



FACTOR ANALYSIS OF MOBILE OPERATOR SELF-SERVICE APPLICATION TECHNOLOGY ADOPTION: A CONCEPTUAL MODEL

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ABSTRACT

The number of mobile telecommunication users in the world has reached 67% of the world's population, and 133% of Indonesia's population act as users. There are 142.8 million internet users in Indonesia, and it keeps rising every year. Even so, the use of Mobile Operator Self-Service applications is not parallel with this rising number. Companies have striven to increase market penetration and usage by understanding technological acceptance through various research models. This study aimed to examine the effect of competence, training, and organizational climate on OCB by using job satisfaction as an intervening variable. This paper is made to propose a conceptual model. It comprehends the research background, literature review, conceptual model, hypotheses, and quantitative research methods. This quantitative study aims to analyze the factors for the adoption of mobile operator self-service application technology using MyXX as a case study.

Keywords

Mobile Application, Technology, Adoption, Self-service, Conceptual Model.

INTRODUCTION

The world's population continues to grow. Based on statistics compiled by wearesocial.com, the world population in 2019 reached 7.67 billion people, of which 56 percent live in urban areas in cities, while in Indonesia, the population reached 268.2 million people, or about 3.5 percent of the world's population, and 56 percent of them live in urban areas, the same percentage as what is also happening in the world. The total population of Indonesian men and women is quite balanced, with which the men population amounting to 50.3 percent and women at 49.7 percent. The average age of the Indonesian population is a fairly productive age of 29.3 years, with Indonesia's GDP per capita is \$12.28.

Nowadays, technology is closely related to various activities of human life, such as the use of cars or mobile communication technologies. Mobile telecommunication users in the world reach 5,112 billion or 67 percent of the world's population, while mobile telecommunication service users in Indonesia are 355.5 million. This figure exceeds the total population of Indonesia, which is only 268.2 million people. This shows that the penetration of mobile communication in Indonesia is quite high, which is 133 percent of the population, which means that one person has more than one mobile device. This can also be interpreted to mean that competition is saturated in the mobile communication service industry. With these conditions, the right strategy is needed to survive and grow. From wearesocial.com data, the world's internet users are 4,388 billion with a penetration of 57 percent, and this figure has grown by about 9.1 percent compared to the previous year. Of the 4.3 billion internet users in the world, 3.48 billion are actively using social media.

In Indonesia, the penetration growth is higher, reaching 13 percent from the previous year, with 150 million internet users of the total internet users in the world and 142.8 million internet users in Indonesia are mobile internet users. From the high number of internet users mentioned, both desktop and mobile, the Mobile Operator Self-Service application is not often used by internet users in Indonesia, even though mobile internet users certainly take advantage of the network and services of cellular operators in surfing or social media.

MAU data or Monthly Active User of the Mobile Self-Service mobile application of cellular operators from one of the cellular operators in Indonesia also showed very small growth compared to the growth in the number of subscribers. MAU is the sum of all unique visitors who entered for the past month. For this research object application, the MAU is less than twenty percent (20%) of the total customers.

This, of course, must be a concern for cellular operators in Indonesia and find out how to make these mobile internet users also adopt the self-service application that has been provided. There have been many research models related to adoption technology, and there have also been many researchers who have conducted research for various technologies, both for consumer applications, as well as applications for management and internal organizations. Some popular research models are used to find out the factors that determine the adoption of technology including the Technology Acceptance Model (TAM) (Davis, 1989), Motivational Model (MM), and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). There are also many researchers who modify or integrate some of these models by adding other variables whose hypotheses have been proven to have an impact. For example, Hector San Martin with Angel Herrero, in his research entitled "Influence of the user's psychological factors on the online purchase intention in rural tourism," integrated the innovativeness variable into the UTAUT model (San Martín and Herrero, 2012), and the result was that the variable was quite significant.

