Analysis of the Impact of Mobile-Based Property Management Applications Implementation on Service Satisfaction for Middle-Class Apartment in Jakarta

Prasetya Cahya S
Information Systems Department
School of Information System
Bina Nusantara University
Jakarta, Indonesia 11480
prasetyacs@binus.ac.id

Abstract

Information technology has become an integral part of an organization. Information technology offers business processes that are more effective and efficient when compared to manual work handling. The apartment management is no exception. The number of residents in an apartment requires the manager to be able to carry out its business processes so that all stakeholders in the organization can be served properly. The Mobile-based Property Management application is one manifestation of the use of information technology in the management of middle-class apartments in the Jakarta area. The implementation of this application is intended to be able to provide services to apartment residents to be more effective and efficient. From the utilization of the implementation of the Mobile-based Property Management application, an analysis was carried out using the UTAUT method to see the impact of the implementation of the Mobile-based Property Management application on user acceptance and in the end could increase the satisfaction of application users, namely the residents and staff of the Apartment Manager/Building Management. The results analyzed in this study are Performance expectancy, effort expectancy, social influence, and Facilitating conditions for the implementation of Mobile-based Property Management applications using the UTAUT framework. With the UTAUT method, it will be seen how much satisfaction level of application users are with the implementation of Mobile-based Property Management in middle-class apartments in Jakarta.

Keywords
Property Management, Building Management, Mobile, UTAUT method, Performance expectancy.

1. Introduction
In the application of technology in the property industry, especially property management (Fennelly and M. Perry, 2017) practicality is needed in all respects. Including the implementation of the Mobile-based Property Management system. The application system for apartment management, especially for middle-class apartments, is intended to create convenience for residents and property management staff. The features contained in this application are divided into several roles, namely: the Occupant/Unit Owner role, the Tenant Relation role, the Engineering Department role, and the Building Manager role. This application is mobile based runs on Android smartphones.

Mobile-based Property Management application is a concept about the use of Information Technology (IT), development, and characteristics for effective management of apartments. Mobile-based Property Management applications are considered a systematic procedure for collecting, maintaining, and utilizing data needed by organizations for the management of residents and existing facilities in an apartment (Krasnoyarova 2021),The features contained in this application are adjusted to the role per each part, for residents/unit owners there are features to be able to make complaints or submit requests, billing systems, payments, Apartment Circular Documents, and information on important numbers. The role of the Tenant Relations Division is to receive complaints from residents and send them to the Engineering section and in the end, can close tickets. This division can also view Circular Documents and information on important numbers. The Engineering Division has a role to be able to handle complaints and requests sent by the Tenant Relations Division, to handle Complaints and Requests until they are completed. The Building Manager can monitor all activities carried out by the Tenant Relations Division and the Engineering Division and obtain information in the form of an Executive Information System in the form of summary info of the entire process. All roles will get the feature of viewing Circular Documents and finding out important numbers that can be contacted when there is an urgent need. The apartment that is used as

the object of research consists of 3 apartments located in the Jakarta area and are middle-class apartments (Bolshakov et al, 2020). The UTAUT model (Im et al, 2005) refers to and integrates with eight previous models developed from theories related to the acceptance and use of technology in one theory. The eight leading theories put together in UTAUT are Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM, and TPB, Model of PC Utilization (MPTU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT). The UTAUT model proved to be more successful than the other eight theories in explaining up to 70% of variance (Lalitaphanit and Theeraroungchaisri 2016, Zhou et al, 2019).

By analyzing the Mobile-based Property Management application using the UTAUT method (Im et al, 2011, Hair et al, 2014), it is expected that apartment managers can see how much this application can benefit its users and provide various conveniences and accelerate the improvement of apartment management services for residents/unit owner.

2. Literature Review

2.1 UTAUT

This analysis helps researcher identify the level of influence of each of the seven theories adopted from a technology. Where the researcher can conclude, that the most influential construct to become a model is obtained almost 70% of the variance in the use of IT. The latest model is the UTAUT model.

The UTAUT's theories consist of :

1. Effort Expectancy (the level of ease of use of the application)
2. Performance Expectancy (the belief of users that using Mobile-based Property Management will help to achieve job performance,)
3. Social Influence (the level of a person's perception that other parties believe that it is better to use the new system)
4. Facilitating Condition (the degree to which an individual has the technical and organizational infrastructure available to support the use of the system)

2.2 UTAUT Framework

This research will examine the determinants of user acceptance and usage behavior in the UTAUT model, namely performance expectancy (X1), effort expectancy (X2), social influence (X3), and facilitating conditions (X4) on the implementation of Property Management applications based on Mobile (Y) in 3 (three) middle-class apartments in Jakarta. The following is the framework of thought in this research in figure 1

