Analysis of Factors Influencing Continuance Intention of E-wallet Use: A Case Study of LinkAja

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Abstract— The rapid development of technology has influenced various aspects of human life, one of which is in the financial sector. Buying and selling transactions that used to be carried out by bartering, then turned into paper money, and now it has changed again to electronic money in the form of a mobile phone application. One of these applications is the LinkAja application. The purpose of this research is to analyze, test, and determine what factors influence LinkAja e-wallet application users to use this application on an ongoing basis. This research uses the theoretical basis of the Expectation-Confirmation Model (ECM) with the Partial Least Squares (PLS-SEM) approach method. The variables used in this study are user satisfaction, confirmation, perceived usefulness, perceived security and privacy, user interface, and continuous usage intention. The respondents of this study were shown to 150 active users of the LinkAja application who live in Jabodetabek using saturated sampling techniques. The data processing tool of this research was carried out using SmartPLS 3.3.2. The results obtained from this study are perceived usefulness and user satisfaction have a significant positive relationship with continuance usage intention. In addition, the confirmation variable has a positive significant effect on user satisfaction, perceived usefulness, perceived security and privacy, and user interface.

Keywords— Expectation-Confirmation Model (ECM), Partial Least Squares (PLS-SEM), Continuance Usage Intention.

I. Introduction

The development of information technology is currently experiencing rapid development so that it affects people's lives in this modern era. According to the Indonesian Internet Service Providers Association (APJII), there are 64.8% of internet users in Indonesia, or 171.17 million people from the total population of Indonesia, namely 264.16 million people. Internet use in Indonesia has also increased by 10, 12% from 2017. APJII also states that as many as 93.9% of Indonesians are connected to the internet via a Smartphone or Mobile device. Based on the data above, it can be said that the internet has an effect on aspects of people's lives, one of the aspects that strongly supports the development of technology with the internet in finance.

In line with technological developments in the payment system, in order to facilitate the transaction process, a payment instrument other than cash has emerged, namely electronic money (e-money). Electronic money is a non-cash payment instrument that is relatively new in Indonesia which has several advantages compared to several other payment instruments, namely prioritizing speed, speed and efficiency when executing a transaction, so that e-money is expected to reduce the growth rate of cash use in Indonesia (BI, 2006). The rapid development of e-money in Indonesia has led to many new innovations, such as the existence of an e-wallet an

application-based card for transactions. E-wallets are a transaction system where internet services or programs allow consumers to ask for information in a place related to purchases, loyalty, and banking information similar to a physical wallet (Lee, 2019). LinkAja is an e-wallet application that was formerly called T-Cash owned by Telkomsel. Migration from T-Cash to LinkAja began on June 30, 2019. According to research conducted by MDI Ventures and Mandiri Sekuritas in a report entitled "Mobile Payments in Indonesia: Race to Big Data Domination", the T-cash application from its inception in 2007 to 2017 had managed to regulate competition among e-wallet companies.

As time progressed and the development of e-wallet technology, there were more and more newcomers who shifted the popularity of the T-Cash application such as Research conducted by the iPrice Group and App Annie which was released on August 12, 2019, in the second quarter of 2019 Gopay and OVO dominated the use of e-wallets, then followed by DANA which managed to shift LinkAja (T-Cash). Based on this research, the Gojek is in first place, the OVO is in second place, and the LinkAja is in the third place as the largest application in Indonesia based on the number of application downloads. The survival of an information technology depends on its continued use. If the enthusiasm of the user's first use decreases after the user experiences using information technology, then the information technology will experience a decrease in usage and even not be used again at a later date. The continued use of information systems at the individual level is also very important for the sustainability of many business-to-customer (B2C) e-commerce companies, such as internet service providers (ISPs), online retailers, online banks, online brokers, online travel agents, and others (Bhattacherjee 2001).

