



Factors Affecting Acceptance of Mobile Health Insurance in Indonesia: TAM Applicability

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ABSTRACT

In this paper, we are going to analyse factors that affect user acceptance for health insurance mobile application (app) using TAM (Technology Acceptance Model) framework. This research will involve some numbers of respondent which are the health insurance participant. They will have to complete a survey for our data that make us possible to determine the factors affecting acceptance of the application. We made the survey questions based on TAM framework and one factor that we proposed. The questions consist of factors related to users' view of service availability, usefulness, ease of use, attitude toward users using the application and users' behaviour intention to use the application. A total of 88 respondents in this research indicate that the factors we have significantly impacted the users' behavior to have intention to use the mobile app of health insurance. However, the result from our research using TAM framework and statistical factor analysis shows the hypotheses from TAM framework PU (Perceive of usefulness) affects BI (Behavioral Intention) were not supported in this research.

Key words : TAM, Health Insurance Mobile Application, Statistical Factor Analysis

1. INTRODUCTION

In order to improve The Health Insurance (JKN) services in Indonesia, social security administration for health (BPJS) launched the Mobile JKN application which is used to obtain various facilities in accessing BPJS Health information and services, anywhere anytime without limitation. The role of mobile technology becomes dominant in terms of accessibility and information, there is a good chance for insurance industry to start investing and applying mobile technology for their business in order to utilize the integration, multi-distribution and also the implementation of their strategies. Mobile technology provides the ability to expand networks, allows communication anytime and anywhere with various users such as employees, customers and organizational [3] so it will be a powerful thing to help the organization runs their business.

Users are hoping that this convenience will be activated or enabled by considering the following:

- Nowadays, mobile devices are widely spread. Almost everyone has at least one. Data says that there are more than 5 billion mobile subscriptions which is same as 87% of the world mankind population. Beside that massive number, the mobile devices

usage is keep penetrating and growing up, estimated from 5 billion plus in 2010 and 4 billion plus mobile subscriptions in 2009. The mobile subscriptions have developed markets averaging more than one subscription per person: 110 total subscriptions per 100 inhabitants.

- Numbers of mobile app downloads are enormous nowadays. Almost a million applications are available in Google Play and Apple's app store, people can find any kind of mobile apps. In the 3rd Quarter of 2011, people had downloaded over more than 17 billion applications from App store only and the number keep growing at furious a billion per month pace. Many digital team of insurance industry are giving close attention to this phenomenal and they try to step up with their applications in order to provide value and view of information about their financial lives.
- People in these days are using mobile devices in their daily lifes. With the usage of mobile devices, people's way to learn about, selecting and buying products are changed. The ease of use of mobile devices had made consumers feel convenience to research, buy and find the services for their needs moreover with the existence of the mobile applications. In US year 2012, people as consumers are predicted to spend their money more than \$10 billion for the nondigital things from their mobile phones, and the number of the spending was growing to \$31 billion by 2016. Not only in US but also in Europe the mobile devices users are growing up, with 18% of iPhone users that spend 10 even more hours using their devices surfing the internet each week [9].

These conditions help increase the ease of doing health insurance services. One of the requirements for health insurance services is to provide services that are fast, accurate and precise. With the nature of handheld, mobile devices have fulfilled the requirements. Report on industrial research outlines; "Stakeholders throughout the world are faced with the increasing need to offer more services to agents and consumers via mobile devices" [7].

In information technology context, the user acceptance is defined as "a willingness that can be verified in some numbers of users which use information technology as an instrument to assist the smooth implementation of jobs" [19]. In journal [8] we are informed about a systematic review from some of important theories which talk about the user acceptance technology and this review is focus on the

framework named Technology Acceptance Model (TAM) that was proposed by Fred D. Davis in 1989. There are lots of literature discussed and used TAM framework for various cases. The variation of these cases is important for IT needs but it depends on the goal of the technology which is used. For study of user acceptance technology there is no firm method which suitable for all case. Often we need to combine and use some of theories in order to solve our problem. This combination of theories is used for Wu et al. research. In their research, they used original TAM framework to analyse the implementation of mobile computing used by healthcare professionals [20]; In journal [21] Zhang et al. also used TAM framework to do a research of factors that influencing the implementation of IT mobile by homecare nurses.

