

THE INNOVATION MODEL OF SMARTPHONE ADOPTION AMONG THE LECTURERS OF PRIVATE UNIVERSITIES IN BANDUNG

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Volume: 1
Number: 2
Page: 87 - 93

Article History:

Received: 2021-09-11

Revised: 2021-10-30

Accepted: 2021-11-15

Abstract:

This study reveals innovations particularly related to the acceptance of mobile technology (smartphones) by lecturers. A smartphone is able to change the work performance of lecturers and academicians, especially with respect to technology. The purpose of this study is to determine whether the Job Relevance, observability, Compatibility, Personal demographics, Personal experience, Internal environment, and External environment have effects on attitude and its impact on the behavioral intention in the use of smartphones. The sampling technique used is non-probability sampling of 300 respondents who are lecturers of private universities in Bandung, by the deployment of questionnaires containing 27 question items. The data obtained from these respondents were processed using the technique of Partial Least Squares (PLS), and the results revealed that there is an influence of innovation factor on Attitude at 71% and there is an influence of Attitude on Behavioral Intention, amounting to 60.58%. There are five variables of innovation factor that affect the attitude, namely Job Relevance, observability, Compatibility, Personal experience, and Internal environment, while the other two variables, which do not affect the attitude, are the Personal Demographics and External Environment.

Keywords: Attitude, Behavioral Intention, Compatibility, External environment, Internal environment, Job Relevance, Observability, Personal demographics, Personal experience.

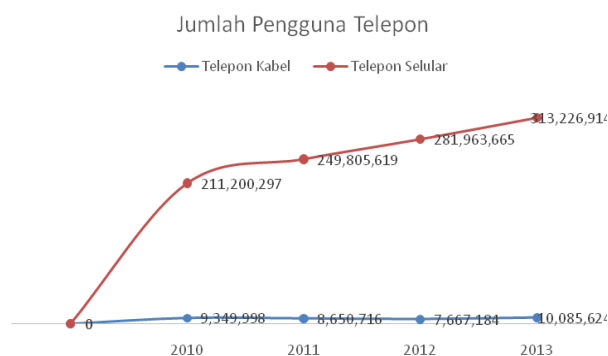
INTRODUCTION

The development of the global information and communications technology continues to evolve in line with the increasing use of the Internet. Internet users meet their needs of Internet access, which involves fast access, cheap access, cheap and easily obtained devices, and anywhere access. The number of Internet users in Indonesia in 2015 reached 88.1 million (Wearesocial, 2016). Sanjoyo (2016) states that 93% of the internet users in Indonesia access the Internet using a smartphone, 11% using a tablet, while only 5% using a desktop. The use of smartphones at this time is a representation of the behavior of technology adoption.

Data from the Indonesian Central Statistics Agency in 2013 showed the number of phone users according to the type of network operations in Indonesia. Seen in Figure 1.



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Source: (Central Bureau of Statistics, 2013)

Figure 1. Number of Phone Users by Type of Network Operations

The use of smartphones in the university environment has an impact on education, psychology, and social life in the environment (Mohammed and Tariq, 2013). The academic implementations in a university are a major business that must be run properly; the smoothness of the academic processes will facilitate the implementations of other business processes, so it should be taken seriously and wisely (Adhy & Vishnu, 2013). On the other side, in the academic environment, especially in private universities where there is a large number of students, lecturers, and employees, the activities of teaching and learning frequently take place in different locations; therefore, the use of communications technology is needed maximally, effectively, and efficiently, such as the use of smartphone technology.

As one of the professional groups in the field of education, the use of smartphones among lecturers should not only be for a communication tool, but also for other functions such as work support and a self-actualization symbol, which is expected to improve their productivity through the utilization of these technologies. Therefore, it is necessary to identify what the adoption of smartphone usage among lecturers looks like, especially at private universities in Bandung, in adopting smartphone technology. One appropriate approach can be used to explain the acceptance of users of a technology is the Technology Acceptance Model. The factor sex is a key in the technology acceptance model that can identify how influential they are in affecting the adoption of technology in both user attitude and behavioral interest in the use of smartphone technology.