UTAUT hypothesizes that Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating conditions are factors that determine Behavior Intention or intention to use (Zuberi, Lachenauer, and Pillai, 2007) or interest in using or adopting a technology. In another study, another factor or variable in the UTAUT model is also included, which is the Promotional Benefits variable. This is based on a report in the UK, which states that 50% of online consumers are affected by promotions when making a purchase (Rapid Campaign Report, 2015; Brooks, 2015). There is a positive influence of Promotional Benefits on Mobile wallet adoption - (Madan and Yadav, 2016). Based on the supportive evidence above, this study aims to analyze the analysis of factors for the adoption of mobile operator self-service application technology using MyXX as a case study.

LITERATURE REVIEW

A. User Acceptance

Acceptance can be defined as the use of technology by workers as their way of life. Studies in the field of information systems assess the acceptance of use in the following ways: the number of times a computer system is used, the duration of time of use, and the number of uses of different computer applications (Schillewaert, 2000).

Acceptance theory explains the willingness of user groups to utilize information technology to support the work of tasks. According to (Rogers, 1995), in the theory of diffusion and innovation, there are five characteristics that determine the acceptance of a technology, which is:

- a) Relative advantages, the benefits of technology in the form of improvements according to the tools available on the technology.
- b) Compatibility, that is, the consistency of the use of technology against social practices and norms among users.
- c) Complexity, which is the ease of use and learning.
- d) The ability to be tested, which is an opportunity for users to try an innovation before deciding to use it.
- e) The ability to be observed, namely clarity on the added value of using technology.

B. Technology Acceptance

Technology acceptance can be interpreted as the willingness of people or users to hire technology for jobs designed to support it (Teo, 2011:1). Meanwhile, according to (Harz & Vesper, 2013: 314), technology acceptance refers to the relationship between humans and complicated technology or artifacts. Technology acceptance plays a crucial role in implementing any information system (Nikou & Economides, 2017: 84). From the theories above, it can be concluded that technology acceptance is the level of acceptance of technology about how technology can help provide convenience and speed in working. Here are some models for the acceptance of existing technologies:

1. Technology Acceptance Model (TAM)
2. Unified Theory of Acceptance and Use of Technology (UTAUT)
3. Model of Adoption and Technology in Household (MATH)
4. Extended Unified Theory of Acceptance and Use of Technology UTAUT2)

C. The unified theory of acceptance and use of technology

According to Venkatesh, The Unified Theory of Acceptance and Use of Technology (UTAUT) is a research method based on psychology and sociology. UTAUT is one of the latest technology acceptance models developed from previous models commonly used to conduct research on user acceptance of information technology. UTAUT synthesizes elements in eight leading technological acceptance models to gain a unified view of user acceptance into a single theory.

Unified Theory of Acceptance and Use of Technology (UTAUT) is one of the models of acceptance of information technology.

The implementation of Information Technology is always related to the acceptance of use. The extent to which users can understand the technology is important to know the success rate of the implementation. In the UTAUT method, there are four independent variables that can affect the level of acceptance and use of information technology. Each of these independent variables has indicators derived from several leading theories such as TAM, TRA, SDG, MM, IDT, and MPTU. The combination of these eight theories on the independent variable indicator can be seen more clearly in the table:

Table 1. Theories on the independent variable indicator

UTAUT Concept	Concept Roots	Source Model
Performance Expectancy	Perceived Usefulness	TAM
	Extrinsic Motivation	MM
	Job Fit	MPCU
	Relative Advantage	IDC
	Outcome Expectations	SCT
Effort Expectancy	Perceived Ease of Use	TAM
	Complexity	MPCU
	Ease of Use	IDT
Social Influence	Subjective Norm	TRA, TPB, C-TAM-TPB
	Social Factors	MPCU
	Image	IDT
Facilitating Conditions	Perceived Behaviour Control	TPB, C-TAM-TPB
	Facilitating Conditions	MPCU
	Compatibility	IDT

Source: Venkatesh (2003)

The conceptual framework model describes the relationships between the variables tested in the study. The conceptual framework describes the relationship of variables of performance expectations, business expectations, and social factors to the interest in the use of Information Systems, as well as the relationship of variable conditions that facilitate users and interest in the use of Information Systems to the use of Information Systems. The UTAUT method is also rooted in the moderating variable. These variables can affect the intention the use new technologies and the behavior toward using new technologies. More details can be seen in the following image.

