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THE INFLUENCE OF PERCEIVED RISK AND CONSUMER INNOVATIVENESS ON INTENTION TO USE OF INTERNET OF THINGS SERVICE

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ABSTRACT

The current study is focused on consumer response for IoT (the Internet of Things) service. In particular, it explored consumer response which is influenced by the intention to use based on the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT has been generally introduced as model and theory of adoption of new technology instead of Technology Acceptance Model (TAM). It is used as an exploration research for consumer's response of IoT service. Even though technology has improved and rapidly changed, if it doesn't understand how to adjust or work well from the point of view of consumer, the technology won't be necessary for consumers. The results of 147 participants show that moderating effect of consumer innovativeness is influenced on attitude toward IoT service and intention to use. So, the result of the study indicated the point of view consumer's response such as perceived risk and consumer innovativeness different from previous research in the basis of UTAUT.

Keywords: *IoT, UTAUT, Perceived risk, Consumer innovativeness, Intention to use*

1. INTRODUCTION

According to Gartner report, the Internet of things (IoT) is nearly 20.8 billion devices by 2020 [1]. IoT means the process and connected technique as inter-networking vehicles based on the "connected devices" and "smart device" [2].

Thus, the results of research have implications on the marketing of IoT service. It should be considered that active promote will be useful to IoT service on the point of view of the consumer. IoT has become a major trend in the 4th revolution era as well as increasing the number of devices. The technology acceptance of IoT will be examined from the point of view of behavioral intention and use behavior through integrated UTAUT model based on 8 models including TRA (theory of reasoned action) and so on.

Even though the marketer and consumer have interest on IoT service nowadays, it hasn't yet been generalized as a service in the real market. In other words, it hasn't been generally used as a service in general. It is just presented the parts of IoT service as a few types in the consumer market. Also, they don't know or can't explain what features they need from IoT service [3].

So, it needs to investigate the effect of service on the basis of consumer's response or trait.

The purpose of this study is to investigate the consumer reaction to IoT in terms of behavioral intention and use behavior based on the extended UTAUT model. The current study was conducted to investigate consumer's attitude and response toward IoT service through personal traits such as perceived risk and consumer innovativeness.

Particularly, perceived risk and consumer innovativeness will influence consumer's intention to use IoT. In addition, it will play an important role in moderating consumer innovativeness in usage behavior.

2. BACKGROUND

2.1 The UTAUT model

The present study is focused on consumer's response about acceptance of IoT service. Specifically, it investigates the relationship between

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consumer's response and the intention to use including perceived risk and consumer innovativeness as personal traits in the basis of UTAUT.

Based on the previous model of technology adoption model, the TAM is one of the most useful and able to predict attitude toward and the acceptance of technologies [4, 5].

However, TAM has only two main constructs in simplicity such as "perceived usefulness" and "perceived ease of use" for predicting extreme of adoption of new technologies. Also, it has been explained in about 20 to 30 percentages toward previous TAM model [6]. It is difficult to understand based on the point of view at an individual level. It couldn't evaluate TAM because of the fast-changing IT industry [6, 7].

As shown in Figure 1, UTAUT model has four constructs such as performance expectance, effort expectancy, social influence, and facilitating conditions. Also, it has a moderating role that shows the difference of various demographic variable and intention to use such as gender, age, experience, voluntariness of use [6].

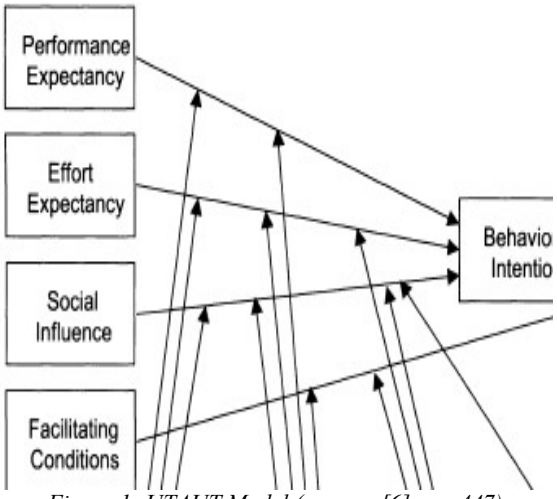

Figure 1: UTAUT Model (source: [6], pp. 447)

Each construct are described briefly in UTAUT model. The performance expectancy is the degree of individual belief of the ability through using the system and it will help to attain gains in job performance. Social influence is the degree of individual perception. Some studies pointed out the complex role of social influence in the acceptance of new technology [4].

