THE ROLE OF PERSONAL INNOVATIVENESS ON BEHAVIORAL INTENTION OF INFORMATION TECHNOLOGY

Melissa T. A. Simarmata[1], Iman Jaya Hia[2],
Department of Accounting, Faculty of Economics and Business, University of HBKP Nommensen, Medan, North Sumatera, Indonesia
melissa.simarmata@uhn.ac.id[1], imanjayh.ij@gmail.com[2]

ABSTRACT

The purpose of this study is to investigate PIIT as an appropriate factor in predicting behavioral intention in the information technology acceptance framework. This research is a longitudinal study conducted during one semester in spring semester of 2017. Data collection using a survey questionnaire in the pilot study, period 1 and period 2. Participants in this study are accounting students who are enrolled in Introductory to Computer Application course at the University of HKBP Nommensen, Medan. Statistics techniques used were Pearson Correlation, means, linear regression and paired sample t-test. The results show that the hypothesis and the research model were supported significant statistically. The finding also suggested that the use of IT overtime increased the innovativeness and intention of the students. This research contributed to conducting training using certain software in practical settings.

1. INTRODUCTION

Very rapid technological developments that have an impact on the implementation of information technology to organizations. Many people are able to adapt information technology quickly, but not a few people who have difficulty adopting it (Agarwal & Prasad, 1998). The application of technology in organizations is influenced by the acceptance of individuals as employees who will use information technology to run the organization. The need for the use of technology is very important and has become one of the organizational resources from business corporations to non-profit organizations (Rosen, 2005) and up to the employee level. Success or failure in implementing technology in an organization is not only about the costs incurred for the application of information technology, but also to prepare and improve the ability and speed of individuals to adopt and adapt to different and more innovative technologies.

As individuals who run an organization, employees are expected to have the intention to use technology. Many companies carry out training for their employees in order to be able to use the latest and even to prepare employees for adoption that are not yet present commercially in the information technology market. Educational institutions as one of the institutions that prepare prospective professionals for the work environment also have their own problems. The response of educational institutions is not as fast and responsive as corporate institutions in facing the development, presence, and acceptance of the technology. The success of technology acceptance is influenced by various factors such as individual characteristic (Im, Bayus, & Mason, 2003; Karahanna, Ahuja, Srite, & Galvin, 2002; Park & Kim, 2010), social factors (Lewis et al., 2003; Thatcher, Marett, Chudoba, & Carter, 2012; Turan et al., 2015) and even the information technology itself.

Particularly, information technology is needed in the field of accounting from recording transactions, preparing financial reports and conducting financial audits of the micro, small, medium, large corporations, and non-profit organizations as well. Accounting personnel must be prepared to face changes from the manual system to the digital system. Therefore, accounting students must be able to adopt any new information technology specifically related to accounting information technology. Because, in fact, accounting graduates will not only compete with fellow humans but technology, software or machines will become a potential threat that is very likely to occur in the future.

Therefore, to explore the factors that influence individuals in the process of technology acceptance, this study uses the individual construct proposed by the UTAUT model. Agarwal & Prasad (1998) first introduced the Personal Innovativeness in the Domain of Information Technology (PIIT) designed to measure an individual's desire to try any information technology. Therefore, this study investigates the effect of the PIIT variable on the behavioral intention of information technology on students. By using PIIT as a predictor factor, it is expected to predict the behavioral intention of information technology particularly in university accounting students. Several previous studies have used PIIT as constructs in their research model as an antecedent to other variables, as a consequence of other variables, and as a moderator between variables.

The finding of several previous studies, PIIT has been proved as an independent variable. PITT has been shown to influence computer self-efficacy as antecedents (Agarwal & Prasad, 1998; Thatcher & Perrewé, 2002), and intention to use technology (Thatcher, Marett, Chudoba, & Carter, 2012). In terms of research, PIIT variables that still have room to be studied in different contexts and settings (Lassar, Manolis, & Lassar, 2005; Nov & Ye, 2008). Therefore, this research also raises the role of PIIT which needs to be considered as one of the factors in the technology acceptance process. This study examines PITT as a variable that predicts behavioral intention to use of new information technology. The research model offered

proposes that PIIT is tried to clarify whether PIIT is the right factor to be applied in the context of technology acceptance. This current research proposed the research question: (1) Does PIIT have an influence on the behavioral intention of technology on students? (2) Are there differences in PIIT and behavioral intention of students in 2 time periods? Briefly, this research aligned with Rosen (2005), this study aims to 1) determine the involvement of PIIT is an appropriate explanation to explain the process of technology acceptance, 2) to determine whether PIIT is the right factor in the context of technology acceptance in accounting students.

