(RESEARCH ARTICLE)

Analysist and implementation additional model for web service to improve user satisfaction and acceptance

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Abstract

The tridharma for Higher education activities is an obligation that must be carried out by lecturers and Community Service (P3M) which is one of the units at the Jember State Polytechnic (Polije). satisfaction of P3M services, ranging from research planning and community service to post-activity monitoring and evaluation activities reported by stakeholders to the P3M unit to increase satisfaction and acceptance of the P3M website services that have been created and applied by the P3M website. The process of grouping the data is carried out using the Direct Interview mechanism, distributing questionnaires to all stakeholders in the company. Furthermore, Goodness Of Fit and then Structural Equation Modeling (SEM). The proposed research and community service will be more for institutional contributions, especially at the Jember State Polytechnic. This study offered a UTAUT2 development model by adding service quality and trust variables. The method used to analyze the model was the Structural Equation Model (SEM). Research data collection was done through online questionnaires. The results of this study tested 12 hypotheses that affected Behavioral Intention and Use Behavior in using fixed broadband services in Indonesia. In the end, this research would get a development model from UTAUT 2, which was P3M Model.

Keywords: UTAUT-2; P3M; SEM; Trust; Service Quality

1. Introduction

Higher education certainly cannot be separated from the Tri Dharma of Higher Education, which consists of Education, Research and Community Service. These three become important points in realizing the vision of the university. These three things are also the responsibility of all elements in Higher Education, including students, lecturers, and various academicians involved. there is a Unit that focuses and is concerned with the Tridharma Activities of Higher Education, namely the Jember State Polytechnic P3M Unit. This unit focuses on Research Management and Community Service for all academics in this case the lecturers are directly obligated, starting from program preparation, program proposals, program reviews to the expected outputs and results of research and community service.

The Existing conditions in the P3M service business process already have an existing P3M information system. Background The existing conditions for the existing system are as follows: (1) P3M Unit Opens 2 Research and Community Service Programs, namely the Grant scheme funded by PNBP and Independent. (2) Grant and Independent Proposals are Uploaded on the P3M System (3) Review process is done manually by downloading files on the P3M web (4) Program announcements and validation processes are still manual (5) Progress reporting using manual drive (6) tracking output completion progress. The cause of the length of the submission process to the review to the publication of the expected output is, the length of the process which still seems manual and has not been integrated into the system, so you have to check the system one by one. And you must download the expected documents and then re-upload the documents that have been reviewed for approval. Based on the existing conditions above, there are main problems with

the system, namely: (a) the Reporting System has not been integrated into the system, (b) the Review system for the proposed proposal has not been integrated, (c) the Outcome Tracking system on Progress has not been integrated, (d) the assessment system to the system has not been integrated. The solution to the problems above is to develop a P3M Service System for Optimizing the Selection Results Assessment of several modules in the existing P3M system to make it easier for P3M managers, lecturers, and related stakeholders to apply the principle of data transparency to support the Tri Dharma of Higher Education.

2. Material and methods

2.1. Literature Review

2.1.1. Unified Theory of Acceptance and Use of Technology 2 UTAUT 2

Unified Theory of Acceptance and Use of Technology 2 or abbreviated as UTAUT 2 is the latest model to identify technology acceptance where the model is formulated based on eight theories of technology acceptance (Venkatesh, 2012) Unified Theory of Acceptance and Use of Technology 2 or abbreviated as UTAUT 2 is a development of UTAUT. (Venkatesh, 2012). In UTAUT2 model, there are additional variables that does not exist before in UTAUT, those are Price Value, Hedonic Motivation, and Habit (Rosyady, 2021).

2.1.2. Trust

In every social environment that involves the role of people and technology, trust becomes a critical issue (Rosyady, et al., 2022). Trust can help to set social relationships and reduce the uncertainty of human behavior. Therefore, trust is a very vital thing in the financial services adoption which is used mobile internet and is even more critical from an online business perspective. Trust is a subjective tendency to believe that the occurrence of an consistent action with the positive assumption (Guan, 2010).