Problem Statement. A smartphone is able to change the work performance of lecturers and academicians, especially with respect to technology. This technology combines and integrates the functions of multiple and diverse technologies in a single device that is flexible and portable. Although Smartphones have many advantages, their functions are not limitless. Smartphones have limited the available screen size, and users often express dissatisfaction in terms of readability. Therefore, the research is needed for empirical support that the innovation characteristics of Job Relevance, observability, Compatibility, Personal demographics, Personal experience, Internal environment, and External environment have effects on Attitude and its impact on the behavioral intention in the use of smartphones.

The Aim of Research. This paper conducted research to have important implications for the management of universities, policymakers and educational service researchers.

METHODS



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To find out the influences of Relevance, Observability, Compatibility, Personal demographics, Personal experience, Internal environment, and External environment towards attitude in the use of smartphones and its impacts on behavioral intention, this research's method is The sampling technique used is non-probability sampling of 300 respondents who are lecturers of private of universities in Bandung, by the deployment of questionnaires containing 27 question items.

RESULT AND DISCUSSION

The first step to analyze the correspondents is to do the validity test. To do the validity test, Pearson correlation is used. All statement items have Corrected Item - Total Correlation (r count) is greater than r table (0.361), so it can be said that all the items passed the test of validity (valid). Then it was continued with the reliability test.

Then it was continued with the reliability test. The instrument reliability test of this study uses reliability analysis by the Alpha Cronbach technique. The score of Cronbach's Alpha Based on Standardized Items is 0,959; it can be concluded that the questionnaire of this study passed the test of reliability (reliable) and can be used for the next stage.

Structural Equation Modeling or SEM is divided into two groups, namely covariance-based matrix structural equation modeling (CB-SEM) and variance-based matrix structural equation modeling (VB-SEM) (Indrawati, 2015: 198). This study uses VB-SEM, which is intended to make predictions on the constructs' relationship or the independent and dependent variables in the model (Hair et al., 2010, in Indrawati, 2015: 198). The statistical analysis included in the VB-SEM is partial least squares (PLS). The focus of the PLS is to make predictions (explain the variance) and for exploratory (Al Qeisy, 2009; Barroso et al., 2010, p. 442; Gefen et al., 2000; Hair et al, 2010; Ringle et al., 2012; Urbach & Ahlemann, 2010; Vinzi et al., 2010, p. 48 in Indrawati, 2015: 198). Analysis using PLS includes two steps. The first is the assessment to measure the model, to test the reliability and validity of the instruments used. The second is an assessment of the model structure to test hypotheses in the study (Indrawati, 2015).

Rating in measuring the model is usually done to ensure that the instrument is reliable and valid before concluding the relationship between the constructs in the model. Validity according to Sekaran (2003) and sekaran & Bougie (2010) in Indrawati (2015) is how well the items in the questionnaire can measure what it is supposed to measure, so it can be said that the higher the validity of the gauges are, the more effective it is to reach the goals or the more accurate it is in showing what should be measured (Indrawati, 2015: 146). In this study, the validity test is done through the content or logical validity, and construct validity.

Content validity (Indrawati, 2015: 147) is the extent to which the items used to measure the variables are logically consistent with what would be measured. Content validity is obtained by looking at the items that will be used in the questionnaire to ensure they are logically suitable for measuring the variables that would be measured in reference to the definition and indicators that have been set.

The next validity test is the construct validity. A measuring instrument is said to have construct validity when the value resulting is in accordance with the selected theory that has become the basis for making the instrument. Construct validity itself has two types, namely the convergent validity and discriminant validity (Indrawati, 2015: 149).

A measuring tool can be said to fulfill the criteria of convergent validity, if the items are theoretically stated to measure the same variables, the measurement results must be high correlated, the correlation should be higher than the value of the correlation with the items to measure different



variables, because theoretically they are also said to be different or the items used to measure the same factor, then these items must have a value that indicates that these items cohere (converge) to one another. To measure the convergent validity, we can use the inter-item correlation coefficient, factor loading, and average variance extracted (AVE) (Indrawati, 2015: 149).

Convergent validity is tested through factor loading or outer loading value; the value should be at least 0.5 to indicate that an item within a factor has convergent validity (Hair et al., 2010, in Indrawati, 2015: 151). If the outer loading value is more than 0.7, it indicates that these items have a good convergent validity (Chin & Dibbern, 2010; Henseler et al., 2009; Ghozali, 2008; Urbach & Ahlemann, 2010; Vinzi, Trincherra & Amanto, 2010 in Indrawati, 2015: 151).