With the decreasing number of LinkAja application users, it is considered necessary to conduct research analysis related to what factors influence the interest in using the LinkAja application on an ongoing basis. This research uses the theoretical basis of the Expectations-Confirmation Model (ECM) with the Partial Least Squares approach (PLS-SEM). Where by using the variable Expectation-Confirmation Model (ECM) method used in this study is confirmation, user satisfaction, perceived usefulness, perceptions of security and privacy, user interface and continuous use intention.

II. Theoretical Basic

A. Financial Technology (Fintech)

Fintech comes from the term financial technology or financial technology. Based on Bank Indonesia regulation PBI

No.19 / 12 / PBI / 2017 the definition of fintech is the use of technology in the financial system that results in new products, services, technology and / or business models and can have an impact on monetary stability, financial system stability, and / or efficiency, smoothness, security, and reliability of the payment system (Bank Indonesia, 2017). According to The National Digital Research Center (NDRC), fintech is defined as "innovation in financial services", which is an innovation in the financial sector that gets a touch of modern technology. Fintech is a point where financial services and technology become one where this phenomenon is not new.

B. LinkAja

LinkAja is an electronic financial service from a Badan Usaha Milik Negara (BUMN), namely PT Telkomsel, which is a form of transformation from a payment product that was originally called Telkomsel Cash (T-Cash) to LinkAja on February 22, 2019, which aims to provide services that are better and more complete. LinkAja is a financial service resulting from a merger or synergy between T-Cash owned by PT. Telekomunikasi Selular (Telkomsel), and E-Cash owned by PT. Bank Mandiri (Persero), Tbk. And T-Bank is owned by PT Bank Rakyat Indonesia (Persero) Tbk. According to CNBC Indonesia's website at the beginning of its establishment, LinkAja's shareholder composition included Telkomsel 25 percent, Bank Mandiri 19.71 percent, BRI 19.71 percent, BNI 19.71 percent, BTN 7.12 percent, Pertamina 7.12 percent, Jiwasraya 1 percent, and Danareksa 0.63 percent. LinkAja services are operated by PT. Fintek Karya Nusantara (Finraya). Finraya was founded on January 21, 2019 with the status of a subsidiary of Telkomsel which is engaged in providing payment system services (PT Telkom Indonesia, 2019). The existence of LinkAja, which is now one of the most popular e-wallet companies in Indonesia, cannot be separated from the previous development of the T-Cash application. Telkomsel Cash (T-Cash), which was launched on January 9, 2007, at that time was a new innovation from Telkomsel in contributing to the technology sector. T-Cash is an official financial service that has been registered and supervised by Bank Indonesia, has the same function as cash as a legal means of payment, where the value is equivalent to the value of cash first deposited into a T-Cash account and the money deposited is not in the nature of savings as stipulated in banking laws and regulations, so that T-Cash does not provide interest and is not guaranteed by the Deposit Insurance Corporation (Telkomsel).

C. Expectation-Confirmation Model (ECM)

The Expectation-Confirmation Model (ECM) is a model that explains the user's intention to continue using information technology (Salsabilla, Kholid and Maharani, 2019). The Expectation Confirmation Model (ECM) is a model developed by Anol Battacherjee in 2001 which has a focus on sustainable use of information systems (Quaddus & Hossain, 2012). ECM adapts the Expectation Confirmation Theory (ECT) theory, ECT is a theory that explains the intention to buy back from consumers. ECT is widely used in marketing, particularly in the field of consumer behavior to identify consumer satisfaction and repurchase intentions.

ECM explains that the intention of information technology users to continue the use of information technology is determined by 3 variables, namely confirmation, satisfaction and perceived usefulness (Bhattacherjee, 2001). Bhattacherjee (2001) explains that the user process in making decisions to reuse an information system is like a consumer's decision to repurchase a product (repurchase decision) where users usually have an initial decision or expectation. Expectations refer to perceived usefulness, in which users assess performance through the experience of using information systems (Confirmation). If users find that the information system is useful, as expected, there will be a sense of satisfaction (satisfaction) which affects their decision to use the information system on an ongoing basis or not.