2.   LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Adoption and acceptance of technology have become a topic that is widely discussed in various fields of literature such as accounting information systems, information management, information systems, and information technology. This research explores and discusses innovativeness in the context of behavioral intention on information technology, then the literature review will briefly discuss Personal Innovation of Information Technology, Behavioral Intention and the theories that underlie both variables such as UTAUT, TAM and Diffusion Innovation Theory (Carter et al., 2012).

Personal Innovativeness in the Domain of Information Technology (PIIT)

Innovativeness is defined as a degree in which an individual relatively adopts innovation earlier than another individual as a member of the social system (Rogers & Shoemaker, 1971). This definition is used to measure that innovation has been adopted. Then, another study defines that the concept of innovation is a basic dimension of relevant personality to analyze organizational change (Kirton, 1976). The definition offered by Kirton is that one can be located in a continuous range of abilities to do things better that are given an adaptive label to the stage of the ability of different things given the emphasis of innovative labels (Kirton, 1976). Kirton's thinking about innovativeness is to predict the level of individual innovativeness before the adoption process occurs.

This idea was used in the accounting information system, management information management, information system and information technology field when a study was conducted to define Personal Innovativeness in the Domain of Information Technology or Personality Innovativeness of Information Technology (PIIT) (Agarwal & Prasad, 1998). Some of these studies are as in mobile advertising (Boateng, Okoe, & Omane, 2016), online purchasing intent (Boyle & Ruppel, 2006; Chao, Reid, & Hung, 2016), mobile payment (Thakur & Srivastava, 2014), entrepreneur value creation (Stauffer, 2016), and health care field (Park & Kim, 2010). PIIT is referred to as the willingness of an individual to try out any new information technology (Agarwal et al. 1998). If there are individuals who have a tendency to try IT can be identified, then these individuals can act as agents of change to implement new IT within the scope of a group or even an organization (Agarwal & Prasad, 1998). Such individuals can help an organization to succeed in implementing projects in order to implement new technologies. In academic settings, students like being able to become agents of change and leader opinions within their community.

PIIT is the construct that appears in the Theory of Reasoned Action, Theory of Planned Behavior, Technology Acceptance Model, Combined TAM-TPB, and the Motivation Model. This research used behavioral intention to use technology, or actual use of technology as a dependent variable. The behavioral intention in information technology is defined as the degree of difficulty that people have in trying new technologies, and how much effort they plan to make in order to carry out a behavior (Ajzen, 1991).

A research conducted by (Rosen, 2005) hypothesized PIIT of behavioral intention has a positive effect on five different time periods. The results showed that time periods 2, 3, and 5 supported the hypothesis while time periods 1 and 4 were not supported. On the other hand,

research conducted by (Boyle & Ruppel, 2006) found that personal innovativeness has a significant positive relationship with online purchasing intention. Consistent results have also been demonstrated through research (Lu, 2003) which found statistically significant support that PIIT has a positive direct impact on continuance intention toward m-commerce. Moreover, personal innovativeness is investigated to ensure the student's intention to try new innovations and their intention to apply them in the future. (Mahat, Ayub, & Wong, 2012). Similarly, studies that examine personal innovativeness correlate positively with the intention to use location-based services (LBS) to provide marginally supported results for potential users (Xu & Gupta, 2009). While the results of research conducted by (Lu, Yao, & Yu, 2005) showing different results, PIIT does not have a direct positive impact on intention to adopt wireless internet services via mobile technology (WIMT).

Agarwal and Prasad (1998) theorize PIIT has a relationship with behavioral intentions to use a new IT. For example, consider two individuals who have the same perception on one specific information technology. Those two people with higher levels of PIIT are suggested to be more likely to create favorable intentions to use new information technology than those with lower levels of PIIT (Agarwal et al. 1998). According to the definition of personal innovativeness discussed in the previous session and the results of studies in the previous discussion the link innovativeness to either behavioral intentions of information technology and all found empirical support for those links. This research proposed one hypothesis stated in the following statement.