Facilitating Conditions are an individual belief existed or supported on organizational and technical infra-structure [4, 6].

According to UTAUT model, performance expectancy, effort expectancy, and social influence have a higher prediction of intention to use a technology. However the facilitating conditions focused on technology use, compared with other constructs [4, 6, 8].

2.2 Perceived Risk and Consumer Innovativeness

Perceived risk implies a belief that an individual is unaware of the consequences of an action due to uncertainty about a particular behavior [9]. It is due to the fact that people want to avoid losses, as much as possible, when making decisions in risky situations that can be done by certain actions [9, 10].

The perceived risk has been conceptualized as six risk dimensions [11, 12]. They are: (1) social risk (possibility of influencing the thoughts of others); (2) convenience risk (the possibility that the consumer would have to put effort in getting the goods repaired and adjusted); (3) physical risk (hurt potential for physical well-being); (4) financial risk (the risk of financial loss); (5) psychological risk (how the purchase may affect how they think) and (6) performance risk (perceived risk that the functional attributes of the goods do not meet the requirements).

Tan classified the perceived risk factors separately. When individuals make decisions, four risk factors are affected in Table 1 [13].

Table 1: Tan's perceived risk factors

Risk factors	Definition
Financial Risk	Possibility of causing financial loss
Performance Risk	Possibility of Incorrect results
Social Risk	Possibility of influencing the thoughts of others
Prosecution Risk	Possibility of legal punishment

Consumer innovativeness is defined as the degree to which innovation is adopted relatively quickly by other members of the society to which the individual belongs [14]. It is defined as the tendency to purchase products faster than others, stimulated by the novelty and freshness of new products [15, 16, 17].

It is an important attribute that influences the diffusion and adoption of new products and services [16]. Also it is a general characteristic

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based on personal characteristics [18] and plays a decisive role in making consumers adopt new products and services than any other variable [19].

In many studies, consumer innovativeness as personal trait has been theorized as a single structure, but recent studies have suggested a multi-dimensional structure [17]. That means, consumers with cognitive innovativeness tend to like new experiences stimulating their rational judgment [20].

They motivate themselves through innovative experiences and new ways of making decisions [17]. So, they seek new experiences through mental activities that analyze and solve the causes and consequences of the problem [17].

Also, they acquire a large amount of new information, and analyze and solve problems using the acquired information [21]. There are tendencies to accept cognitive planning and processes more comfortably and happily [17, 20, 22]. Consumers with a high level of cognitive innovativeness reasonably judge the decision to purchase a product based on financial risks.

On the other hand, consumers with sensory innovativeness tend to prefer feeling or sense through external stimuli [17, 20, 22]. While they do not prefer cognitive processes to acquire and analyze information about new products, they tend to purchase new products to experience excitement and enjoyment [23, 24]. Thus, they tend to purchase new products and services extemporaneously rather than meticulously assessing information about new products and services.

2.3 Hypotheses

In the basis of previous literatures, the proposed model in this study is considered as moderating roles of consumer innovativeness in IoT service. Consumer innovativeness is considered relationship with perception such as personal trait [10]. Also, it is considered perceived risk in UTAUT model compared with previous research.

Consumers are exposed a various risk such as psychological, financial, social etc. for adoption of new technology and in front of the uncertainty [9]. So, this study included perceived risk in regard to the consumer's adoption of new technology. The hypotheses of the present study suggested as follows.