D. Formulation of Hypotheses and Research Model Concepts

This research was conducted with the aim of finding out what factors influence the user's intention to use the LinkAja on an ongoing basis. In conducting this research, the writer used the expectation-confirmation model (ECM) method to determine the research factors or variables. The variables used are confirmation, user satisfaction, perceived usefulness, and continuance usage intention. Other ECM variables used by the author as research variables are perceived security and privacy and user interface variables. The two variables are used based on research references conducted by Aries Susanto, Younghoon Chang, and Youngwook Ha in 2016 entitled "Determinants of Continuance Intention to Use the Smartphone Banking Service: An Extension to the Expectation-Confirmation" and research that conducted by Apollos Patricks Oghuma, Christian Fernando Libaque-Saenz, Siew Fan Wong, and Younghoon Chang in 2016 entitled "An Expectation-Confirmation Model of Continuance Intention to Use Mobile Instant Messaging". Based on the explanation above, the researcher proposes the following hypothesis:

a. H1: Confirmation positively influence Satisfaction.
b. H2: Confirmation positively influence Perceived Usefulness.
c. H3: Perceived Security and Privacy positively influence Confirmation.
d. H4: Confirmation positively influence the User Interface.
e. H5: Satisfaction positively influence continuity usage intention.
f. H6: Perceived of usefulness positively influence Satisfaction
g. H7: Perceived of usefulness positively influence continuity usage intention
h. H8: User Interface positively influence Perceived Usefulness
i. H9: User Interface positively influence Satisfaction
j. H10: Perceived Security and Privacy positively influence Satisfaction

Based on the formulation of these hypotheses, the authors propose a research model concept shown in Figure 1 below:
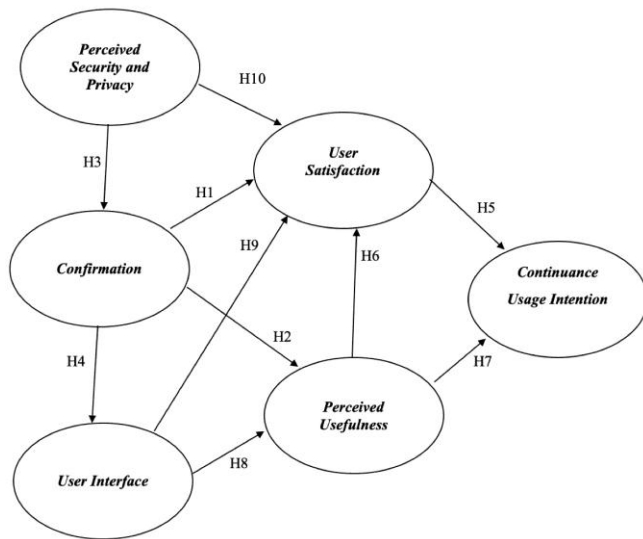
Fig. 1. Proposed Research Model

III. RESEARCH METHODS

A. Research Variable

According to Sugiyono (2017: 38) research variables are anything in the form determined by the researcher to study so that information is obtained about something that will then be drawn. The variables to be used are divided into two types, namely independent variables and research variables. The independent variable is a variable that affects, or causes, changes in the (dependent) variable (Hermawan, 2018: 38). The research variable that becomes independent is Confirmation (X). The dependent variable is the variable that is obtained or that is the result of the independent variable (Hermawan, 2018: 38). In this study, the related variables are Satisfaction (Y1), Perceived Usefulness (Y2), Perceived Security and Privacy (X1), Confirmation (X2), User Interface (X3) and Continuance Usage Intention (X4).