H₁: **There will be a significant positive relationship between PIIT and behavioral intentions to use a new information technology.**

In summary, this study proposes one hypothesis. Innovativeness in the form of PPIT will be tested in a hypothesis that tries to show whether PIIT is one of the right variables for the behavioral intention (BI) process of technology acceptance presented in the proposed research model shown in Figure 1.
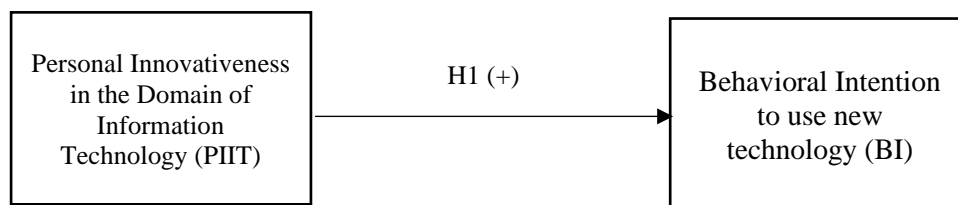

Figure 1. Proposed research model

3. RESEARCH METHODOLOGY
Research design

This research was a longitudinal study, which examined how perceptions of student behavior intention in information technology tend to change from overtime every week. Data collection was used through a survey questionnaire from students. In addition, the study used PIIT as a predictor variable and BI as a dependent variable. The researchers offer a formula to empirically test the extent of PIIT's influence through the formula presented in Equation 1. The notation of α describes the constant or intercept of BI. While β is the coefficient value of PIIT which increases BI in this proposed research equation.

$$BI = \alpha + \beta\, PIIT$$

Equation 1. The proposed formula of this research

Subjects

This research was conducted on freshmen undergraduate students enrolled in the Introductory to Computer Application in Accounting department, Faculty of Economics and Business at the University of HKBP Nommensen, Medan, North Sumatera, Indonesia in two stages during the Spring semester of 2017. First, a pilot study was conducted on 37 students who held in March 2017. The purpose of the pilot study is to test whether the validity and reliability of the questionnaire and also to obtain evidence about whether students understand the purpose of the questionnaire in question. In addition, the pilot study was also carried out with the aim of perfecting the statements in the questionnaire. Second, the main study was done by carrying out two survey time periods involving 259 students conducted at the beginning of the semester in March 2017 and 260 students in May 2017.

Procedure

Respondents in this study were students who took the Introductory to Computer Application course. Learning materials in this course were the use of Ms. Word, Ms. Power Point, and Ms. Excel. At the first meeting of this course (March 2017), there were 37 students were asked to fill out questionnaires for the purpose of the pilot study. Then, at the end of March 2017, the survey for Period 1 was conducted and distributed 259 questionnaires. At the end of May 2017, a Period 2 survey was conducted and distributed 260 questionnaires.

In the pilot study, the subject is students who come to the first meeting for this course. The aim is to obtain students' initial perceptions regarding the software they will use and do not yet understand the teaching patterns in the courses. After collecting the questionnaire from the pilot study, researchers conducted the testing and analysis of the results of the questionnaire.

The main study was conducted in two different time periods (2 different time periods). The questionnaire distribution for Period 1 was conducted at the meeting at the end of March 2017 and obtained 259 questionnaires. Distribution for Period 2 was conducted at the meeting at the end of May 2017 and received 260 questionnaires. This difference in number occurs because some things such as students do not come in Period 1 but are present in Period 2 and vice versa, then the information in the questionnaire is incomplete from Period 1 so that certain students are no longer involved in taking surveys in Period 2.

Instrument

The survey instrument was adopted and modified from previous research to suit the research context. This current study examined one independent variable was PIIT and the behavioral intention was the dependent variable. First, Personal Innovativeness in the Domain of Information Technology (PIIT) defined as "the willingness of the individual to use new information technology" (Agarwal & Prasad, 1998). The questionnaire contains questions related to the PIIT construct developed by Agarwal & Prasad (1998) which consists of four statements. Subjects were asked to indicate their agreement with the four statements related to their innovation on information technology. Responses were recorded on a 7-point Likert-type format ranging from 1 (strongly disagree) to 7 (strongly disagree).