2.1.3. Service Quality

Service quality can be defined as the difference between reality and customers' expectation for the service they receive or accept. The customers' expectation is basically the same as what kind of service a company should provide to their customers. This customers' expectation are based on word of mouth, personal needs, past experiences, and external communications (advertisement and other forms of company promotion) (A. V. Parasuraman, 2006).

2.1.4. Partial Least Square Structural Equation Modeling (PLS SEM)

Structural Equation Modeling that based on covariance is generally tests a theory, while PLS (Partial Least Square) is tend to be more predictive model. In PLS, it can be conducted the measurement of model with structural testing. The measurement model (outer model) is used to test the validity and reliability test, while the structural model (inner model) is used to test causality (test hypotheses with predictive models).

2.1.5. P3M Unit

There is a Unit at State Of polytechnic Jember that focuses and is concerned with the Tridharma Activities of Higher Education, P3M Unit. In carrying out the Tridharma Process of Higher Education, especially in the field of Research and Community Service, This unit focuses on Research Management and Community Service for all academics in this case the lecturers are directly obligated, starting from program preparation, program proposals, program reviews to the expected outputs and results of research and community service.
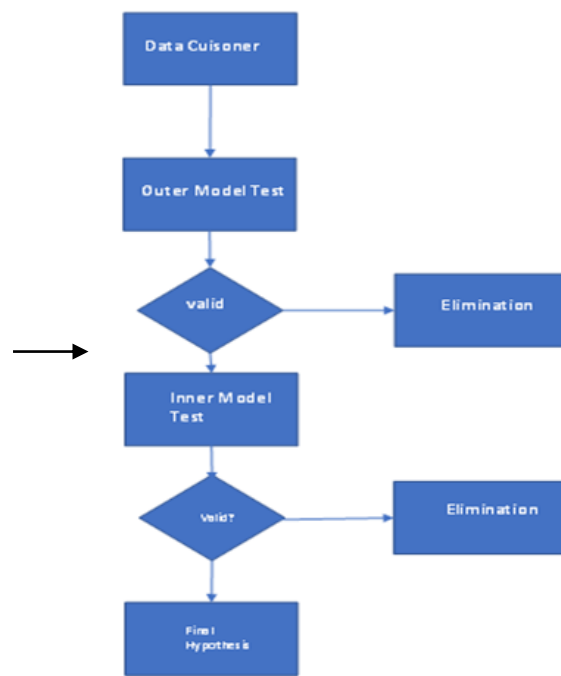
2.2. Methods

2.2.1. Flowchart diagrams

In this stage contemplating and preparing this research report will be done. The Development Of UTAUT 2 Model For P3M Web Service To Improve User satisfaction and acceptance as described in **Figure 1**.
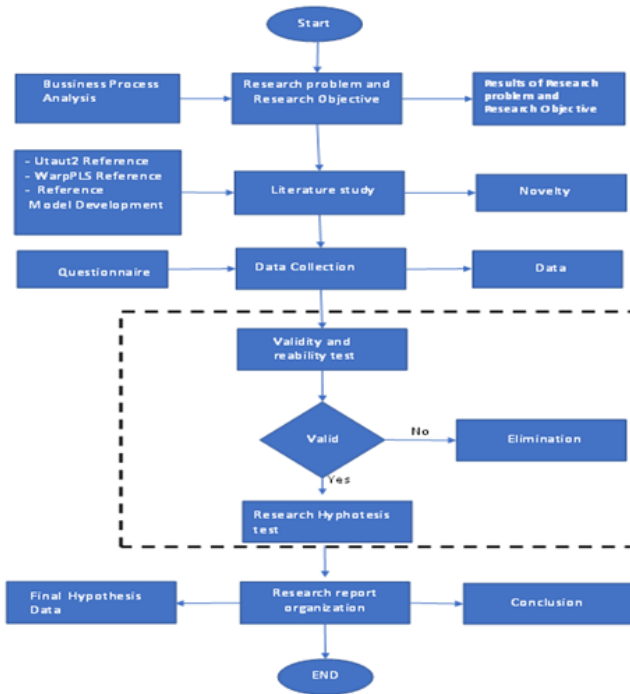
**Figure 1** Flowchart diagram of research methodology   **Figure 2** SEM Analysist