This research intent to analyse the factors which can influence users in case of acceptance for mobile health insurance application. The users of this research are the BPJS participant in Indonesia. This paper is set as follows: The first chapter, introduction. Second, the proposed theoretical and model framework. The third and fourth sections explain the methodology and data analysis. Finally, result, conclusions and future research.

2. LITERATURE REVIEW

A. The Technology Acceptance Model (TAM).

Technology Acceptance Model (TAM) is a model of information systems that aims to determine acceptance by the users, this theory is quite take effect on information systems by predicting acceptance and observing problems before development or to be used (Davis, 1989) [13].

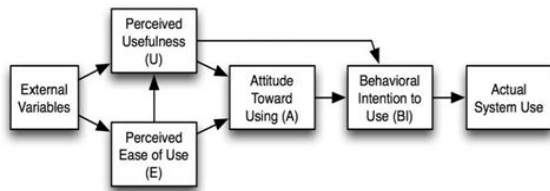


Figure 1:Example of a figure caption. (figure caption)

Regarding the conclusions of this study, namely the factors that can influence user acceptance in unequal terms, identify many factors used by previous studies that are mostly different in nature, and often use are showed in this table 1,

Table 1: Top 4 of TAM Construct

No	Construct	No of Studies
1	Perceived ease of use (PEOU)	55
2	Perceived usefulness (PU)	55
3	Behavioral intention (BI)	45
4	Attitude (AT)	26

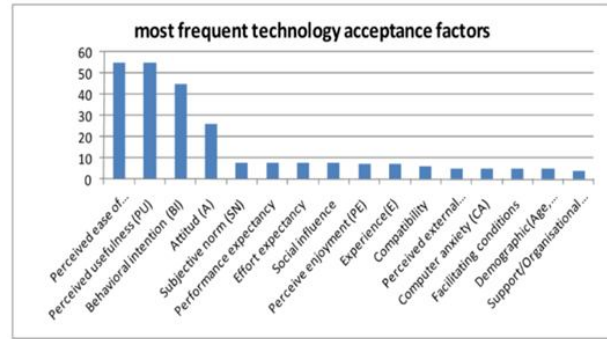


Figure 2:Example of a figure caption. (figure caption)

The figure 2 above shows that the construction of TAM, namely perceived ease of use (PEOU), perceived usefulness (PU), behavior intention (BI), and attitude towards use (AT), are the most common construct to be used to predict user acceptance [8]. The findings show that the Technology Acceptance Model (TAM) is considered the most prominent and empirically proven theory [2]

B. Perceived Service Availability (PSA)

Service availability is the user's perception that the system used is considered provide connections on the spot. Perceived service availability is measured by indicators that can use technology anytime and anywhere, technology can be easily accessed and portable, technology is available for use whenever they needed [18].

Lingshuang Shao et al define and measure availability through availability metrics in service-oriented environments. They propose server-side availability metrics and user-side availability must be distinguished. They analyze the characteristics of service availability that users feel can be used to measure the availability of web services [10]. The dependence of perceived of service availability is a factor that influences service failure rates / improvement rates, user retry rates, and user switching rates [11].

Esti Widyaprabha et al resulting that perceived service availability has a positive and significant influence on perceived ease of use, where PEOU affects AT. In this model the researcher adopted the PSA against AT without mediating PEOU [5].

Factors in the TAM model are used as a measurement of decision makers to decide when and how they will use the technology. Here are a number of factors in the TAM model: Perceived Usefulness (PU): which is defined as "the extent to which users are convinced to use certain systems to improve their performance". Perceived easy-of-use (PEOU): defined as "the extent to which users believe that the system is easy to use" [8].

C. Perceived Ease Of Used (PEOU) and Perceived Usefulness (PU)

Based on research conducted by Morosan (2014) that PEOU users affect PU indirectly strengthen attitudes and intentions of mobile users to purchase additional services for airplane mode. Literature results can be concluded that PEOU will have a positive influence on PU and attitudes towards intention to purchase additional airplane mode services for cellphone [12]. The findings show that there is a significant impact of ease of use and the benefits felt by customers to

help banks, especially Libyan banks, to consider implementing mobile banking services. Mobile banking is expected to provide high quality service to customers, thereby increasing customer loyalty and satisfaction [1].