Second, the dependent variable is the behavioral intention to use new technology (Venkatesh, Morris, Davis, & Davis, 2003) referred to as the degree of difficulty that people have in trying new technologies, and how much effort they plan to make in order to carry out a behavior (Ajzen, 1991). The questions consisted of three statements were utilized to record the indication of their behavioral intention to use new information technology developed by Venkatesh et al. (2003). The responses of the subject were recorded on a 7-point Likert-scale format ranging from 1 (strongly disagree) to 7 (strongly disagree).

4. RESULT AND DISCUSSION

This pilot study was conducted in the first week of the course semester, of the 37 questionnaires distributed only 34 usable questionnaires due to incomplete data (N=34). After screening the questionnaire in Period 1 (the fifth week) and Period 2 (the twelfth week) the usable questionnaire was N = 256 and N = 251, respectively. The distribution of subject information can be seen in Table 1. Only a completed questionnaire will be used for the statistical and analysis testing phase. Statistical tests that have been done are validity and reliability tests, means, correlations, ANOVA and regression. The collected data were analyzed using IBM SPSS Statistics 22.

Pilot Study Results

The purpose of the pilot study in this study is first, to test and ensure that students as participants understand each statement item in the questionnaire. Secondly, to test the internal reliability of each statement item using Cronbach's Alpha. Lastly, to test the validity between each statement item on both BI and PIIT variables using Pearson Correlation. Participants in the pilot study were 34 respondents, 33 female students (97.1%) and 1 male student (2.9%). The reliability results show that the Cronbach's Alpha value for PIIT and BI is 0.284 and 0.709 respectively. Although the PIIT value was lower than 0.70, PIIT was used in this study. And the results of the reliability test also showed participants understood each statement item in the PIIT. On the other hand, Cronbach's Alpha of BI was higher than 0.709 and is acceptable for use in this study.

Table 1. Respondents Demographic – Period 1 & 2

Characteristic	Period 1		Period 2	
	Frequency	Percentage	Frequency	Percentage
Gender				
Female	200	78,1	200	79,7
Male	56	21,9	51	20,3
Age				
17	4	1,6	4	1,6
18	62	24,2	57	22,7
19	113	44,1	118	47,0
20	57	22,3	50	19,9
21	17	6,6	17	6,8
22	1	0,4	3	1,2
23	2	0,8	2	0,8
Semester				
2	161	62,9	159	63,3
4	94	36,7	91	36,3
8	1	0,4	1	0,4
High School Type				
SMA Negeri	171	66,8	164	65,3
SMA Swasta	57	22,3	65	25,9
SMK Negeri	14	5,5	14	5,6
SMK Swasta	14	5,5	8	3,2

Source: IBM SPSS Statistics 22 output

Main Study Results
Reliability test

Internal Consistency Reliability (ICR) is measured using Cronbach's Alpha with a provision of 0.70 or greater which is generally considered acceptable in social science research (Fornell & Larcker, 1981). PIIT variable was measured using four items (statements) in its scale. Meanwhile, BI is measured using a three-item scale. Reliability results are shown in

Table 2 with Cronbach's Alpha value. PIIT variable of Cronbach's Alpha value less than 0,70 at any point in the period. On the other side, BI Cronbach's Alpha of higher than 0,70 at any point in the period. Although the values for the PIIT variable were very far below the 0.70 level, both PIIT and BI were deemed to be acceptable for use in this study.

Table 2. Reliability test – Cronbach's Alpha Value

Variable	Period 1	Period 2	Number of Item
PIIT	0,352	0.462	4
BI	0.877	0.870	3

Source: IBM SPSS Statistics 22 output

Means

Because this research is a longitudinal study, testing how students' perceptions change over time is interesting to explore (Rosen, 2005). The means for both variables at two periods are presented in Table 3 and both variables have significant changes. PIIT has been theorized to be a stable personality trait and does not change from overtime (Rosen, 2005). The means of PIIT ranged from 6.37 to 4.69, not supporting some of the previous studies. This study found that PIIT has changed over time and even lower.