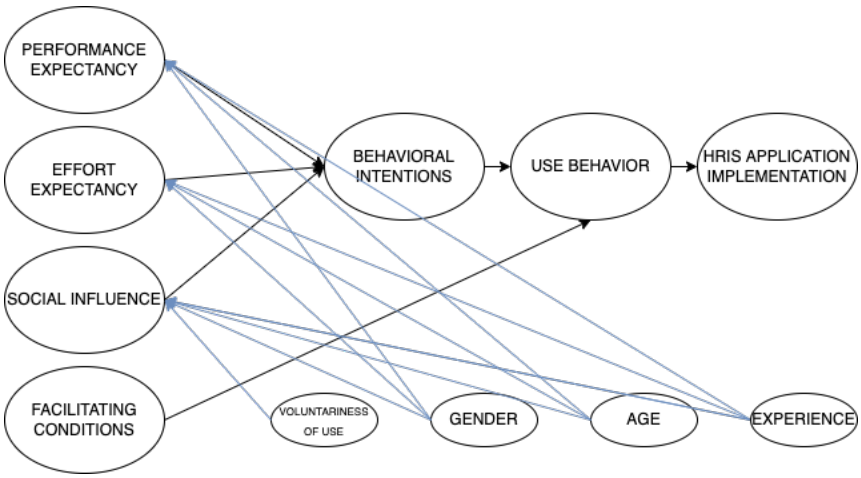

Figure 1. UTAUT Model Framework

The framework of thinking in this study uses the basis of the UTAUT framework. The variables of Performance Expectancy (PE), Effort Expectancy (EE), and Social Influence (SI) influence Behavioral Intention (BI) either directly or indirectly. Where are Facilitating Conditions (FC) which have a direct influence on Use Behavior (UB), from these variables and indicators has a significant direct and indirect influence on the variables of Mobile-based Property Management Application Implementation?

Based on the instrument validity test with SPSS, the validity value is in the Corrected item-total Correlation

column. In the significance test to see whether the data is valid or not, it can be done by comparing the calculated r-value with the t table for a degree of freedom (df) = n – 1, wherein in this case n is the number of samples. If the value of t count > t table (Table 1), then the questionnaire instrument is declared valid.

Table 1: Instrument Validity Test Table

Category/Type of Test	**Item**	**Corrected Item-Total Correction**
Performance Expectancy	P01	0,390
	P02	0,446
	P03	0,500
	P04	0,234
	P05	0,451
Effort Expectancy	P06	0,622
	P07	0,582
	P08	0,544
	P09	0,511
Social Influence	P10	0,536
	P11	0,532
	P12	0,519
Facilitating Conditions	P13	0.722
	P14	0.504
	P15	0.418
	P16	0.589
Behavioral Intentions	P17	0.489
	P18	0.579
	P19	0.444
Use Behavior	P20	0.564
	P21	0.738
	P22	0.681
Application Implementation	P23	0.573
	P24	0.586
	P25	0.525
	P26	0.558
	P27	0.553

This test cacarried out to measure whether the instrument used is completely error-free. With the help of the SPSS program, the Cronbach Alpha coefficient values can be seen. The results of the Cronbach Alpha coefficient values for each construct are shown as follows

Table 2. Table of Cronbach's Alpha Values for Each Category/Type of Test

Category/type of test	**Cronbach's alpha**
Performance expectancy	0.882
Effort expectancy	0.875
Social influence	0,870
Facilitating conditions	0,872
Behavioral intention	0,881
Use behavior	0,865
Implementation of the Mobile Base Property Management	0,875

Based on the results shown (Table 2) in the table above, if the Cronbach Alpha coefficient for the construct is more than 0.5, it can be said that the instruments used to measure the construct are. All constructs can be said to be acceptable because they meet the requirements > or = 0.50 (Table 2).

A. Structure Equation Modelling Analysis

a. Measurement Model – Confirmatory Factor Analysis

Where the measurement model is a sub-model in the SEM which is used to specify the indicators in each construct[10] .This measurement model is used to determine to construct validity, indicating whether the indicators used as parameters of a study can predict a construct that is by the theory.

In this study, the test is based on the actual research data, where the total data used is 86 data. The following are the tests and results of testing the goodness of fit indicators indicating whether the measurement model is acceptable.

Measurement Model -CFA- Satisfaction

The goodness of fit indices indicates that the model can be received well even though the X2 value is large with a significance level below 0.05. This shows that there is no difference between the sample covariance matrix and the estimated population covariance matrix so that the model results can be accepted statistically. The results of calculations using the AMOS 20 software are shown in the following table3 :

Table 3. Table Measurement Model – Goodness of Fit Index

The goodness of Fit Index	Cut-Off Value	Model Result
DF	Positive	86
CMIN/DF	≤2.00	448.949
Probability	≥0.05	0.000
GFI	≥0.90	0.730
AGFI	≥0.90	0.554
TLI	≥0.95	0.782
CFI	≥0.95	0.855
RMSEA	≤0.08	0.142

The results of the constructed test of the final quality dimension, which are presented in Figure 2, are evaluated based on the goodness of fit indices, the criteria for the UTAUT model, and the critical value that has data suitability.