The existence of mobile applications has now dominated the digital world because it allows people to do everything through smartphones. By using TAM it is proposed that user acceptance to use mobile applications in learning the Kadazandusun language is influenced by their usefulness and ease of use of the application, which in turn affects their attitudes towards the use of cellular applications and behavioral intentions to use [4]. In another study about using an Android application to manage weight. A total of 94 users who participated and used the application for two weeks, completed a survey of 18 items to determine the factors that affect application acceptance showed that compatibility, perceived benefits, and perceived ease of use significantly influence behavioral intentions to use cellular obesity management applications [6]. In studies using cloud based virtual learning, it is stated that application functions are relatively easy to navigate, which leads to continued use of the application [22]. Nowadays UX (user experience) which is related to ease of use becomes very important in the development of a website, where this user experience affects the acceptance of use on the web [23].

D. Attitude Toward Using (AT)

The preliminary analysis and data screening revealed that participants tended to give high ratings to items, usually in the moderately agree to strongly agree interval, particularly for items related to AT. The results showed that AT has a significant positive influence on BI. This means that the sample population has a positive attitude toward using m-government applications and intends to use these applications in the future. Therefore, majority of participants believe that using m-government applications is a good and positive idea. Results of the current study show that most participants have a positive attitude toward using m-government applications. This suggests that citizens will use m-government without any resistance to change and will support the government decision to provide these services [2].

E. Behavioural Intention to Use (BI)

Behavioural intention may be explained as the intended use of a system before its real use and its predictions for the future [15]. Many models have been developed for analysing and predicting the users' intentions mobile applications. For examples (Abbas & Hamdy, 2015) they have determinants of continuance intention factor in Kuwait communication market. The understanding of the behavioural intention to use mobile banking Services Recommended Citation Toward An Understanding of the Behavioral Intention [17]. Based on TAM theory, perceived use of ease and perceived usefulness effect positively on the behavioural intention of the users [16]

3. RESEARCH METHODOLOGY

This research design as a quantitative method using simple random sampling. As a hypothesis testing, we use structural equation modelling operation. This statistical method was approaching by default method from that model we improve

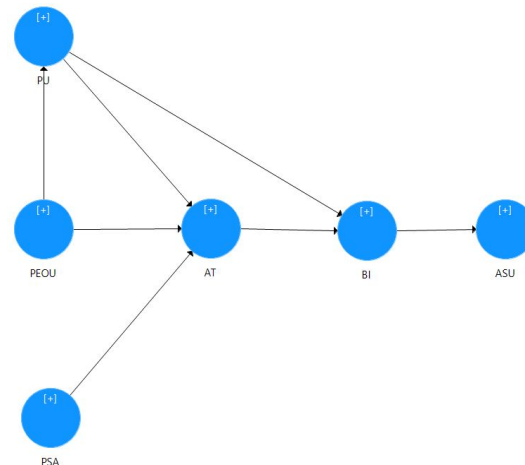
with technology acceptance model including "perceived service availability" (PSA) variable.

As there some option from standard using of SEM (CB & PLS) we choose partial least square base. According to Gazali & Latan (2012) PLS base its more suitable for operating in model or research with more mediating variables.

4. IMPLEMENTATION

A. Design Model

The conceptual framework is used as the basis for testing. In this study, the TAM model was used. The conceptual framework of the study of the relationship between constructs, the research hypothesis is formulated as follows



Figuer 3: Design Model

H1: Perceived service availability (PSA) has a positive and significant influence on Attitude towards using technology (AT) in the use of Mobile Health Insurance (JKN) Application

H2: Perceived usefulness (PU) has a positive and significant effect on Attitude towards using technology (AT) in the use of Mobile Health Insurance (JKN) Application

H3: Perceived ease of use (PEOU) has a positive and significant effect on Attitude towards using technology (AT) in the use of Mobile Health Insurance (JKN) Application

H4: Perceived ease of use (PEOU) has a positive and significant effect on perceived usefulness (PU) in the use of Mobile Health Insurance (JKN) Application

H5: Perceived usefulness (PU) has a positive and significant influence on behavioural intention to use (BI) in the use of Mobile Health Insurance (JKN) Application