Table 3. Mean Scores

Variable	Period 1	Period 2
PIIT	6.37	4.69
BI	4.67	6.28

Source: IBM SPSS Statistics 22 output

Correlations

A standard approach before conducting linear regression is to analyze correlations between variables to help determine each compilation of analysis that is not in line with the assumptions of linear regression. PIIT and BI poorly correlated with Sig. = 0,000 in period 1 and period 2 as shown in Table 4 and Table 5. Since the correlation value is slightly low in the two-period times, this indicated that the PIIT variable has a good explanation of behavioral intention (BI).

Table 4. Pearson Correlation – Period 1

		PIIT	BI
PIIT	Pearson Correlation	1	0.283**
	Sig. (2-tailed)		0.000
	N	256	256
BI	Pearson Correlation	0.283**	1
	Sig. (2-tailed)	0.000	
	N	256	256
**Correlation is significant at the 0.01 (2-tailed)			

Source: IBM SPSS Statistics 22 output

Table 5. Pearson Correlation – Period 2

		PIIT	BI
PIIT	Pearson Correlation	1	0.309**
	Sig. (2-tailed)		0.000
	N	250	250
BI	Pearson Correlation	0.309**	1
	Sig. (2-tailed)	0.000	
	N	250	250

**Correlation is significant at the 0.01 (2-tailed)

Source: IBM SPSS Statistics 22 output

Regression

To find out how big the influence of PIIT on BI in Period 1 and Period 2, the test is performed using simple linear regression. The results obtained from testing for Period 1 are shown in Table 6 - Table 8 while Period 2 is presented in Table 9 - Table 11.

Table 6. Model Summary - Period 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.283	0.080	0.076	1,011

Source: IBM SPSS Statistics 22 output

Table 7. ANOVA – Period 1

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.612	1	20.612	22,078	0,000
	Residual	237.134	254	0.934		
	Total	257.746	255			

Source: IBM SPSS Statistics 22 output

Table 8. Coefficients – Period 1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,916	0,316		15,579	0,000
	PIIT	0,311	0,066	0,283	4,699	0,000

Source: IBM SPSS Statistics 22 output

As time period 1 measure initial acceptance of software or information technology, it provides an interesting starting point or study. R-value = 0.283 indicates that the relationship between PIIT and BI variables is in the weak category. Then, R^2 is obtained at 0.080 which means that the PIIT variable has an effect of 8% on BI and the remaining 92% is influenced by factors other than the PIIT summarized in Table 6. Moreover, the model, according to the research data, was found to be significant (F = 22,078, p <0,001) can be seen in Table 7 and the linear regression model meets the criteria for linearity. These results lead to the conclusion that there is support for hypothesis 1, there will be a significant positive relationship between PIIT and behavioral intentions to use a new information technology. This study's results are consistent with previous studies such as Boyle & Ruppel (2006), Lu, 2014; Lu et al. (20050, Mahat et al. (2012), Rosen (2005), Xu & Gupta (2009). This significant independent variable

was PIIT (t = 4.916, p <0.001) as shown in Table 8. Based on statistical tests, the regression equation model obtained was a constant 4.916 accumulated with 0.311 PIIT beta coefficients as shown in Table 8 and Equation 2.

$$BI = 4,916 + 0,311\ PIIT$$
Equation 2. Formula for Period 1

Table 9. Model Summary - Period 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,309	0,096	0,092	1,011

Source: IBM SPSS Statistics 22 output

Table 10. ANOVA – Period 2

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26,821	1	26,821	26,231	0,000
	Residual	253,579	248	1,022		
	Total	280,400	249			

Source: IBM SPSS Statistics 22 output

Table 11. Coefficients – Period 2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,705	0,314		14,981	0,000
	PIIT	0,336	0,066	0,309	5,122	0,000

Source: IBM SPSS Statistics 22 output

The results of this time period 2 were slightly similar to the previous period. R-value was 0.309 indicates that the relationship between PIIT and BI variables is in the weak category. Then, R^2 is obtained at 0.096 which means that the PIIT variable has an effect of 9.6% on BI and the remaining 90.4% is influenced by factors other than PIIT as can be seen in Table 9. Furthermore, the model of regression, according to the research data, was found to be significant (F = 22.078, p <0.001) as shown in Table 10 and the linear regression model meets the criteria for linearity. These findings lead to the conclusion that there is support for hypothesis 1, there will be a significant positive relationship between PIIT and behavioral intentions to use a new information technology. And similar results with (Boyle & Ruppel, 2006; Lu, 2014; Lu et al., 2005; Mahat et al., 2012; Rosen, 2005; Xu & Gupta, 2009). This significant independent was PIIT (t = 4.705, p <0.001) as presented in Table 11. Based on statistical tests, the regression equation model obtained is a constant of 4,705 accumulated with 0.336 beta coefficients of PIIT as shown in Table 11 and Equation 3.