2.2.2. Data collection

Data collection in this study was done by using an online survey method. Online surveys were carried out by using Google Document Forms documents or generally abbreviated as Google Forms. Then, this online questionnaire was distributed through social media such as Whatsapp, Telegram, Instagram, Facebook, and Email. The research attributes that was used refer to previous studies. Questionnaires were distributed by online to all Stakeholder at State Of Polytechnic Jember. Each indicator from each variable used a likert scale interval data measurement with a measurement scale as follows (Bagranoff, 2010): Strongly Agree (SS) score = 5, Agree (SS) score = 4 Disagree (KS) score = 3 Disagree (KS) score = 2 Strongly Disagree (KS) score=1

2.2.3. Research Variable Model

Error! Reference source not found. below was the model used in this study. This research model explained the behavioral intention and usage behavior of consumers in Indonesia in using Fix Broadband Service. In this model there were the basic variables development of the UTAUT2 model, such as trust and service quality.
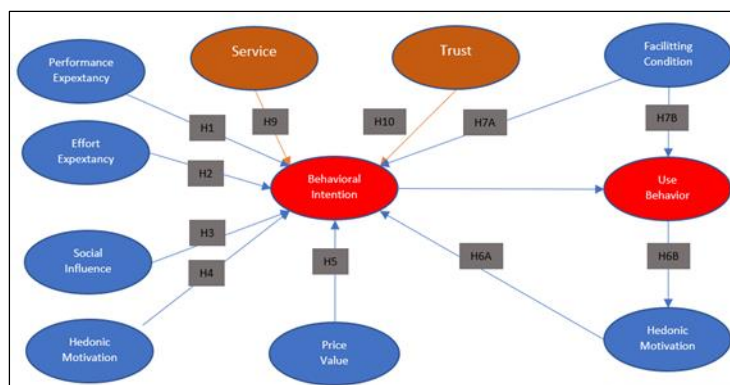
Figure 3 Research Variable Model

3. Results and discussion

3.1. Data Collections

The number of questionnaire respondents obtained in this study were 273 respondents. The questionnaire was collected for approximately 4 weeks from end of Juli to mid-aug 2022. Through online distribution and was spread to several social medias. The survey method used a web google form, where users could directly filled out the questionnaire form instantly and was recorded directly by the system. From the 273 respondent datas, then filtered again with the parameters of respondents who had subscribed p3m web services and there was obtained customer data as follows: 16 respondents who had not subcribed p3m web services, 31 respondents non state polytechnic of jember. 228 respondents who had already subscribed to p3m web services.

3.2. Partial Least Square Analysis (PLS-SEM)

There were two stages of PLS analysis, such as the outer model evaluation (constructive model) and the inner model evaluation (structural model). PLS-SEM analysis in this study was conducted using the WarpPLS 7.0 software.

3.2.1. Outer Model Evaluation (Construct Model)

Outer model evaluation was used to see whether the indicators or question items in the study were able to properly measure the research variables (valid and reliable). The evaluation of the outer model in PLS was divided into three parts, those were:

Convergent Validity Evaluation

The results of the convergent validity test showed that each indicator/question item in this study had an outer loading value greater than 0.7. The test results showed that each indicator/question item had good convergent validity. For example variable Performance Expectancy as describe is

Table 1 Convergent Validity Evaluation

Variable	Loading Factor
PE1	0.899
PE2	0.848
PE3	0.889

Discriminant Validity Evaluation

Discriminant validity evaluation was performed to test whether the indicator/question item in a variable can only be used to measure the variable and cannot be used to measure other variables (Hair, 2016).