H6: Attitude towards using technology (AT) has a positive and significant influence on behavioural intention to use (BI) in the use of Mobile Health Insurance (JKN) Application

H7: Behavioural intention to use (BI) has a positive and significant influence on Actual System use (ASU) in the use of Mobile Health Insurance (JKN) Application

The sampling using a purposive sampling technique with these criteria: the community of BPJS both independent

users and corporations and the people who are live in the city of Jakarta. The questionnaire making is based on various variables found in the TAM model. Perceived Usefulness relates to measuring the use of mobile health insurance applications which is believed to bring benefits to people who use it. Perceived Ease of Use relates to a person who belief that the mobile Health insurance applications can be easily used and understood. Perceived service availability relates to the indicators where technology can be used anytime and anywhere, technology is available to be used whenever needed by availability through Service Oriented Environment. Attitude towards using technology relates to a person's acceptance of the ability themselves to use the mobile Health insurance applications Behavioural Intention relates to a person's intention to use the mobile Health insurance applications. Actual System Use Relates to a person's real actions when using the mobile Health insurance applications

B. Pre-Test

The procedure of this study was a pre-test. The pre-test will conduct with two evaluations that determine the validity and reliability of the research questionnaire. Validity is used to measure the ability of a measuring instrument. Reliability is used to measure the extent to which measurements can be trusted (Kuncoro 2012). Sampling for pre-test is done by giving the online questionnaires to 30 respondents who previously been confirmed as a health insurance participant

Table 2: Pre-Test

Concept	Indicator	KMO	Anti-Image Matrix	Total Variance	Loading Factor	C Alpha
Perceived Usefulness	PU 1	0.772	0.723	67,267 %	0.740	0.858
	PU 2		0.789		0.879	
	PU 3		0.824		0.815	
	PU 4		0.816		0.750	
	PU 5		0.852		0.802	
	PU 6		0.795		0.709	
	PU 7		0.582		0.801	
Perceived Ease Of use	PEO U 1	0.820	0.855	64,550 %	0.811	0.753
	PEO U 2		0.836		0.715	
	PEO U 3		0.821		0.755	
	PEO U 4		0.786		0.759	
	PEO U 5		0.805		0.807	
Attitude Towards Using	AT 1	0.850	0.816	63,388 %	0.819	0.808
	AT 2		0.849		0.694	
	AT 3		0.862		0.768	
	AT 4		0.818		0.825	
	AT 5		0.882		0.806	
	AT 6		0.877		0.755	
Behavioral Intention	BI 1	0.760	0.799	56,341 %	0.773	0.814
	BI 2		0.829		0.742	
	BI 3		0.731		0.687	
	BI 4		0.768		0.745	

Perceived Service Availability	PSA 1	0.735	0.770	56,061 %	0.712	0.776
	PSA 2		0.736		0.758	
	PSA 3		0.795		0.786	
	PSA 4		0.692		0.751	
	PSA 5		0.690		0.736	
Actual System Use	ASU 1	0.778	0.741	58,749 %	0.819	0.853
	ASU 2		0.783		0.654	
	ASU 3		0.809		0.845	
	ASU 4		0.781		0.784	

The test conducted using SPSS 21 software. It is carried out using a scale analysis reliability method. The measurement of a construct will be reliable if the value of the Cronbach alpha parameter is greater than 0.5 (> 0.5) (Field 2007).

The results of the validity test show that the KMO test value for each latent shows a good value (> 0.5). The Bartlett test value shows significance below 0.05. Furthermore, the value of the anti image matrix and total variance explained are above > 0.5 and > 60 percent respectively. Judging from the value of the factor loading, overall item statement does not indicate a problem. In addition to testing the validity, the author also tested the reliability of construct. Reliability test results (Table II) can be seen that the whole construct has a good reliability value. At N = 30 the cronbach alpha value is above> 0.7. The Cronbach alpha requirement of a construct has sufficient indicator reliability is > 0.5 and is good if it has a value> 0.7

C. Profiling Respondent

The distribution of respondents aims to get a general picture of the respondent profile. The profile will be used as a reference to discuss the results according to the research objectives. Reference to distribution of frequency distribution is collected from respondents' biodata questions. The following shows the respondent's frequency distribution

Table 3: Profiling Respondent by Gender

Gender	Freq	Percentage
Male	43	51%
Female	45	49%

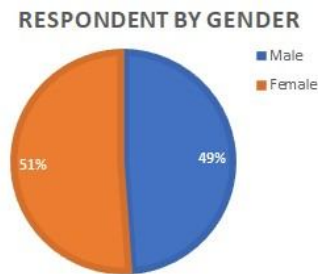


Figure 4: Rrespondent by gender

Figure 4 shows that 51% percent of the respondent are male and 49% are female.