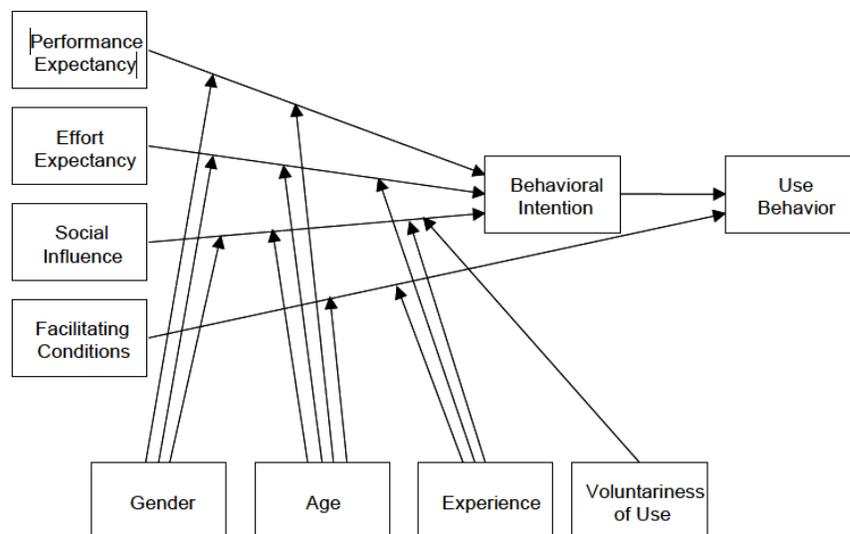


Figure 1. Conceptual framework of UTAUT method

In the figure above, the behavioral intention and use behavior is influenced by people's perception of performance expectancy, effort expectancy, social influence, and facilitating conditions moderated by gender, age, experience, and voluntariness.

D. Extended unified theory of acceptance and use of technology (UTAUT2)

UTAUT2 (Extended Unified Theory of Acceptance and Use of Technology) is an extended version or addition to UTAUT proposed by Venkatesh et al., (2012:158). UTAUT four constructs, namely Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, which affect Behavioral Intention and Use Behavior.

Considering how binding the variables of Behavioral Intention and Use Behavior and the large number of people who tried the UTAUT model and ended up adding and criticizing the model for conforming to their research, Venkatesh et al., decided to add three constructs to UTAUT2, the three constructs mentioned were: (1) Hedonic Motivation (2) Price Value (3) Habit. With the addition of these three constructs, UTAUT2 is designed to focus more on consumers (Venkatesh, Thong, & Xu, 2012:158). Here is a model drawing made by Venkatesh, Thong, & Xu (2012:160).

