requires long-term management of a relatively large number of assets rather than low-priced services that are used as curiosity or hobbies, so, it is analyzed that they do not think it as ease as there is personal innovation. The subjects of the study were analyzed to think that self-efficacy who felt that they could easily use it without learning when they see others use, the social impact that their position will be raised as the evaluation of the service is good and widely known to used by people around them will give influence on ease.

However, personal innovation that they try to use or experience new technologies or products has been rejected. Unlike other information technology devices, the Robo-advisor service is a service that requires long-term management of a relatively large number of assets rather than low-priced services that are used as curiosity or hobbies, so, it is analyzed that they do not think it as ease as there is personal innovation.

Third, the hypothesis that service characteristics and individual characteristics influence on usability was adopted. In service characteristics, they are cost, reliability, convenience and in personal characteristics, they are personal innovation, self-efficacy and social impact. According to Davis (1989), Usability means the degree to which a particular product and technology or service is perceived to enhance the user's task, that is the degree that accepting new technologies and services is perceived to be better than living without accepting them. The cost and reliability and personal innovation of individual characteristics that were rejected in the hypothesis that it affects the above ease of use were adopted.

It is that cost, reliability and personal innovation variables do not affect on the ease but on the usability.

It is analyzed that it is useful if it is inexpensive, more economical than existing asset management services, worth the cost of payment and if the information provided is error-free and more reliable than information on existing asset management services, they think it as useful, though not considered easy.

Fourth, all of the hypotheses that the technology acceptance model characteristic variables (perceived ease of use, perceived usefulness) would affect on the use intention were all adopted. This means that it is helpful to understand the ease of use and get the desired result easily, that is the ease of use and service and to help the asset management and efficiency and perceived usefulness affects on intent to use. The hypothesis that perceived ease of use affects on perceived usefulness was also adopted. This implies that it is important for financial companies to improve the efficiency of asset management such as making use of Robo-advisor services easy and convenient and widening the scope of asset management, so that, they can achieve their operational goals effectively.

Fifth, the hypothesis that the use experience will control the relationship of the factors influencing on intention to use in the controlling variables (use experience, prior knowledge) was rejected. In the early stage of introducing the Robo-advisor service in our country with small number of experienced users as well as of respondents, the meaning of the analysis could be insignificant. The analysis of indirect experienced people was also the same. However, the hypothesis that prior knowledge will control the relationship of factors affecting intention to use was statistically significant and adopted. The items (cost→ease), (social effect→ease), (cost→usability), (convenience→usability), (self-efficacy→usability) which were rejected in the low prior knowledge group were adopted in a group with much prior knowledge.

We can see that for those with prior knowledge of the Robo-advisor service, the cost or social impact of a particular service that is the degree of how much people around them use and perceive the service also affects on ease.

IMPLICATIONS

This study conducted an empirical study on the major factors affecting on the intention to use Robo-advisor which is still lack in academic research as a study of services that are not well established in the market. Therefore, there are some limitations and the contents are as follows.

First, Robo-advisor service which is the subject of this study, completed the government official test bed in May 2017 and 28 services have passed the examination. Therefore, as the experience of the existing users is insignificant, this study conducted an empirical study about use intention, targeting some users experienced with the use and potential users. It is believed that more practical and reliable analysis will be possible if the service is spread and the intention to use is examined at the same level of experienced and inexperienced users. For example, one of the greatest features of Robo-advisor is

low cost but it is difficult to find any significant implications because there are not many experienced users.

Second, if additional studies are to be conducted in the future, it is necessary to study additional variables such as system stability and security in service characteristics variables. Also in the satisfying condition of government's test bed there are items about system establishment for preventing against hacking and disasters. For investors, it seems to be an important criterion for using future services or choosing a financial company.

Third, the size of the investment was not investigated in the demographic items of the questionnaire. It is because of the tendency of questionnaire respondents who are burdened to reveal the income scale and it seems that it is necessary to carry out the investigation by varying the customers according to the investment size in connection with financial companies from the early stage of research. If, we conduct the empirical study with the investment size as a controlling variable, it is considered that we can grasp the intention to use by investment scale and the financial companies will be able to establish the marketing strategy accordingly.

Based on the above limitations, it is expected that more advanced follow-up studies will be actively carried out and Robo-advisor service will be activated, so that, anyone can easily manage their assets.

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