H1. THE FOUR CONSTRUCTS OF UTUTA MODEL AND PERCEIVED RISK IS INFLUENCED ON ATTITUDE TOWARD IOT SERVICE.

H2. THE CONSUMER INNOVATIVENESS IS MODERATING ROLE BETWEEN THE FIVE CONSTRUCTS AND ATTITUDE TOWARD IOT SERVICE.

H3. THE FOUR CONSTRUCTS OF UTUTA MODEL AND PERCEIVED RISK IS INFLUENCED ON INTENTION TO USE.

H4. THE CONSUMER INNOVATIVENESS IS MODERATING ROLES BETWEEN THE FIVE CONSTRUCTS AND INTEN-TION TO USE.

H5. THE ATTITUDE TOWARD IOT SERVICE IS INFLUENCED BY THE INTENTION TO USE.

3. METHOD AND RESULTS

3.1 Measurement and Stimuli

The study was conducted with one hundred forty seven undergraduates who volunteered and enrolled in a business course (male=59, female=88, mean age=23.14 years). Only 27 students have experienced IoT service.

The main variables are perceived risk [9] and consumer innovativeness [25] including four conducts of UTAUT [26]. These variables were measured using a modified scale from several previous researches. Dependent variables are intention to use [5] and attitude towards IoT service [27, 28]. All items measured on a 7-point Likert scale from '1=Strongly Disagree' to '7=Strongly Agree'.

It is made up of two stimuli: to increase reality and the smart products in stimuli are general in consumer market. Because it has limited to use service in real market although it is introduced various IoT services. The first stimulus has presented an explanation on how to use the sensor, switch, and light bulb of a common product such as home service. The other is about a digital door lock with a camera for IoT service. They are shown in Figure 2 and Figure 3.

The participants are exposed two stimuli and it randomizes the participants into two groups. They were asked to read the stimuli and answer the questions on the survey. It takes around 10 minutes to finish the survey.

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Figure 2: Stimulus about Home service

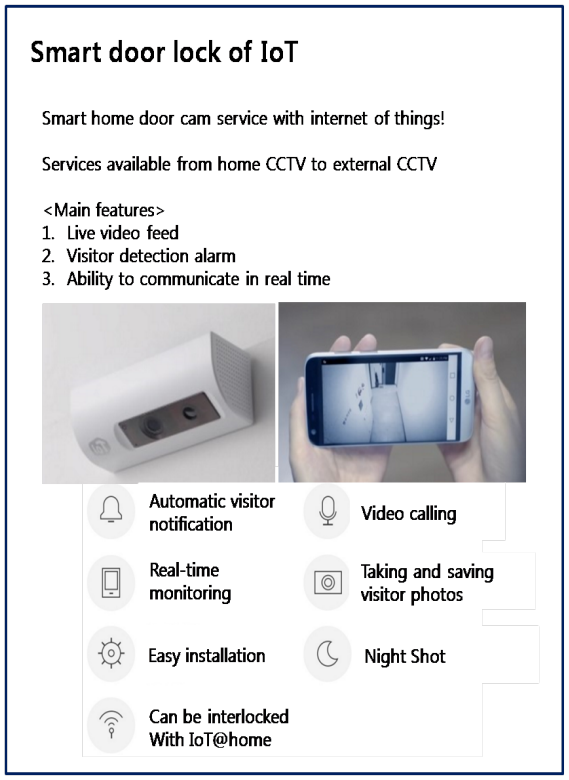

Figure 3: Stimulus about smart digital door rock

3.2 Analysis of Validity and Reliability

Before testing the hypotheses, the validity and reliability were verified. For validity of constructs,

The value of Cronbach's alpha for each construct is depicted in Table 2. Each construct measures Cronbach's alpha statistics for the internal validity. Especially, the social influence, perceived risk, and attitude toward IoT service are based on the reliability coefficient increasing after an item is deleted, as shown "Chronbach's alpha if item deleted" in item total statistics of result table. They have deleted one item from total items for increasing reliability.