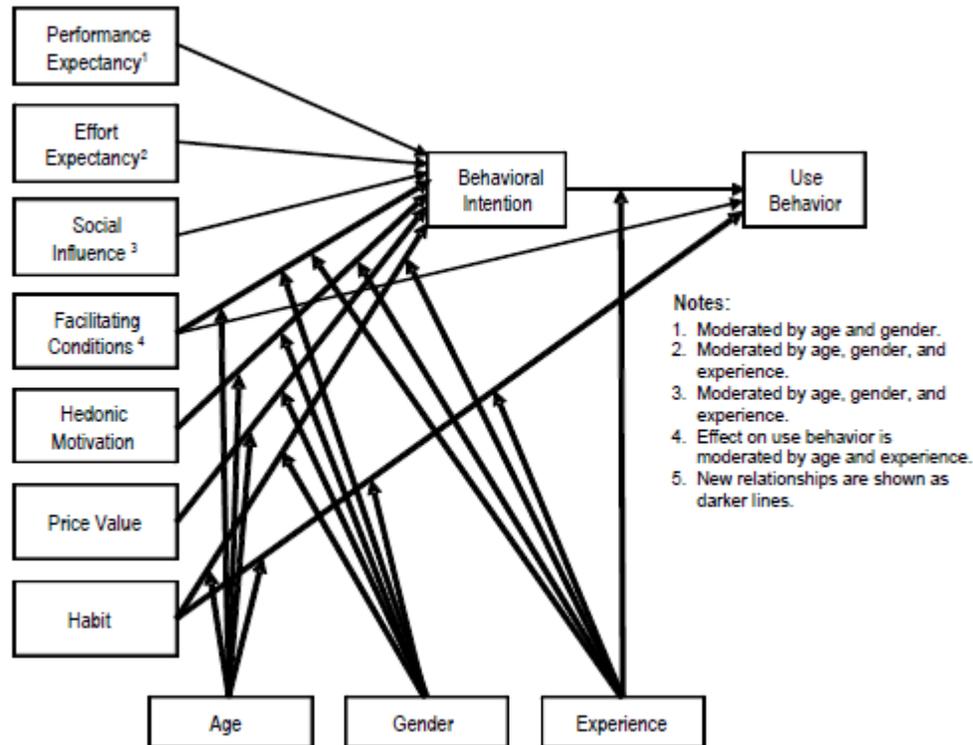


Figure 2. Conceptual framework of UTAUT2 method

1. Performance Expectancy

Performance Expectancy is defined as the level of benefits obtained by consumers in using technology to carry out their daily activities (Venkatesh, Thong, & Xu, 2012: 159). Performance Expectancy is an original variable belonging to UTAUT developed by Venkatesh. In this evaluation, Performance Expectancy will be used to investigate people's belief that using the MyXX application will generate profits for them. In Performance Expectancy, there are three dimensions or sub-variables. The first is usefulness, which means the usefulness obtained in using technology in everyday life (Venkatesh, Thong, & Xu, 2012:178). The second is quickness, which is the level at which technology can speed up the work done (Venkatesh, Morris, Davis, & Davis, 2003:448). Finally, the third is productivity, which is defined as an increase in related productivity in terms of user work when using a technology (Venkatesh et al, 2012:178).

2. Social Influence

Social itself leads to how much the level of people close to us, such as family or good friends, think that we should use technology (Venkatesh, Thong, & Xu, 2012:159). Social Influence is also the original variable of UTAUT. In this evaluation, Social Influence is measured based on the level of acceptance of the application by people who are influenced by others around. There are two dimensions of Social Influence. The first is the social factor which means the level of influence of people who are near the user in the use of technology (Venkatesh, Thong, & Xu, 2012: 178). The second is the subjective norm. Subjective norm is the influence of important people associated with users on the use of technology (Venkatesh, Morris, Davis, & Davis, 2003:452).

3. Effort Expectancy

Effort Expectancy is the level of effort that must be used in operating a particular technology (Venkatesh, Thong, & Xu, 2012:159). Effort Expectancy is part of UTAUT's original variables. In this evaluation, Effort Expectancy is used to find out people's trust that using this application is free from difficult efforts. The two dimensions found in Effort Expectancy are

complexity and ease of use. Complexity is how complicated technology is difficult to learn (Venkatesh, Morris, Davis, & Davis, 2003:451). While ease of use is the ease felt when using technology (Venkatesh, Thong, & Xu, 2012: 178).

4. Facilitating Conditions

Facilitating Conditions are the user's perception that there are sources and support for using existing technology (Venkatesh, Thong, & Xu, 2012: 159). In other words, facilitating conditions provide the outside resources needed to facilitate the performance of certain behaviors (El-Masri & Tarhini, 2017). In this evaluation, Facilitating Conditions will be measured by people's perception that they can get the necessary sources to use this application. There are three dimensions of facilitating conditions, which consists of resource, knowledge, and compatibility. A resource is the presence of outside sources that affect the use of technology (Venkatesh, Thong, & Xu, 2012: 178). Knowledge is the existence of a source of knowledge from outside to use technology (Venkatesh, Thong, & Xu, 2012:178), and the third, compatibility is the degree of compatibility of the system with the technology used today (Venkatesh, Morris, Davis, & Davis, 2003:458)