B. Population and Sample

Population is a generalization area consisting of objects or subjects that become certain quantities and characteristics set by researchers to study and then draw conclusions (Sugiyono, 2015). So that within the scope of this study, the population in the study were all users of the LinkAja application who live in Jabodetabek (Jakarta, Bogor, Depok, Tangerang, and Bekasi), so that the total population is 150 respondents. According to Sugiyono (2015), sample is part of the number and characteristics of the population. When the population is large, and researchers may not study everything in the population. The sampling technique used in this research is saturated sampling. Saturated sampling is a method of sampling by taking all members of the population into a sample (Hidayat, 2017). The number of users or users of the LinkAja application who live in Jabodetabek (Jakarta, Bogor, Depok, Tangerang, and Bekasi) is 150 people, so that all of them are taken as research samples.

C. Data Collection Technique

There are two types of data collection methods in this study, namely questionnaires and documentation. The first is

Sugiyono (2016: 142) said that a questionnaire is a data collection technique that is carried out by giving a set of questions or written questions to respondents to be answered by the respondent. This method is done by making a list of questions related to satisfaction, confirmation, perceived usefulness, perceived security and privacy, user interface, and continuous usage intention. The online questionnaire was created using Google Form then also distributed via online. And the second method of documentation is done by recording the documents and data that exist in the company which aims to support the research carried out. In this study, the measurement scale used by researchers is the Likert scale. The measurement scale used in this study for each independent and dependent variable is Strongly Agree has a score of 5, Agrees to have a score of 4, Neutral has a score of 3, Disagree has a score of 2, and Strongly disagrees with a score of 1.

D. Instrument Design

The questionnaire in the form of this study is based on the results of previous research which have been translated into Indonesian to adjust the local context and to make it more understandable to local people. Indicators of User Satisfaction variables (S1, S2, S3, S4,) were made based on the research of Susanto, Chang, Ha (2016), the Confirmation variable indicators (C1, C2, C3) were made based on research by Bhattarcejee (2001), the User Interface variable indicators (UI1), UI2, UI3, UI4, UI5, UI6, UI7, UI8) were made based on Oghuma's research (2016), the indicators of Perceived Usefulness variables (PU1, PU2, PU3, PU4, PU5, PU6) were made based on research by Susanto, Chang, Ha (2016).) and Oghuma (2016), variable indicators of Perceived Security and Privacy (SEC1, SEC2, SEC3, SEC4, SEC5) are based on research by Susanto, Chang, Ha (2016) and Oghuma (2016), and the last variable indicator is Continuance Usage Intention (CI1, CI2, CI3) were made based on research by Bhattarcejee (2001) and Oghuma (2016). The total of all variable indicators in this study were 29 research variable indicators.

E. Research Instrument

The research hypothesis testing was carried out using the Structural Equation Model (SEM) approach based on Partial Least Square (PLS). PLS is a component or variant based structural equation model (SEM). According to Latan and Ghozali (2012), PLS is an alternative approach that shifts from a covariance-based to variant-based SEM approach. Covariance-based SEM generally tests causality or theory while PLS is more of a predictive model. The first steps taken in testing the hypothesis in this study are testing the outer model. At this stage, the validity and reliability of the data will be tested. This study uses a questionnaire in collecting research data. To determine the level of validity and reliability of the questionnaire, researchers used the SmartPLS 3.0 program. The second is the inner model test where the objective of the structural model test is to see the correlation between the measured constructs which is the t test of the partial least square itself. The structural or inner model can be

measured by looking at the R-Square model value which shows how much influence the variables in the model have.

IV. RESULT AND DISCUSSION

A. Respondent Demographics

The data used in this study are primary data obtained through questionnaires given to LinkAja application users who live around Jabodetabek. The number of reports used in this study were 150 respondents, all of whom were LinkAja application users. The descriptions used to describe the research subjects are based on gender, age, and occupation.

a. Responding based on Gender, from 150 applications of LinkAja users, it is known that each LinkAja application user based on gender is 95 respondents or 63% is Female, then followed by Male respondents as many as 55 respondents or as much as 37%.

b. Responding based on Age, from 150 respondents who use the LinkAja application, it is known that the LinkAja application is based on age, namely users aged 20-40 years as many as 101 or as much as 67%, then followed by under 20 years of age as many as 46 respondents or as much as 31% and the rest are aged more than 40 years as many as 3 respondents or as much as 2%.

c. Respondents based on Occupation, from 150 respondents using the LinkAja application, it is known by LinkAja application users based on work, namely workers totaling 79 respondents or as much as 53%, then followed by student users or students as many as 60 or 40% and the rest are jobs categorized with and others, namely as many as 11 respondents or as much as 7%.