Table 2: The value of Chronbach's alpha

Items	The number of items	Chronbach's alpha
Performance expectancy	3	0.84
Effort expectancy	3	0.87
Social influence	2	0.81
Facilitating conditions	2	0.63
Perceived risk	3	0.85
Consumer innovativeness	4	0.85
Attitude toward IoT service	3	0.81
Intention to Use	3	0.91

For testing validity, the exploratory factor analysis was conducted with principal components analysis. The varimax rotation was performed to assess the measurement of the items. After that, it eliminated the construct of less than 0.5 as quantified factor loading [29].

Overall, the factor analysis produced one factor with an eigen-value of more than 1.00 and with factor loadings ranging from 0.56 to 0.894 as shown in Table 3.

As shown in Table 2 and Table 3, the levels of reliability and validity were accepted [30].

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Table 3: Factor Analysis

	Component					
	1	2	3	4	5	6
Social In.1	.715	.048	.219	.317	.207	-.148
PEx.1	.696	.185	.138	.030	.173	-.039
Perceived R.1	.676	-.395	.173	-.087	-.122	.193
Social In.2	.662	.241	.220	.293	.184	-.133
Perceived R.2	.649	-.386	.167	.027	-.114	.365
Perceived R.3	.633	-.458	.248	.013	-.066	.238
Social In.3	.560	.152	.150	.207	.215	.142
Intention to U1	.024	.896	-.077	.155	-.027	.064
Intention to U2	.037	.893	-.002	.037	-.077	.008
Intention to U3	.024	.874	.011	.131	-.038	.001
Inno1	.134	-.085	.842	.072	.074	.115
Inno2	.271	.094	.795	.117	.042	.245
Inno3	.215	-.302	.752	.159	.068	.005
Inno4	.296	.122	.707	-.023	.259	.183
Atti1	.047	.068	.078	.812	.105	-.018
Atti2	.105	.138	.066	.796	.120	.106
Atti3	.155	.174	.191	.752	.109	.019
Atti4	.094	-.040	-.045	.673	.015	.218
Effort EX1	.074	-.044	-.063	.082	.884	.123
Effort Ex2	.121	-.078	.154	.124	.853	.071
Effort Ex3	.125	-.004	.252	.138	.825	.084
Facili.1	.164	-.075	.154	.137	.248	.738
Facili.2	-.028	.107	.223	.150	.068	.724

3.3 Results

For testing hypotheses, regression analysis was used. In Hypothesis 1 and 3, the independent variables are the four constructs extracted from UTAUT model and perceived risk of IoT service and the dependent variable is attitude toward IoT service and intention to Use as shown in Table 4 and 5.

Table 4: Results of H1

	Understnadized Coefficeients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	2.75	0.51	
Performance Expectancy	-0.01	0.09	-0.02
Effort Expectancy	0.08	0.09	0.08
Social Influence	0.36	0.08	0.46
Facilitating Conditions	0.20	0.07	0.23
Perceived Risk	-0.16	0.06	-0.21

a. Dependent Variable: Attitude toward service

	t	Sig.	Collinearity Statistics	
			Tolerance	VIF
(Constant)	5.38	0.00		
Performance Expectancy	-0.16	0.87	0.57	1.75
Effort Expectancy	0.97	0.33	0.79	1.27
Social Influence	4.85	0.00	0.57	1.77
Facilitating Conditions	2.88	0.01	0.83	1.21
Perceived Risk	-2.48	0.01	0.75	1.34

a. Dependent Variable: Attitude toward service

First, it needs to check a role of collinearity of the independent variables through tolerance and VIF. Dubin-Watson is 1.94 and the value of tolerance from multi-collinearity is more than 0.1 and VIF is less than 10 of exact values. The value of tolerance ranged from 0.57 to 0.83 and VIF ranged from 1.21 to 1.77. So, it has no problem about the multi-collinearity between independent variable.

