Evaluation of e-government LAKSA services to improve the interest of use of applications using Technology Acceptance Model (TAM)

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Abstract. The government of Tangerang provides LAKSA (Layanan Aspirasi Kotak Suara Anda) which is a social media based on e-government service for the community to participate in giving aspirations and reporting problems surrounding Tangerang city environment. This study was conducted with the aim of evaluating and finding out the factors that influencing LAKSA adoption in Tangerang Live application. The effect on LAKSA adoption is explained using perceptions of beliefs, attitudes, and intentions of use that refer to the Technology Acceptance Model (TAM). The innovation factor also explains the influence of LAKSA adoption indirectly. Data processing and analysis in this research is using SEM-PLS (Structural Equation Model - Partial Least Square) method. The results of this study indicate that innovation has a positive effect on usability perception and perception of ease of use. The perception of usability and perceived ease of use have a positive effect on user attitudes. User attitude positively affects the intention to use technology.

Keywords: E-government, Technology Acceptance Model, Structural Equation Model – Partial Least Square

1. Introduction
Organizations invest in information systems for several reasons including pressure to cut costs, pressure to be more productive without increasing costs, and only to improve the quality of services or products. Advanced communication technologies such as the internet and social media have changed how governments communicate with their citizens. Several studies have suggested that innovative modes of communication can increase government transparency and encourage people to participate in government decision-making processes. The Tangerang City Government together with the Department of Communication and Information (DISKOMINFO) of Tangerang City developed the Tangerang Live application as one of the manifestations of the application of smart city. The features that support the smart city concept are presented in an integrated manner on the Tangerang live application. One of the features that is the object of this research is Your Voice Box Aspiration Service (LAKSA).
LAKSA supports the smart city concept in a smart government dimension in order to provide public services for the community to participate in giving aspirations. LAKSA is a social media based e-government service used on the android platform. Arief Rachadiono as the mayor of Tangerang believes that many people have used smartphones in their daily lives and the Tangerang city government wants to facilitate the use of information technology in city services. However, there are still many Tangerang citizens who have not used the Tangerang Live application. This is indicated by the data that the Tangerang Live Application has been installed as many as 10,000, while the population of the city of Tangerang itself is around 3 million people. According to the Tangerang City Communication and Information Office (DISKOMINFO), new applications are used by less than 0.5% of the city of Tangerang. Searching for E-government and its development is the topic of this research.

Research related to online communication media as a public space has an impact on communication between the government and the community. Understanding the Technology Acceptance Model helps researchers analyze factors of technology acceptance and can help further to take efficient steps and increase user acceptance in using technology [1]. TAM can analyze the involvement of factors that have an impact on the intention to use E-government services and also analyze the relationships that exist between these factors. Based on the background of the problem, the problem formulation was found to find out the factors that influence people's attitudes in adoption and intention to use LAKSA.

This research is conducted with several scopes, such as the sole focus is at the e-government service evaluation of Your Voice Box Aspiration Service (LAKSA) in the Tangerang Live application. The aforementioned application is evaluated by using Technology Acceptance Model (TAM) as a research model used to test the level of influence of factors on the intention to use e-government services. Data analysis is supported by Structural Equation Modeling Partial Least Square (SEM-PLS) analysis methods and uses Smart PLS application version 3.0 to predict relationships between variables in the model. The data were gathered from respondents from the research who are citizens who had used LAKSA. By evaluating LAKSA in the Tangerang Live application as the Tangerang City e-government service based on variables and indicators on the Technology Acceptance Model (TAM), we aim to find out what are the factors that influence the intention to use LAKSA. It is hoped that this research will be beneficial to enrich the knowledge of management system, also to increase the success in adopting e-government services in Indonesia.

2. Research Methodology

This research is quantitative where the methodology used in the collection includes interviews, questionnaires and literature studies. Library studies are conducted to study theories and look for information material through books, e-books, e-journals and related scientific works and that support this research. While the primary data obtained directly from the source of this research was obtained from the questionnaire. The distribution of questionnaires is done directly in physical form and also online. Sampling techniques used are probability sampling and Simple Random Sampling. Probability sampling is where each population element has the same opportunity to be selected as a sample. Simple random sampling is where samples are taken randomly without regard to certain elements.