Table 4: Profiling by Age

Age	Freq	Percentage
< 20	3	3.41%
20 - 29	36	40.91%
30 - 39	31	35,23%
40 - 49	17	19,32%
> 49	1	1,14%

Table 5 :Profiling by usage

Do you use mobile insurance	Freq	Percentage
Not Yet Using Mobile Insurance	56	63,64%
Already Using Mobile Insurance	32	36,36%

RATIO OF MOBILE INSURANCE USER

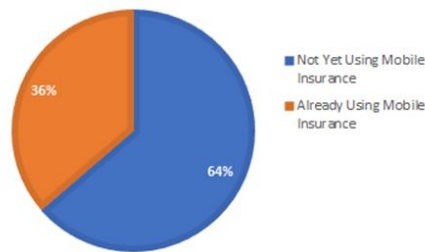


Figure 5: Ratio by usage

D. Analisis Deskriptif Statistik

Descriptive statistics are used to determine the mean and standard deviation. The usage of these two values is to find out the respondent's evaluation scores and the diversity of respondents' responses to the statements in the questionnaire. The following are the results of descriptive statistics in the data table and description:

Table 6:Descriptive statistics

Concept	Indicator	Mean	Standar Deviation
Perceived Usefulness	PU 1	2,14	1.040
	PU 2	2.03	1.079
	PU 3	2.16	1.115
	PU 4	2.01	1.150
	PU 5	2.04	1.002
	PU 6	2.11	1.109
	PU 7	2.12	1.001
Perceived Ease Of use	PEOU 1	2.16	1.111
	PEOU 2	2.09	1.015
	PEOU 3	2.08	1.055
	PEOU 4	2.06	1.059
	PEOU 5	2.11	1.007

Attitude Towards Using	AT 1	2.11	0.989
	AT 2	2.12	0.994
	AT 3	2.14	1.068
	AT 4	2.03	0.995
	AT 5	2.08	1.006
	AT 6	2.01	1.055
Behavioral Intention	BI 1	2.03	1.073
	BI 2	1.99	1.042
	BI 3	1.95	1.087
	BI 4	2.13	1.045
Perceived Service Availability	PSA 1	1.83	1.112
	PSA 2	1.53	1.058
	PSA 3	1.63	1.186
	PSA 4	1.73	1.051
	PSA 5	1.53	1.136
Actual System Use	ASU 1	2.02	1.119
	ASU 2	2.42	0.984
	ASU 3	2.13	0.993
	ASU 4	2.33	1.084

Data processing for the main research will use partial least square - structural equation model (PLS-SEM) to answer the research question. PLS-SEM requires two evaluation stages, evaluating the outer model and evaluating the inner model.

The first evaluation is the outer model. Evaluation of the outer model is done to measure the relationship between latent constructs and indicators. Evaluation of outer model is also used to test construct validity and reliability of research instruments using data from the main research. In evaluating the outer model, several values of validity are needed, namely, convergent validity, discriminant validity, and reliability (Gazhali & Latan 2012).

E. Outer Model Evaluation: Diskriminant Validity

The first measurement validity of the outer model using PLS-SEM, is discriminant validity. This validity is evaluated by comparing the AVE root value on Smart PLS 3.0 output.