For influencing the attitude toward IoT service, the social influence and facilitating conditions of four constructs in IoT service are significant. Specially, the t-value of social influence is 4.85($p<0.01$). In other words, the consumer has received to use IoT service depending on social influence. Also, the facilitating conditions are significant. It means, consumers recognize their need to know and the conditions to use the service because the IoT service is something new for them.

The t-value of perceived risk is -2.48($p<0.01$). It means that the higher perceived risk has negatively

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influenced the attitude toward IoT service. In other words, the lower of perceived risk has positively influenced the attitude toward I oT service.

The influence of the two variables, performance expectancy and effort expectancy on the positive attitude toward IoT service is not statistically significant. This result is related to the previous citation in the introduction. That is, the usage of IoT service hasn't been generalized yet and the consumers don't know how to use and why they need [3]. H1 is not supported.

For testing hypothesis 3, it tests the relationship between independent variables and intention to use as the dependent variable. The results are shown in Table 5.

Dubin-Watson is 1.44 and the value of tolerance ranged from 0.57 to 0.83 and VIF ranged from 1.21 to 1.77. So, it has no problem about the multi-collinearity between independent variable. As shown the results of H3, all constructs are statistically significant. Especially, the effort expectancy is negatively influenced by the intention to use.

The effort expectancy means that it is easy to understand on how to use and convenience of use of the IoT service. So, the higher effort expectancy of IoT service is, the negatively intention of use was influenced. In other words, the lower effort expectancy of IoT service, that is, the easier to use the IoT service, the more increased the intention to use than the higher effort expectancy is.

Table 5: Results of H3

	Understnadized Coefficeients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3.61	0.72		5.02	0.00		
Performance Expectancy	0.39	0.13	0.28	3.07	0.00	0.57	1.75
Effort Expectancy	-0.35	0.12	-0.23	-2.94	0.00	0.79	1.27
Social Influence	0.32	0.11	0.28	3.08	0.00	0.57	1.77
Facilitating Conditions	0.22	0.10	0.17	2.32	0.02	0.83	1.21
Perceived Risk	-0.90	0.09	-0.62	-7.83	0.00	0.75	1.34

a. Dependent Variable: Intention to use

Perceived risk has the same results compared with attitude toward service. The perceived risk is also negatively influenced on the intention of use. It means the lower perceived risk is positively influenced on the intention of use in IoT service.

Compared with attitude toward service, all construct is significantly influenced by intention of use. It implies that intention is behavioral based on consumers' interest. H3 is supported.

According to hypotheses 2 and 4, it needs to test the moderating role as consumer innovativeness and as consumer's trait.

The consumer innovativeness is main construct related to new product or service from previous researches [15, 16].

To test moderating effect, stepwise regression has been conducted and made up of moderating variable, both five constructs and consumer innovativeness. In other words, it is investigated to moderate by consumer innovativeness about the relationship between five constructs as independent variables including perceived risk and attitude or intention to use as dependent variables. The results are shown as follow in Table 6 and 7.

Table 6: Results of H2

Model	R	R Squre	Adjusted R Suqare	Std. Error of the Estimate
1	0.40[a]	0.16	0.13	1.00
2	0.52[b]	0.27	0.24	0.94
3	0.63[c]	0.40	0.35	0.87

d. Dependent Variable: Attitude toward service

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	Change Statistics				
Model	R Square Change	F Change	df1	df2	Sig. F Change
1	0.16	5.34	5	141	0.00
2	0.11	21.52	1	140	0.00
3	0.12	5.52	5	135	0.00

d. Dependent Variable: Attitude toward service

For testing attitude toward IoT service, the value of R square is significantly increased from model 1 to model 3 as shown Table 6. Also, each value has increased from model 1 to model 3 and each model is significant in Table 7. H2 is supported.