$$VE = \frac{\sum \lambda i^2}{\sum \lambda i^2 \sum_i var(\in i) -}$$

(1)

In which :

λi= loading factor, $var(\in i) = 1 - \lambda^2$

Table 2 Discriminant Validity Evaluation

	PE	EE	SI	FC	HM	PV	HT	T	SQ	BI	UB
PE	**0.879**	0.781	0.513	0.624	0.665	0.657	0.656	0.680	0.653	0.599	0.581
EE	0.781	**0.863**	0.578	0.704	0.694	0.674	0.707	0.718	0.637	0.582	0.567
SI	0.513	0.578	**0.817**	0.595	0.586	0.662	0.556	0.514	0.593	0.553	0.529

This table is example for variable of PE, EE & SI. The results of the discriminant validity evaluation showed the AVE root value which was shown through the bold diagonal value in **Table** 2 The AVE root value on performance expectancy was 0.879, which was greater than the performance correlation value with other variables. It was also the same as the other variables which was known to have the AVE root value greater than the variable correlation value with other variables in the model. Thus, it can be stated that the question items in this study had good discriminant validity, so that the question item of a variable could only described the variable and could be distinguished from other variable question items in the research model.

Construct Reliability Evaluation

Construct reliability evaluation was conducted to see whether the research question items were reliable/reliable in measuring the research variables. Reliability according to Sugiyono (Kock, 2013) was the extent to which an indicator/question item tested on the same object would produce the same data analysis results.

$$CR = \frac{(\sum_{i=1}^{n} \lambda)^2}{(\sum_{i=1}^{n} \lambda)^2 + \sum_{i=1}^{n} 1 - \lambda^2} \qquad (2)$$

In which, λ was the loading factor from the indicator/question item, while n was the number of indicators/items in the latent variable.

Table 3 Composite Reability

Variabel	Composite Reliability	Variabel	Composite Reliability
Performance Expectancy	0.911	Habit	0.913
Effort Expectancy	0.898	Trust	0.922
Social Influence	0.857	Service Quality	0.923
Facilitating Condition	0.884	Behavioral Intention	0.904
Hedonic Motivation	0.891	Use Behaviour	0.825
Price Value	0.890		

Table 3 showed that each variable in this study had a composite reliability value ranging from 0.825 to 0.923. The composite reliability value for each variable was greater than 0.7, which meant that each variable in this study had reliable/credible indicators/question items.

3.2.2. Inner Model Evaluation (Structural Model)

The second stage was inner model evaluation (structural model), at this stage it tested the relationship between variables according to the research hypothesis and evaluated the goodness of fit model was done. Inner model evaluation consists of four parts, such as:

Multicollinearity Test

The existence of multicollinearity is indicated if there is one variable that has a Variance Inflation Factor (VIF) value of more than 5, so if there is a variable that had a VIF value > 5, it is necessary to consider including that variable in the model (Hair, 2016).

$$VIF = \frac{1}{1 - R_x^2} \qquad (3)$$

VIF is obtained from the R2 of exogenous variabels value in the research model. (Hair, et al., 2016) and the results obtained from the warppls application were as follows:

Table 4 VIF

Variabel	VIF	Variabel	VIF
Performance Expectancy	3.015	Habit	3.547
Effort Expectancy	3.666	Trust	4.087
Social Influence	2.112	Service Quality	4.101
Facilitating Condition	3.033	Behavioral Intention	3.024
Hedonic Motivation	4.095	Use Behaviour	2.329
Price Value	4.011		

The results of multicollinearity test used VIF in **Table** 4 showed that all variables in this study had VIF value were less than 5. Thus, it can be concluded that there was no multicollinearity between variables in this study so that testing bias can be avoided.