The result of the convergent validity test through the outer loading shows that all the items are declared valid because they have the outer loading value above 0.5, and have a good value of convergent validity because all the items have a value above 0.7.

The second convergent validity test is through the value of average variance extracted (AVE). If the value of AVE is bigger than 0.5, it indicates that the items in the variable have enough convergent validity (Hair et al., 2010; Heykal et al., 2024; Ghozali, 2008, in Indrawati, 2015: 153). The AVE is greater than 0.5, meaning the whole variable items in this study has good convergent validity.

Then the result was tested by discriminant validity. The result has discriminant validity. To see if the independent variable has an effect or not, and what the direction of its relationship looks like, can be seen from its t-value and path coefficients. Path coefficients must have a counted t-value which is bigger than 1.96 (this value is obtained from the T table with an error rate of 0.05) (Chin & Dibbern, 2010; Henseler et al., 2009; Urbach & Ahlemann, 2010 in Indrawati, 2015).

Table 1. Path Coefficients and t-Value

Construction Relationships	Path Coefficient	t-Value	Explanation
Compatibility → Attitude	0,3029	7,8310	H1 ACCEPTED
Observability → Attitude	0,1907	4,3350	H2 ACCEPTED
Job Relevance → Attitude	0,2143	4,2030	H3 ACCEPTED
Personal Demographic → Attitude	0,0340	0,9614	H4 REJECTED
Personal Experience → Attitude	0,2007	5,4618	H5ACCEPTED
Internal Environment → Attitude	0,1149	2,6966	H6 ACCEPTED
External Environment → Attitude	0,0605	1,4459	H7 REJECTED
Attitude → Behavioral Intention	0,7783	23,8642	H8ACCEPTED

Table 2. Comparison of Research Results with the Previous Studies

Construct Relationship	First Year Research		Second Year Research	
	t-Value	Conclusion	t-Value	Conclusion
Comp → Att	5.5893	H1 ACCEPTED	7,8310	H1 ACCEPTED
Obs → Att	3.3421	H2 ACCEPTED	4,3350	H2 ACCEPTED
Job → Att	3.453	H3 ACCEPTED	4,2030	H3 ACCEPTED



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Dem→ Att	1.4349	H4 REJECTED	0,9614	H4 REJECTED
Exp→ Att	1.1524	H5 REJECTED	5,4618	H5 ACCEPTED
InEnv → Att	0.5735	H6 REJECTED	2,6966	H6 ACCEPTED
ExEnv→ Att	0.0393	H7 REJECTED	1,4459	H7 REJECTED
Att →BI	-		23,8642	H8 ACCEPTED
		r-Square	r-Square	
Comp				
Obs				
Job				
Dem	Att	63,75%		71,00%
Exp				
InEnv				
ExEnv				
Att →BI		-		60,58%

Table 2 shows that there are differences in the results of research in the first year compared with the study in the second year. In the first year, there were only three innovation factor variables that significantly influenced the attitude, namely compatibility, observability, and job relevance. The first year of the study did not involve the test of the attitude variable's effect on behavioral intention. The significant influence of the innovation factor on attitude is 63.75%.

In the second year of the research, there are five innovation factor variables that significantly influence the attitude, namely: compatibility, observability, job relevance, personal experience, and the internal environment. In addition, in the second year, there is a test of the effect of attitude variable towards behavioral intention, and the result proved that attitude significantly influences behavioral intention. The significant influence of the innovation factor on attitude is 71% while the significant influence of attitude on behavioral intention amounts to 60.58%.

CONCLUSION

Based on the research, five innovation factor variables affect the Attitude, and two other innovation factor variables do not affect the Attitude. The variables that affect Attitude are: compatibility, observability, job relevance, personal experience, and internal environment. While the unaffected variables are: Personal Demographic and External Environment. The variable of attitude affects the behavioral intention. The significant influence of the innovation factor on the attitude is 71% and the significant influence of attitude towards behavioral intention amounts to 60.58%.

Acknowledgements. First of all, the author wishes to express gratitude towards Direktorat Jenderal Pendidikan Tinggi (Dikti) / Directorate General of Higher Education, who greatly support this research. The authors would also like to express their deepest thanks and appreciation to all the lecturers of Private Universities in Bandung, as the respondents in this study. Special thanks go to Telkom University for supporting the studies of the authors that enabled them to conduct this research.



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