Table 7: ANOVA results of H2

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regress-ion	26.75	5	5.35	5.34	.00[b]
	Residual	141.21	141	1.00		
	Total	167.96	146			
2	Regress-ion	45.56	6	7.59	8.69	.00[c]
	Residual	122.39	140	.87		
	Total	167.96	146			
3	Regress-ion	66.33	11	6.03	8.01	.00[d]
	Residual	101.62	135	.75		
	Total	167.96	146			

a. Dependent Variable: Attitude toward service

In order to examine intention to use IoT service as the other dependent variable, the methodology performed was the same as the hypothesis 2. These results indicate in Table 8.

Table 8: Results of H4

Model	R	R Squre	Adjusted R Suqare	Std. Error of the Estimate
1	0.54[a]	0.29	0.27	1.36
2	0.58[b]	0.34	0.31	1.32
3	0.64[c]	0.41	0.36	1.27

d. Dependent Variable: Intention to use

	Change Statistics				
Model	R Square Change	F Change	df1	df2	Sig. F Change
1	0.29	11.75	5	141	0.00
2	0.04	9.20	1	140	0.00
3	0.07	3.22	5	135	0.01

d. Dependent Variable: Intention to use

For testing intention to use IoT service, the value of R square is significantly increased from model 1(R square=0.29) to model 3(R square=0.41) as shown Table 8. Also, each value is increased from model 1 to model 3 and each model is significant in Table 9. H4 is also supported.

Table 9: ANOVA results of H4

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regress-ion	107.96	5	21.59	11.75	.00[b]
	Residual	259.07	141	1.84		
	Total	367.04	146			
2	Regress-ion	123.94	6	20.66	11.89	.00[c]
	Residual	243.09	140	1.74		
	Total	367.04	146			
3	Regress-ion	149.86	11	13.62	8.46	.00[d]
	Residual	217.18	135	1.61		
	Total	367.04	146			

d. Dependent Variable: Intention to use

Finally, hypothesis 5, which is explained the relationship between attitude toward IoT service and intention to use, is supported (t=2.90, p=0.004). It means that attitude toward IoT service is positively influenced on intention to use the IoT service.

The results of the present study have shown the moderating role of innovativeness as consumer's traits and additionally it investigates to include perceived risk in UTAUT model compared with previous researches.

3.4 Further Study

As the stimuli of the current study, different products in the IoT service message were used for

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the validity. In reality, it just has these kinds of smart products offering IoT service.

Even though the consumer doesn't have a lot of exposure to products of IoT service, it needs to check the influence of smart products in the stimuli on consumer's attitude.

One of stimuli is as smart home service (N=66), as sensor, switch, light bulb. And the other is about a digital door lock with cam (N=81). The content involvement of message is measured three items out of ten items from previous research [31].

These items are related to memorize contents, concentrated on, attention to it using a seven-point rating scale. The reliability measured using Chronbach's alpha is 0.86.

In the case of contents involvement of message, it was conducted on T-test. The result is significant ($M_{door\ rock}$ = 5.10(SD=1.03) > $M_{home\ service}$ = 4.31(SD=1.28), t=4.04, p<0.01).

The service involvement is measured five items modified from previous research [32] and Chronbach's alpha is 0.84. In the case of service involvement of IoT service. The result of T-test is significant ($M_{door\ rock}$ = 4.46(SD=1.16) < $M_{home\ service}$ = 5.01(SD=1.04), t=3.00, p<0.01).

These results have implied that the contents involvement has related to cognitive process of reading the message. That is, they are careful of reading and understanding about new product or service. So, the smart digital door lock in IoT service is concentrated more on home service in message.

On the other hand, for service involvement, it has involved home service rather than the message about smart digital door lock. It means the home service in IoT is used and familiar more common than smart digital door rock service.

Additionally, it is a wonder that the consumer has different information processing depending on the uniqueness or novelty of the contents of message. It used consumer innovativeness to testify it and constructed T-test. The result is not statistically significant ($M_{door\ rock}$= 4.52 (SD=1.35) vs. $M_{home\ service}$ =4.91(SD=1.31), t=-1.78, p<0.10).

4. DISCUSSION AND CONCLUSIONS

The result of present study has shown the process in detail that consumer received or accepted the IoT service. It has contributed to the related and interested company of IoT service to understand consumer's response toward acceptance of IoT service.