Goodness of Fit Model Assessment

Goodness of fit assessment in Partial Least Square (PLS) which is used WarpPLS can be done by looking at some of the references that have been given by (Kock, 2013) Goodness of fit criteria value as a result of the PLS analysis in this study was described in **Table 5** was acquired by doing calculations through the WarpPls application, where the model that has been obtained was described in the tools then it was achieved the Goodness of fit value according to the WarpPls criteria from each - each variable.

Table 5 The Result of Goodness of Fit Model Assessment

No	Criteria	Value	Explanation
1	ARS	< 0,001	Good
2	AARS	< 0,001	Good
3	AVIF	3,373	Ideal
4	AFVIF	3,365	Ideal
5	TGoF	0,712	Good
6	SPR	1,000	Ideal
7	SSR	1,000	Ideal

The results of the goodness of fit assessment showed that of the seven criterias that is set by (Kock, 2013) it was found in **Table 5** that all the criteria were fulfilled so that it can be stated that the model was decent and good to be used for the research hypothesis testing process.

Coefficient of Determination Assessment (Adjusted R^2)

Table 6 Adjusted R^2

Endogenous Variable	Adjusted R^2
Behavioral Intention	0.794
Use Behaviour	0.560
Average Adjusted R^2	0.670

The corrected determination coefficient was used to assess the role of exogenous variables towards endogenous variables in this study. The corrected determination coefficient usage was suggested by (cohen, 2017) to avoid bias in the number of predictors that is included in the model. were described in **Table 6.**

The average adjusted R-square in the structural model was 0.670 which indicated that overall the research model can be explained by research variables of 67.0% while the remaining 33.0% was explained by other variables outside the study. According to (Ghozali, 2014) the adjusted R squared value > 0.25 (25%) indicates that the model is good or the relationship between variables is appointed to be quite close in the study.

Research Hypothesis Test

Research hypothesis test was carried out by looking at the path coefficient and path coefficient's p-value in the structural model. The path coefficient pointed the size and direction of the relationship between two variables, while the p-value pointed whether the research hypothesis was accepted or not. If the p-value was smaller than the degree of error (α) of the study, which was 5%, it was stated that the research hypothesis was accepted and it was stated that there was an effect of exogenous variables on endogenous, were described in **Table 7** .

Table 7 Research Hypothesis Test

Hypothesis	Path Coefficient	P-Value	Explanation
H1: Performance Expectancy has positive influence towards Behavioral Intention	0.120	0.030	accepted
H3: Social Influence has positive influence towards Behavioral Intention	0.154	0.008	accepted
H6a: Habit has positive influence towards Behavioral Intention	0.229	<0.001	accepted
H6b: Habit has positive influence towards Use Behavior	0.187	0.002	accepted
H7b: Facilitating Conditions has positive influence towards Use Behavior	0.134	0.018	accepted
H8: Behavioral Intention has positive influence towards Use Behavior	0.504	<0.001	accepted
H10: Service Quality has positive influence towards Behavioral Intention	0.447	<0.001	accepted

4. Conclusion

Factors that could affect against customer experience analysis on p3m web services were: Performance Expectancy, Social Influence, Habit, Facilitating Condition and service quality while the factors that had no effect were: Effort Expectancy, Hedonic motivation, price value, and trust. In other words, the trust variable could not affect the UTAUT2 model that was applied to mobile customers because the trust path coefficient on Behavioral Intention was found to be negative, that is -0.007 with the p-value in this hypothesis was 0.456 which was greater than (5%). While the Service Quality Variable can be accepted because it was based on the path coefficient value which was positive, that is 0.447 with a p-value smaller than (5%)

From some of the things above, it is necessary to make adjustments and improvements in terms of service quality and performance of the p3m web service, including the need for improvements in the proposal upload service, proposal reviews which are always updated regularly and there are notifications at every event, to monitoring and evaluation services that well computed. making it easier for proposers to self-order and making it easier for supervisors to verify their files.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

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