$$BI = 4,705 + 0,336\ PIIT$$
Equation 3. Formula for Period 2

Paired Sample t Test

As expected, the mean of PIIT and BI in Period 2 were higher than PIIT and BI in Period 1. On average, respondents have more innovative and intention to use new information technology. In Period 1, mean = -1,699, Sig. = 0,000 and the score increased in Period 2 to mean = -1,592, Sig. = 0,000 as presented in Table 12. Therefore, IT overtime provides a positive change in PIIT and BI that is significant for the participant. This finding provides

evidence that training or continuous learning processes can provide positive changes to personal innovativeness and behavioral intention.

Table 12. Paired Sample Test

		Paired Differences					
		Mean	Standard Deviation	Standard Error Mean	t	df	Sig. (2-tailed)
Pair 1	PIIT_T1 & BI_T1	-1,699	1,151	0,072	-23,620	255	0,000
Pair 2	PIIT_T2 & BI_T2	-1,592	1,200	0,076	-20,982	249	0,000

Source: IBM SPSS Statistics 22 output

5. CONCLUSION AND SUGGESTION

This study aims to explore the role of personal innovation in the domain of information technology in the framework of the process of technology acceptance in accounting students. The examination results show that the PIIT factor is statistically significant in predicting the behavioral intention of the user. Although based on testing, the value presented is quite disappointing to influence BI but it is significant. PIIT, based on statistical results is the best variable in influencing BI to use new technology.

The sample sizes in this study are 256 and 251, based on the rule of thumb, the sample size is very adequate. On the other hand, the problem is the imbalance in the number of females and males in this study. Gender inequality can affect perceptions, responses and research results. Next are instructions and study material. Students are not given any instructions other than just lecture material in a computer classroom. Students are only asked to answer surveys after classes are completed in the three-time periods. The survey results have a tendency not in accordance with the expectations of researchers.

Based on some of the limitations of this research that were discussed in the previous paragraph. Researchers propose several future research directions. First, the balance of the numbers between female and male respondents in research like this needs to be considered. Second, certain types of software / IT that are more practical need to be considered that can represent students' perceptions of software used in industrial settings. Third, the results of the study indicate that PIIT has a role in behavioral intention but is quite weak. Factors that influence personal innovation to become a topic that deserves to be explored even more intensely.

The results of this study also contribute to management information systems, accounting information systems, behavioral information systems and human-computer interaction works of literature. Moreover, these current findings contribute to organizational and individual settings, that the use of IT from overtime can increase innovation and intention. This means that educational institutions, business organizations and even governments must perform training activities continuously to trigger the personal innovativeness of students or prospective employees which will eventually lead to behavioral intentions towards the use of any IT. Finally, the personal innovativeness factor must always be improved in every student or employee, because personal innovativeness becomes a factor that influences behavioral intention, the desire to learn new things, not only in the IT field but also for many types of fields.

REFERENCES

Agarwal, R., & Prasad, J. (1998). A Conceptual and Operational Definition of Personal Innovativeness in the Domain of Information Technology. *Information Systems Research*, *9*(2), 204–215.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.

Boateng, H., Okoe, A. F., & Omane, A. B. (2016). Does Personal Innovativeness Moderate the Effect of Irritation on Consumers' Attitude towards Mobile Advertising? *Journal of Direct, Data and Digital Marketing Practice*, *17*(3), 201–210.

Boyle, R. J., & Ruppel, C. P. (2006). The Effect of Personal Innovativeness, Perceived Risk, and Computer Self-Efficacy on Online Purchasing Intent. *Journal of International Technology and Information Management*, *15*(2), 61–74.

Carter, P., Thatcher, J., Marett, K., & Chudoba, K. (2012). Post-Acceptance Intentions and Behaviors: An Empirical Investigation of Information Technology Use and Innovation. *Journal of Organizational and End User Computing*, *24*, 1–20.