This study is focused on the four constructs such as performance expectancy, effort expectancy, social influence, facilitating condition in the basis of UTAUT model and additionally to investigate consumer's response such as perceived risk and consumer innovativeness as a moderating variable.

Testing the hypotheses is done by performing regression analysis. As the results show, all hypotheses are supported significant, except H1. In the current study, it is considered two dependent variables; attitude toward IoT service and intention to use. This is why the consumer's response is investigated in detail.

The IoT service is still not common. But consumers have the interest and expectation about the new service. So, the result of H1 is supported like the present market situation. That is, it is not shown related to attitude toward IoT service, while intention to use IoT service is shown positively.

This study is more focused on consumer's response and tried to examine consumers' thought. That is different from previous research. And it can understand how to process information through a message for consumers and their attitude and intention through these results.

However, the participants in this study are not used to and exposure often to IoT service, even though they know the concept and usage of IoT service. The student sample has a limited gene-ralization of the results.

Future research will be considered using different age groups. Moreover, it needs to consider other moderating variables such as personal trait, need for cognition etc. The reason is that if the consumer uses the smart service, it needs to learn and recognize how to use the service.

REFRENCES:

[1] Gartner, Gartner Says 6.4 Billion Connected "Things" Will Be in Use in 2016, Up 30 Percent From 2015, 10 November 2015, Retrieved 21 April 2016.

[2] Wikipedia, Internet of Things, Available: https://en.wikipedia.org/wiki/Internet_of_things

[3] Infographic: Why the 'Internet of Things' Hasn't Really Caught On Yet, ADWEEK, January 4, 2015.

[4] Cynthia M. Jackson, Simeon Chow, and Robert A. Leitch, "Toward an Understanding of the Behavioral Intentions to Use an Information System", *Decision Sciences*, Vol. 28, No. 2, 1997, pp. 357-389.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

[5] Dennis A. Adams, R. Ryan Nelson and Peter A. Todd, "Perceived Usefulness, Ease of Use and Usage of Information Technology: A Replication", *MIS Quarterly*, Vol. 16, No. 2, 1992, pp. 227-47.

[6] M. Ibraheem Ahmad, "Unified Theory of Acceptance and Use of Technology (UTAUT): A Decade of Validation and Development", *In proceedings of Fourth International Conference on ICT*, December 20-22, 2014, pp. 1-13.

[7] Izak Benbasat and Henri Barki, "Quo vadis TAM?", *Journal of the Association for Information Systems*, Vol. 8, No. 4, 2007, pp. 211-218.

[8] Gary C. Moore, and Izak Benbasat, "Development of an Instrument to Measure the Perceptions of Adopting an Innovation Technology Innovation", *Information Systems Research*, Vol. 2, No. 3, 1991, pp. 192-222.

[9] Bauer Raymond, "Consumer Behavior as Risk Taking Dynamic Marketing for Changing World", Edited by RS Hancock, Chicago: American Marketing Association, 1960.

[10]Vincent-Wayne Mitchell, "Consumer Perceived Risk: Conceptualizations and Models", *European Journal of Marketing*, Vol.33, No. 1/2, 1999, pp.163-195.

[11] Keith B. Murray, "A Test of Services Marketing Theory: Consumer Information Acquisition Activities", *Journal of Marketing*, Vol.55, No.1, 1991, pp. 10-25.

[12] J. Paul Peter and Lawrence X. Tarpey Sr, "A Comparative Analysis of Three Consumer Decisions Strategies", *Journal of Consumer Research*, Vol.2, No.1, 1975, pp. 29-37.

[13] Benjamin Tan, "Understanding Consumer Ethical Decision Making with Respect to Purchase of Pirated Software", *Journal of Consumer Marketing*, Vol.19, No.2, 2002, pp. 96-111.

[14] Everett M. Rogers and F. Floyd. Shoemaker, "Communication of Innovations: A Cross-Cultural Approach", Free Press, New York, NY, 1971.