2.1. Hypothesis Result

Hypothesis test

The results of hypothesis testing in this study are as follows: in table 4

Table 4. UTAUT Model Hypothesis Testing for Mobile-based Property Management Applications

Hypothesis	Indicator	Loading Factor (p-value)
H_1	Effect of PE on IAH	0.568 (0,000)
H_2	Effect of EE on IAH	0,515 (0,000)
H_3	Effect of SI on IAH	0,615 (0,000)
H_4	Effect of FC on IAH	0.518 (0,000)
H_5	Effect of PE, EE, SI, and FC on IAH	0.176 (0.000)

The results of the SEM analysis as a hypothesis testing step are as follows:

1. Hypothesis Testing 1

The parameter estimation of the relationship between the performance expectancy variables has no positive and significant effect on the implementation of the Mobile-based Property Management application in 3 (three) middle-class apartments in Jakarta, which is 0.568. The test showed significant results with the value of C.R= 3.591 with probability= 0.309. The test probability value is above 0.05. Thus Hypothesis 1 is **accepted**.

2. Hypothesis Testing 2

The estimated parameter of the relationship between the variable effort expectancy has a positive and significant effect on the implementation of the Mobile-based Property Management application at the management agency, which is 0.515. The test showed significant results with a C.R value= 20,978 with a probability= 0.000. The results

of the test probability value are below 0.05. Thus Hypothesis 2 is **accepted**.

3. Hypothesis Testing 3

The parameter estimation of the relationship between social influence variables has a positive and significant effect on the implementation of the Mobile-based Property Management application at the Management Agency, which is 0.615. The test showed significant results with the value of C.R= 9,691 with probability= 0.002. And the test probability value is below 0.05. Thus Hypothesis 3 is **accepted**.

4. Hypothesis Testing 4

The estimation parameter of the relationship between the facilitating conditions variables has a positive and significant effect on the implementation of the Mobile-based Property Management application at the Management Agency, which is obtained at 0.518. The test showed significant results with the value of C.R= 3.381 with probability= 0.066. The test probability value is below 0.05. Thus Hypothesis 4 is **accepted**.

5. Hypothesis Testing 5

The parameter estimation of the UTAUT relationship has a positive and significant effect on the implementation of the Mobile-based Property Management application at the Management Agency in 3 middle-class apartments, obtained by 0.176. The test showed significant results with the value of C.R= 16,673 with probability= 0.000. The results of the test probability value are below 0.05. Thus Hypothesis 5 is accepted.

3. Conclusion

From the results of the conclusions obtained in this study are as follows:

1. This study accepts Hypothesis 1 which is proposed that the performance expectancy variable has a positive effect on the implementation of the Mobile-based Property Management application at the Management Agency for 3 middle-class apartments in Jakarta, so it can be concluded that this significant effect is due to the implementation of the Mobile-based Property Management application.

2. This study accepts Hypothesis 2 which is proposed that the effort expectancy variable has a positive and significant effect on the implementation of Mobile-based Property Management applications. Because this application can be used relatively easily, based on the results of short interviews with respondents, information is obtained that most of the respondents have mastered information and communication technology at a relatively high level or in other words, the expertise/experience of using computers is long enough.

3. This study accepts Hypothesis 3 which is proposed that the social influence variable has a positive and significant effect on the implementation of the Mobile-based Property Management application. using the Mobile-based Property Management application in daily activities.

4. This study accepts the proposed hypothesis 4, namely, the variable facilitating conditions have a positive and significant effect on the implementation of the Mobile-based Property Management application, the results of this test indicate that the resource facilities provided affect the users to use the Mobile-based Property Management application.

5. This study accepts Hypothesis 5 which is proposed, namely UTAUT has a positive and significant effect on the implementation of Mobile-based Property Management applications, so it can be concluded that the variables of performance expectancy, effort expectancy, social influence, and facilitating conditions support this research to determine user acceptance and usage behavior on implementation. Mobile-based Property Management application.

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Biography

Prasetya Cahya S is a Faculty Member at Bina Nusantara University as well as a practitioner and technopreneur in the field of information systems. He is an alumnus of the University of Indonesia Master of Information Technology program and has more than 25 years of experience both as a lecturer at several universities and also a consultant for several IT projects such as the State Gas Company, the Indonesia Stock Exchange, Bank Indonesia and also the World Bank.