The target respondents of this research were determined based on Charles Gervitz's method which states that if the population is less than 10,000 people the sample becomes 200 to 500 respondents. Of the 324 questionnaires distributed, there were 311 questionnaire responses that returned with complete entries. The research method used in conducting LAKSA evaluation is the Technology Acceptance Model (TAM). The Technology Acceptance Model framework can be seen in Figure 1. The Structural Equation Modeling (SEM) method with SmartPLS supporting applications is used to determine the correlation hypothesis between variables.
Davis, Bagozzi, and Warshaw developed the Technology Acceptance Model (TAM) to explain user acceptance of new information technology. The purpose of TAM is to provide an explanation of the determinants of technology acceptance that can explain the behavior of technology users across broad groups [2]. The TAM theory consists of two critical beliefs that determine the user's intention to adopt technology and actual use, namely (1) Perceived Usefulness and (2) Perceived Ease of Use [2]. These aforementioned factors mediate from the influence of system characteristics on the decisions of the users adopting technology [3]. Perceived Usefulness and Perceived Ease of Use in using technology have an influence on the attitudes of technology users. Behavioral Intention technology is an important factor that determines whether the user will really use the system [1]. The variables used in the test are innovation variables, perceived ease of use, perceived usefulness, attitude, and intention to use. Table 1 shows the dimensions of the variables used in this research along with the indicators.

Table1. The Dimensions of Research Variables

| Latent variables | Dimension | Code | Character | Indicator (Manifest Variable) |
|------------------|-----------|------|-----------|--------------------------------|
| Innovation       | The degree to which citizens tend to be the first to use new technology | IV1 | +         | LAKSA always builds new innovations in the application (periodically creating new views) |
|                  |           | IV2 | +         | LAKSA always innovates to improve the convenience of using the application |
|                  |           | IV3 | +         | Innovation LAKSA increases the desire of users to use the application |
|                  |           | IV4 | -         | In general I am not ready to accept new ideas |
| Benefit Perception | Degrees which indicate the extent to which citizens expect that using the application will be free from business. | PU1 | +         | Using the LAKSA application can improve my performance in conducting activities |
|                  |           | PU2 | +         | Using the LAKSA application allows me to complaintmore quickly |
|                  |           | PU3 | -         | Using the LAKSA application can reduce my productivity in carrying out activities |
|                  |           | PU4 | +         | Using the LAKSA application can improve the quality of complaints |
| Perceived Ease of Use | The degree of perception of an individual's belief that using the application will be able to meet his needs / improve performance. | PEOU1 | +         | I think the LAKSA application is easy to learn |
|                  |           | PEOU2 | +         | I can use the LAKSA application without the help of experts |
|                  |           | PEOU3 | +         | My interaction with LAKSA is clear and easy to understand. |
|                  |           | PEOU4 | -         | Using the LAKSA application requires a lot of effort. |
Latent variables | Dimension | Code | Character | Indicator (Manifest Variable)
--- | --- | --- | --- | ---
Attitude | Degrees that indicate the extent to which a person has an evaluation or assessment that is beneficial or not to the behavior | AT1 | - | Making a complaint through the LAKSA application is not a good idea
AT2 | + | Making a complaint through the LAKSA application is a good idea
AT3 | + | I like the idea of using LAKSA as a means of complaint about things going wrong in the city of Tangerang
AT4 | + | Using the LAKSA application will be a pleasant experience for me
Intention | Degrees that indicate the extent to which a person has behavioral intentions to use e-government services. | B11 | + | I chose to use the LAKSA application to complain about things going wrong in the Tangerang city environment
B12 | + | It is possible that I will use the LAKSA application to complaint about something wrong in the Tangerang city environment
B13 | - | I would not recommend anyone else to use the LAKSA application.
B14 | + | I hope to always be able to use the LAKSA application in making complaints

3. Result and Discussion
With the TAM method used, there are five operational variables that are examined in real terms within the scope of the research object. The variables include the Innovativeness variable, the Perceived Usefulness variable, the Perceived Ease of Use variable, the Attitude variable and the Intention variable. Based on the research model framework above, the hypothesis can be formulated in Table 2 as follows.