[15] David F. Midgley and Grahame R. Dowling, "Innovativeness: The Concept and Its Measurement", *Journal of Consumer Research*, Vol. 4, No.4, 1978, pp. 229-242.

[16] Elizabeth C. Hirschman, "Innovativeness, Novelty Seeking, and Consumer Creativity", *Journal of Consumer Research*, Vol. 7, No. 3, 1980, pp. 283-295.

[17] Tanawat Hirunyawipada and Audhesh K. Paswan, "Consumer Innovativeness and Perceived Risk: Implications for High Technology Product Adoption", *Journal of Consumer Marketing*, Vol. 23, No. 4, 2006, pp. 182-198.

[18] Ronald E. Goldsmith and Charles. F. Hofacker, "Measuring Consumer Innovativeness", *Journal of the Academy of Marketing Science*, Vol. 19, No. 3, 1991, pp. 209-221.

[19] David F. Midgley and Grahame R. Dowling, "A Longitudinal Study of Product form Innovation: The Interaction Between Predispositions and Social Messages", *Journal of Consumer Research*, Vol. 19, No. 4, 1993, pp. 611-625.

[20] Meera P. Venkatraman, "The Impact of Innova-tiveness and Innovation Type on Adoption", *Journal of Retailing*, Vol. 67, No. 1, 1991, pp.51.

[21] Elizabeth C. Hirschman, "Experience Seeking: A Subjectivist Perspective of Consumption", *Journal of Business Research*, Vol. 12, No. 1, 1984, pp. 115-136.

[22] Pamela H. Pearson, "Relationships Between Global and Specified Measures of Novelty Seeking", *Journal of Consulting and Clinical Psychology*, Vol. 34, No. 2, 1970, pp. 199-204.

[23] Samuel Mudd, "The Place of Innovativeness in Models of The Adoption Process: An integrative review", *Technovation*, Vol. 10, No. 2, 1990, pp. 119-136.

[24] Jan-Benedict EM. Steenkamp and Hans Baumgartner, "The Role of Optimum Stimulation Level in Exploratory Consumer Behavior", *Journal of Consumer Research*, Vol. 19, No. 3, 1992, pp. 434-448.

[25] Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, and Fred D. Davis, "User Acceptance of Information Technology: Toward A Unified View", *MIS Quarterly*, Vol. 27, No. 3, 2003, pp. 425-478.

[26] Ronald E. Goldsmith and Charles Hofacker, "Measuring Consumer Innovativeness", *Journal of the Academy of Marketing Science*, Vol. 19, No. 3, 1991, pp. 209-221.

[27] Wannes Heirman, M. Walrave, K. Ponnet, and E. Gool, "Predicting Adolescents' Willingness to Disclose Personal Information to a Commercial Website: Testing the Applicability of a Trust-based Model", *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, Vol. 7, No. 3, 2013, pp. 1-15.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

[28] Douglas Bryson and Glyn Atwal, "Antecedents of Attitude towards the Adoption of Internet Banking in Senegal", *Journal of Innovation Economics*, Vol. 1, No. 11, 2013, pp. 33-54.

[29] Joseph F. Hair, Jr, William C. Black, Barry J. Babin, and Rolph E. Anderson, Multivariant Data Analysis, 7th Edition, 2010, New Jersey: Pearson International Edition.

[30] J. C. Nunnally, Psychometric theory (2nd ed.), 1978, New York, NY: McGraw-Hill.

[31] Russell N. Laczniak. And Darrel D. Muehling, "The Relationship Between Experimental Manipulations and Tests of Theory in an Advertising Message Involvement Context", *Journal of Advertising*, Vol. 22, No. 3, 1993, pp.59-74.

[32] Jaishankar Ganesh, Mark J. Arnold, and Kristy E. Reynolds, "Understanding the Customer Base of Service Providers: An Examination of The Differences Between Switchers and Stayers", *Journal of Marketing*, Vol. 64, No. 3, 2000, pp.65-87.