Table 7: Diskriminant Validity

	PU	PEOU	AT	BI	PSA	ASU
PU	0,82					
PEOU	-0,01	0,94				
AT	0,266	0,273	0,79			
BI	0,148	0,132	0,097	0,74		
PSA	-0,18	-0,2	-0,21	-0,17	0,85	
ASU	0,128	0,166	0,161	0,172	0,04	0,77

To know the discriminant validity in the outer model test with the PLS-SEM approach there are three choices, (1) evaluating the indicator deviation with the construct on the cross-loading value or (2) evaluating the root deviation value of AVE from each construct in the fornell-larcker criterion table or (3) evaluating AVE root deviation values from each construct in heterotrait-monotrait ratio (HTMT) tables. Those three of them can usefull, but Hansler, Ringle, and Sarsted (2015) for research within the scope of management and

social sciences science is better to use fornell-larcker criterion or heterotrait-monotrait ratio than using cross-loading tables. The author himself chooses to use the results of the analysis contained in the fornell-larcker criterion.

Discriminant validity evaluation in the fornell-larcker criterion table. The AVE root in the Fornell Lackerr Criterion Table shows the results of the AVE value for variables that intersect in the fornell-larcker criterion table that have a good value. This validity is expressed well if the AVE root is higher with the same intersection construct, and lower at the intersection with other constructs

F. Outer Model Evaluation: Convergent Validity & Reliability

The second evaluation of the measurement of the outer model using PLS-SEM is convergent validity and reliability of the construct. Convergent validity by evaluating the factor loading value, that is, the magnitude of the correlation value between the indicator and its latent construct (Wijanto 2008) and the AVE value of each construct indicator. The AVE value of convergent validity is a coefficient to explain variants in the indicator (Fornell and Larcker 1981). The results of processing data using Smart.PLS 3.0 software on each of the research constructs.

Table 8:Convergent Validity & Reliability

Variable	Indicator	Validity		Reliability	
		Factor Loading	A V E	C. Alpha	C.R
Perceived Usefulness	PU 1	0.850	0.595	0.799	0.810
	PU 2	0.730			
	PU 3	0.795			
	PU 4	0.727			
	PU 5	0.795			
	PU 6	0.818			
	PU 7	0.866			
Perceived Ease Of use	PEOU 1	0.864	0.577	0.816	0.822
	PEOU 2	0.871			
	PEOU 3	0.847			
	PEOU 4	0.891			
	PEOU 5	0.850			
Attitude Towards Using	AT 1	0.909	0.584	0.830	0.832
	AT 2	0.804			
	AT 3	0.810			
	AT 4	0.834			
	AT 5	0.862			
	AT 6	0.841			
Behavioral Intention	BI 1	0.918	0.554	0.845	0.855
	BI 2	0.823			
	BI 3	0.851			
	BI 4	0.881			
Perceived Service Availability	PSA 1	0.834	0.497	0.788	0.798
	PSA 2	0.899			
	PSA 3	0.872			
	PSA 4	0.696			
	PSA 5	0.850			
Actual System Use	ASU 1	0.912	0.539	0.830	0.834
	ASU 2	0.930			
	ASU 3	0.881			
	ASU 4	0.875			

G. Path coefficient Evaluation (B) and Relationship Significance (t-value)

Path coefficient evaluation stages are the most important part of this study. It aims to see the direction of the correlation and the significance of the relationship influence between the antecedent construct and the acceptance construct. The suitability of the relationship that has been hypothesized previously was determined by looking at the value of the beta coefficient. whereas to see its significance, it is seen the value on t-value. Evaluation of the relationship between constructs by looking at the hypothesis if the direction of the relationship (beta) has a conformity correlation effect. While the construct relationship is significant if it has a value of t value> t table with t-table value = 1.65 (one-tailed).