5. Hedonic Motivation

Hedonic Motivation is described as the pleasure or satisfaction gained in using technology (Venkatesh, Thong, & Xu, 2012:161). In this evaluation, Hedonic Motivation will be measured based on the level of people who use this application as something fun. There are three dimensions in Hedonic Motivation. The first is fun, which is defined as the level of pleasure obtained in using technology (Venkatesh, Thong, & Xu, 2012: 178). The second is enjoyment, which means how far the enjoyment is gained when using technology (Venkatesh, Thong, & Xu, 2012:178). And the last thing is entertaining, which is how far the use of the system can entertain the user (Venkatesh, Thong, & Xu, 2012).

6. Price Value

Price Value is a comparison obtained from the profit in using technology with the money or costs that must be paid in using the technology (Venkatesh, Thong, & Xu, 2012: 161). In this evaluation, Price Value will be measured based on how much the number of people who consider that the money spent is proportional to the convenience obtained when using the application. The dimensions found are two, which are reasonable, meaning the system has a reasonable price (Venkatesh, Thong, & Xu, 2012:178), and worthiness, meaning the value obtained from using the system is proportional to the price paid (Venkatesh, Thong, & Xu, 2012:178).

7. Habit

According to Vance (2012), habit is defined as routine. However, in the context of information systems, habit is a user habit in carrying out habits in using information systems automatically because they have passed the learning process (Venkatesh, Thong, & Xu, 2012: 161). In this evaluation, a habit will be measured by looking at the tendency of people to make the use of applications a habit. In habit, there are two dimensions, addictiveness and must. Addictiveness is the level of addiction acquired by the user by using the system (Venkatesh, Thong, & Xu, 2012:178). Must is the feeling of the necessity of the user to use the system (Venkatesh, Thong, & Xu, 2012:178).

8. Behavioral Intention

Behavioral Intention is one of the main objectives of technology acceptance models. The definition of Behavioral Intention itself is the degree to which people have consciously planned to perform or not perform certain actions in the future (Sankrusm, 2017). In this evaluation, Behavioral Intention will be measured by looking at whether people will use or integrate technology into their lives. There are two dimensions of Behavioral Intention. The first is intention, which is the user's level of willingness to keep using the system (Venkatesh, Thong, & Xu, 2012:178). The second is continuation, which is interpreted as the extent to which the user plans to keep using the system (Venkatesh, Thong, & Xu, 2012:178).

9. Use Behavior

Use behavior is the degree of variation and frequency of the use of technology by consumers (Venkatesh, Thong, & Xu, 2012). There are two dimensions to Use Behavior. The first is Depth of use, which is interpreted as the frequency of use of technology by users (Venkatesh, Thong, & Xu, 2012). The second is the breadth of use which is the extent to which technology can provide increased knowledge and skills to users (Venkatesh, Thong, & Xu, 2012).

10. Innovativeness

According to Agarwal and Prasad (1998), innovativeness is defined as a person's willingness to try new things on technology/IT products.

11. Promotional Benefits

Promotional benefit is an advantage offered to consumers (Madan & Yadav 2016). Promotional Benefits can be various things and forms of benefits, such as point rewards when first installing the application, special user discounts, and other privileges.

CONCEPTUAL MODEL

Based on the theoretical study above, a conceptual model was formed that describes the analysis of factors for the adoption of mobile operator self-service application technology which can be seen in the following scheme:

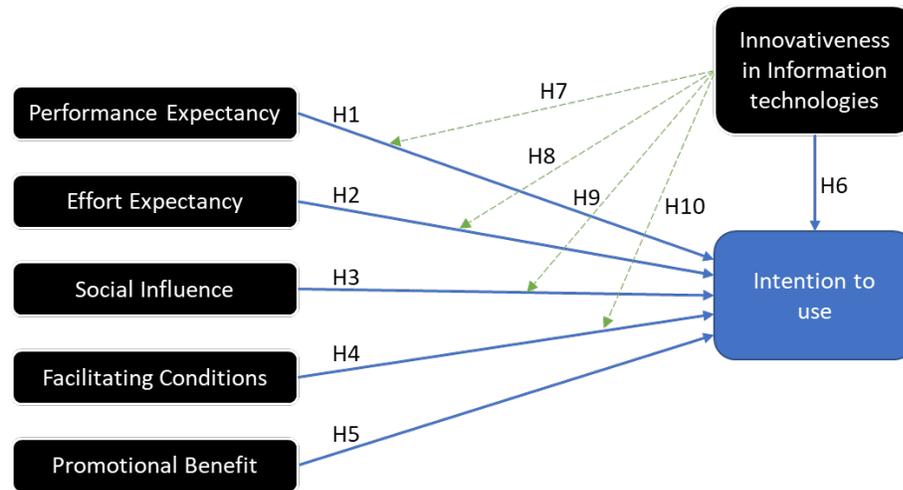


Figure 3. Conceptual Model

HYPOTHESES

Based on the conceptual model, theory, and previous research studies, hypotheses can be formulated as follows:

- H1: There is an effect of Performance Expectancy on Intention to use
- H2: There is an effect of Effort Expectancy on Intention to use
- H3: There is an influence of Social Influence on Intention to use
- H4: There is an effect of Facilitating Conditions on Intention to use
- H5: There is an influence of Promotional Benefit on Intention to use
- H6: There is an influence of Innovativeness on Intention to use
- H7: The greater the Innovativeness, the greater the effect of Performance Expectancy on Intention to use
- H8: The greater the Innovativeness, the greater the influence of Effort Expectancy on the Intention to use
- H9: The greater the Innovativeness, the weaker the influence of Social Influence on Intention to use
- H10: The greater the Innovativeness, the weaker the influence of Facilitating Conditions on Intention to use

METHODOLOGY

The type of research used in this study is quantitative research. According to Sugiyono (2017), quantitative research methods are: "Research methods based on the philosophy of positivism, used to research on certain populations or samples, data collection using research instruments, data analysis is quantitative or statistical, with the aim of testing predetermined hypotheses". This research method translates data into numbers to analyze the findings. Quantitative research can be descriptive, correlational, and associative based on the relationship between its variables. Descriptive quantitative research usually only measures the level of a variable in a population or sample, while correlation and associative look at the relationship between two or more variables. If quantitative correlations only show relationships, associative seek to find cause-effect relationships between variables of related variables.

The data used in this study is primary data. Sugiyono (2016) defines a primary data source as a data source that directly provides data to the data collector. Primary data is data that comes directly from respondents. In this case, it is obtained directly by questionnaire. Researchers collect the data in this study through a questionnaire that is distributed via the internet using the google form application.

A population is a group consisting of several people who share a common interest. According to Sugiyono (2016), the sample is part of the number and characteristics possessed by the population. In other words, the sample is the part of the population that has the appropriate characteristics and can represent the population. The population in this study is the user of the MyXX application, and the sample is the user in the Jabodetabek area, which amounts to 154 people. The sampling technique in this study used the purposive sampling technique. According to Sugiyono (2016), purposive sampling is a sample determination technique with special considerations so that it is worthy of being used as a sample.

The analytical tools used in this study include the Partial Least square (PLS) method as an alternative analysis tool using SMARTPLS. The analysis of this study is a descriptive analysis to obtain the average value (mean), median, mode, standard deviation, maximum value, and minimum value, which will later be presented in the form of a table/histogram/pie chart for each research variable. The data analysis technique used in this study is path analysis using Smart PLS (Partial Least Square) software.

CONCLUSION

This research has included a conceptual model means to study how factors such as performance expectancy, effort expectancy, social influence, facilitating conditions, promotional benefit, and innovativeness related to the intention of usage of technology. This paper is complemented with background research, literature review, hypothesis, and research methodology to develop a conceptual model. The conceptual model will be utilized to analyze the factors for the adoption of mobile operator self-service application technology using MyXX as a case study.

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