| No. | Hypotheses |
| --- | --- |
| H₁ | The Innovativeness variable has a positive significant effect on the Perceived Usefulness variable in the use of the Tangerang Live application. |
| H₂ | The Innovativeness variable has a significant positive effect on the Perceived Ease of Use variable in the use of the Tangerang Live application. |
| H₃ | Perceived Ease of Use has a positive significant effect on the variable Perceived Usefulness in the use of the Tangerang Live application. |
| H₄ | Perceived Usefulness Variable has a positive significant influence on Attitude in the use of the Tangerang Live application. |
| H₅ | Perceived Ease of Use Variable has a positive significant effect on Attitude in the use of the Tangerang Live application. |
| H₆ | Attitude has a significant positive effect on the Intention variable in the use of the Tangerang Live application. |
There are two that were carried out, namely Evaluation of the Measurement Model (Outer Model) and Evaluation of the Structural Model (Inner Model). Evaluation of the outer model consists of several tests, namely convergent validity test, discriminant validity test and reliability test. Convergent validity test is a test where the correlation value between indicators and variables is above 0.70, the correlation is considered high and valid, if the correlation value is between 0.50 - 0.60 then it is still sufficient and valid, then if the outer loading value is between 0.40 to 0.50 it does not need to be deleted immediately, unless when deleted, the indicator can increase the value of composite reliability.

The discriminant validity test is testing validity by paying attention to the values of Cross Loading and Average Variance Extracted (AVE). The AVE results shown in Table 3 have values above 0.50, which proves that the average variance value of each construct is high so that a construct can be explained by more than half the variation of the indicator and the indicator has an average low error value. The results of the discriminant validity test with Cross Loading can prove that each indicator represents the measurement of the variable correctly and validly with the known value of the indicator in the variable higher than the other variables, which can be seen in Table 4. In addition to testing the validity, reliability testing is also performed and is shown in Table 5. Reliability testing is seen from the values of Cronbach’s Alpha and Composite Reliability, if the value is above 0.60 then the questionnaire is said to be reliable and consistent. The path chart test results is tabulated in Table 6.

| Construct            | Average Variance Extracted (AVE) |
|----------------------|----------------------------------|
| Innovativeness       | 0.691                            |
| Perceived Usefulness | 0.656                            |
| Perceived Ease of Use| 0.666                            |
| Attitude             | 0.695                            |
| Behavioral Intention | 0.652                            |

| Construct  | IV1  | PU  | PEOU | AT   | BI   |
|------------|------|-----|------|------|------|
| IV1        | 0.783| 0.418| 0.321| 0.433| 0.444|
| IV2        | 0.870| 0.434| 0.361| 0.401| 0.397|
| IV3        | 0.838| 0.405| 0.377| 0.455| 0.416|
| PU1        | 0.436| 0.777| 0.492| 0.326| 0.420|
| PU2        | 0.438| 0.868| 0.554| 0.451| 0.495|
| PU4        | 0.349| 0.781| 0.431| 0.434| 0.413|
### Table 5. Reliability Test Result

| Construct               | Composite Reliability | Cronbach’s Alpha |
|-------------------------|-----------------------|------------------|
| Innovativeness          | 0.870                 | 0.775            |
| Perceived Usefulness    | 0.851                 | 0.736            |
| Perceived Ease of Use   | 0.857                 | 0.750            |
| Attitude                | 0.872                 | 0.780            |
| Behavioral Intention    | 0.848                 | 0.729            |

### Table 6. Path Chart Test Results

| Path Relations                       | Original Sample |
|--------------------------------------|-----------------|
| Innovativeness → Perceived Usefulness| 0.299           |
| Innovativeness → Perceived Ease of Use| 0.426           |
| Perceived Ease of Use → Perceived Usefulness| 0.484 |
| Perceived Usefulness → Attitude      | 0.355           |
| Perceived Ease of Use → Attitude     | 0.239           |
| Attitude → Behavioral Intention      | 0.680           |

Evaluation of structural models has several tests, including the path coefficient and T-statistics. Regression testing is conducted by looking at the path coefficient value or Original Sample where the original sample value is above 0 then the variable has a positive effect, if the value is in the range of <0 to >0 then it has no influence and if the value is below -0.1 it is considered to have a negative influence. Hypothesis correlation test is also seen in the t-statistic value, where if the value is above 1.96, the relationship between variables proved significant. Table 7 shows the results of the path coefficient values and the value of T-statistics.