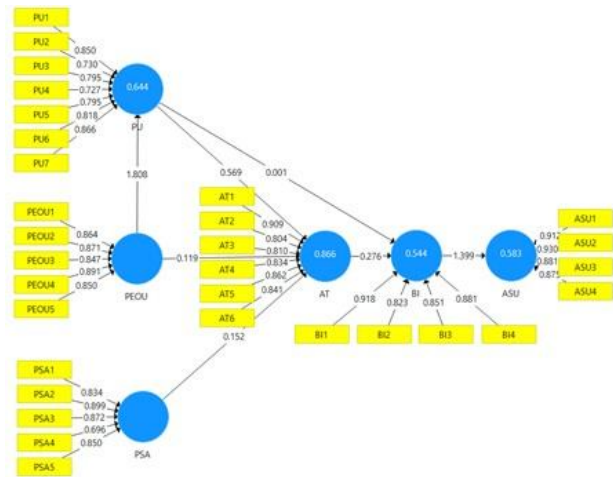


Figure 6 :SEM- PLS Calculation Result

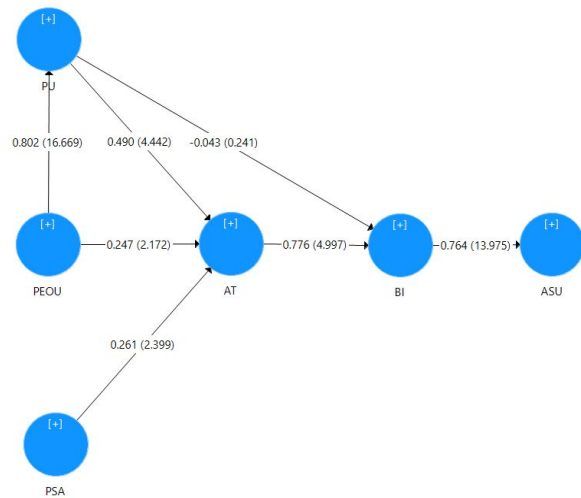


Figure 7 :SEM Path Coefficient and t-Statistik Calculation Result

5. RESULT

Each relationship of the research hypothesis is evaluated based on the values of coefficient B and t-values through the path diagram using Smart PLS 3.0. The relationship Testing

between constructs uses a one-tailed test because the direction of the relationship between constructs has been proven before. The hypothesis is said to be significant if the value of $t_{count} > t_{table}$. by using t -table 1.65 on the 5% freedom degree. The t -value of the path coefficient in evaluating the inner model at H is the answer to the estimation of the relationship (hypothesis) that is accepted or rejected with the suitability of the correlation from the basis of the theory and the findings of previous research

Table 9:Hypothesis Analysis

Hypothesis		t-Statistic	Coeff .B	Result
H1	PSA -> AT	23.399	0.261	Significantly Positive Influence
H2	PU -> AT	4.442	0.490	Significantly Positive Influence
H3	PEOU -> AT	2.172	0.247	Significantly Positive Influence
H4	PEOU -> PU	16.669	0.802	Significantly Positive Influence
H5	PU -> BI	0.241	-0.043	Not Significantly Influence
H6	AT -> BI	4.997	0.776	Significantly Positive Influence
H7	BI -> ASU	13.975	0.764	Significantly Positive Influence

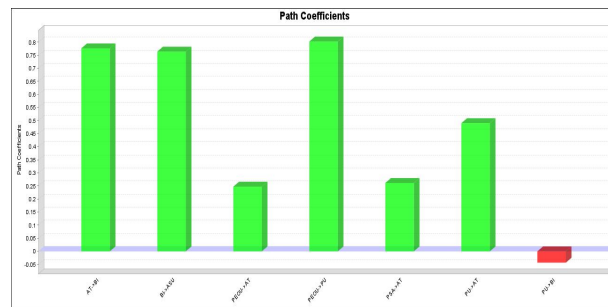


Figure 8: Path Coefficient

The result appears on the table and figure above. Showed that mostly the hypothesis has significant influenced, however nulled in $H-5=0$. This result conclude that technology acceptance model in mobile health insurance application was proved working, however there is insignificant influence perceived usefulness toward behavior intention to use.

6. CONCLUSION

The main aim of this study is to identify and examine the factors that effacing the adoption of mobile health insurance from customer perspective. The findings indicted that perceived service availability, perceived usefulness and perceived ease of use effect positively on attitude toward using. And attitude toward using effect the behavioral intention to use also behavioral intention to use have a positive impact to actual system use. Therefore, H1, H2, H3, H4, h6, and H7 were supported. However, the hypotheses

that perceived usefulness affects behavioral intention to use were not supported in this research. The findings of this research may help the health insurance (BPJS) to consider the adoption and implementation of mobile health insurance services. The adoption of mobile health insurance will help the insurance to provide high service quality to the customers, thus, the satisfaction of customers will be increased.

There is opportunity for future research to expand the sample size and more conical investigations where the profile of the respondents is health insurance (BPJS) participants who download the application or at least tried to use the application. And could improve by the specific age, the segmentation will be scales between 20 to 45 years old in order to enhance the understanding regarding usage of mobile application

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