Chao, C.-W., Reid, M., & Hung, Y.-C. (2016). Vicarious Innovativeness or Vicarious Learning: The Role of Existing Vicarious Innovativeness in New Product Purchase Intentions. *Australian Marketing Journal*, *24*, 87–92.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39–50.
Im, S., Bayus, B. L., & Mason, C. H. (2003). An Empirical Study of Innate Consumer Innovativeness, Personal Characteristic, and New-Product Adoption Behavior. *Journal of the Academy of Marketing Science*, *31*(1), 61–73.

Karahanna, E., Ahuja, M., Srite, M., & Galvin, J. (2002). Individual Differences and Relative Advantage: the Case of GSS. *Decision Support Systems*, *32*(4), 327–341.

Kirton, M. (1976). Adaptors and Innovators: A Description and Measure. *Journal of Applied Psychology*, *61*(5), 622–629.

Lassar, W. M., Manolis, C., & Lassar, S. S. (2005). The Relationship between Consumer Innovativeness, Personal Characteristics, and Online Banking Adoption. *International Journal of Banking Marketing*, *23*(2), 176–199.

Lewis, W., Agarwal, R., & Sambamurthy, V. (2003). Sources of Influence on Beliefs about Information Technology Use: An Empirical Study of Knowledge Workers. *MIS Quarterly*, *27*(4), 657–678.

Lu, J. (2003). Technology Acceptance Model for Wireless Internet. *Internet Research*, *13*(3), 206–222.

Lu, J. (2014). Are Personal Innovativeness and Social Influence Critical to Continue with Mobile Commerce? *Internet Research*, *24*(2), 134–159.

Lu, J., Yao, J. E., & Yu, C.-S. (2005). Personal Innovativeness, Social Influences and Adoption of Wireless Internet Services via Mobile Technology. *Journal of Strategic Information System*, *14*, 245–268.

Mahat, J., Ayub, A. F. M., & Wong, S. L. (2012). An Assessment of Students' Mobile Self-Efficacy, Readiness and Personal Innovativeness towards Mobile Learning in Higher Education Malaysia. *Procedia - Social and Behavioral Sciences*, *64*, 284–290.

Nov, O., & Ye, C. (2008). Personality and Technology Acceptance: Personal Innovativeness in IT, Openness and Resistance to Change. *The 41st Hawaii International Conference on System Sciences*, 1–9.

Park, J. S., & Kim, H. S. (2010). Impacts of Individual Innovativeness on the Acceptance of IT-based Innovations in Health Care Fields. *Health Informatics Research*, *16*(4), 290–298.

Rogers, E. M., & Shoemaker, F. F. (1971). *Diffusion of Innovations* (Second Edi). New York, NY, USA: Free Press.

Rosen, P. A. (2005). *The Effect of Personal Innovativeness on Technology Acceptance and Use* (Oklahoma State University). Retrieved from https://pdfs.semanticscholar.org/72dd/838836a261aae2a2c0e4dfb1f34ac871ec9d.pdf

Stauffer, D. (2016). Personal Innovativeness as a Predictor of Entrepreneurial Value Creation. *International Journal of Innovation Science*, *8*(1), 4–26.

Thakur, R., & Srivastava, M. (2014). Adoption Readiness, Personal Innovativeness, Perceived Risk and Usage Intention Across Customer Groups for Mobile Payment Service in India. *Internet Research*, *24*(3), 369–392.

Thatcher, J. B., & Perrewé, P. L. (2002). An Empirical Examination of Individual Traits as Antecedents to Computer Anxiety and Computer Self-Efficacy. *MIS Quarterly*, *26*(4), 381–396. https://doi.org/10.2307/4132314

Turan, A., Tunc, A. O., & Zehir, C. (2015). A Theoretical Model Proposal: Personal Innovativeness and User Involvement as Antecedents of Unified Theory of Acceptance and Use of Technology. *Procedia - Social and Behavioral Sciences*, *210*, 43–51.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, *27*(3), 425–478.

Xu, H., & Gupta, S. (2009). The Effects of Privacy Concerns and Personal Innovativeness on Potential and Experienced Customers' Adoption of Location-based Services. *Electron Markets*, *19*, 137–149.