### Table 7. Hypotheses Test Result

| Hypotheses | Path Relations | Original Sample | T-Statistic | Conclusion |
|------------|----------------|-----------------|-------------|------------|
| H1         | IV → PU        | 0.299           | 6.11        | Significant|
| H2         | IV → PEOU      | 0.426           | 7.97        | Significant|
| H3         | PEOU → PU      | 0.484           | 10.49       | Significant|
| H4         | PU → AT        | 0.355           | 5.09        | Significant|
| H5         | PEOU → AT      | 0.239           | 3.15        | Significant|
| H6         | AT → BI        | 0.680           | 18.06       | Significant|

### 3.1 Recommendations:
- LAKSA innovation as a complaints service on the android platform makes complaints can be
done more quickly. In addition, LAKSA has innovations to improve the quality of complaints. Complaints made through LAKSA are able to attach details that previously cannot be done manually such as photos and location of complaints.

- In an effort to increase the desire of users to use LAKSA, innovations are carried out periodically in LAKSA. The innovation can be in the form of updating the display of the application to become clearer and easier for users to understand.
- The ease in using e-government services should be considered. User interaction with LAKSA should be clear and easy to understand. The ease of user interaction with the LAKSA application can make the complaints process faster.
- Users will like the idea of using LAKSA because they feel LAKSA improves performance in making complaints. The better quality of complaints and faster complaints through the LAKSA application is the reason the user chooses to use LAKSA in making complaints.
- Easy user interaction with LAKSA can create a pleasant experience using the LAKSA application. Users will like the idea of using LAKSA as a complaint facility if LAKSA is easy to use without the help of experts. User interactions that occur with the LAKSA Application should be easy to understand. This can increase the tendency of people to accept digital technology that is considered easy to use.
- LAKSA as a means of complaint if something goes wrong in the city of Tangerang is a good idea and is liked by users. Users will choose to use LAKSA and recommend others to use LAKSA based on the pleasant experience that users feel when using LAKSA.

4. Conclusion and Suggestion

4.1 Conclusions

This study aims to determine the factors that influence the intention to use e-government services LAKSA using the Technology Acceptance Model (TAM) which was developed by adding constructs as external variables. Some conclusions are obtained based on the results of testing between variables using the Structural Equation Modeling (SEM) method.

a. The measurement results that have been carried out are that the data that the researchers have done has fulfilled the validity test and reliability test. This is based on all the values of outer loading, AVE, cross loadings, Chronbach's alpha, composite reliability and the theory of Hair, Hult, Ringle, and Sarstedt [5] has met the requirements.

b. The results of hypothesis testing show that the Innovativeness and Perceived Ease of Use factors have a positive and significant effect on Perceived Usefulness with the results of t-statistics more than 1.96, namely 5.95 and 10.67.

c. The results of hypothesis testing indicate that the Innovativeness factor has a positive and significant effect on the Perceived Ease of Use with the results of t-statistics more than 1.96, which is 7.37.

d. The results of hypothesis testing indicate that the Perceived Usefulness and Perceived Ease of Use factors have a positive and significant effect on Attitude with the results of t-statistics more than 1.96, namely 5.17 and 3.33.

e. The results of hypothesis testing indicate that the Attitude factor has a positive and significant effect on Behavioral Intention with the results of t-statistics more than 1.96, which is 20.50.

4.2 Suggestions

The researcher submits suggestions that can be used as references for the development of further research, namely:

a. This research adapts from the Technology Acceptance Model (TAM) and is limited to several variables. It is recommended for further research to use other models in evaluating e-government services.

b. It is recommended for further research to add other variables to strengthen the suspicion of research on the evaluation of e-government services that were not discussed in this research.
c. It is recommended that the results of the research be used as criteria and valuable input for future e-government service development plans.

5. References
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