B. Outer-Model Evaluation

This model defines the relationship between each indicator and the latent variable, or it can be said that the external model can determine the relationship between the latent variable and the indicator. In this study, the criteria for validity were based on a reflexive indicator model as measured by convergent validity and discriminant validity. Construction reliability is measured by Composite Reliability and Cronbach's Alpha. In this study, the Path diagram consists of 6 latent variables that represent the dimensions used in the research model.

TABLE I. Outer-Model Testing.

Variable	Cronbach's Alpha	Composite Reliability	AVE
Confirmation	0,862	0,916	0,784
Continuance Usage Intention	0,858	0,911	0,774
Perceived Security and Privacy	0,881	0,914	0,681
Perceived Usefulness	0,923	0,939	0,719
Satisfaction	0,901	0,931	0,771
User Interface	0,930	0,942	0,671

a. Validity Test, it is aims to determine the validity of an indicator in measuring its latent variables. In this study, the validity test was seen from two factors, namely convergent validity and discriminant validity. Convergent validity is seen from the loading factor value, where the value According to Ghozali (2014), an indicator is considered to have a high level of validity if it has a loading factor value greater than 0.70. However, indicators that have a loading factor of 0.50 to 0.60 ($\lambda > 0.5$) are still acceptable (Gede Nyoman, 2008). The results of this study indicate that the loading factor values are more than 0.6 and 0.7. The next validity test is discriminant validity testing. This test is based on the cross loading value of the measurement with the construct and the Average Variance Extracted (AVE) value. AVE is the average percentage score of variance that has been extracted from a set of latent variables which are estimated through loading standardized indicators (Kusuma, 2017). AVE value is good if it has a value greater than 0.50 (Imam Ghozali, 2014). With that the results of this study indicate that all research variables have a value above 0.5. Thus testing the validity of the indicators is continued to the Cross loading step which is used to determine the discriminant validity of the study. An indicator is valid if the loading factor value has the highest value for its construction compared to values for other constructs (Ali. A, 2012). Thus the research variable indicators pass the discriminant validity test.

b. Reliability Test, Reliability test is a tool for measuring a questionnaire which is an indicator of a variable or construct. A questionnaire is said to be reliable if a person's answer to the statement is consistently stable over time. The reliability of indicators in this study is determined from the value of composite reliability and cronbach's alpha for each indicator block. The rule of thumb for alpha or composite reliability values must be greater than 0.7 although the value of 0.6 is still acceptable (Ghozali, 2014). Table I above shows the value of each variable meeting these criteria.

C. Inner-Model Evaluation

Testing the inner model is the next step after testing the outer model is completed, this model is a specification of the relationship between latent variables or hypothesis testing. This test consists of 2 stages, namely the R Square (R^2) Determinant Coefficient test and hypothesis testing. In SmartPLS, inner model testing is carried out through the bootstrapping process. The following Figure 2 is a modified bootstrapping model based on the inner model evaluation.

a. R-square (R^2) Test, The value of R^2 is used to measure the level of variation in the change in the independent variable on the dependent variable, the higher the R^2 value means the better the prediction model of the proposed research model (Jogiyanto, 2011). The value of R^2 is considered weak if it approaches the value of 0.19, then it is considered moderate if it approaches the value of 0.33, and strong if it has a value close to 0.67 (Ghozali & Latan, 2012). This research shows that there are two variables that are considered moderate, namely Continuance Usage Intention (0.262) and Satisfaction (0.425) and three variables that are considered weak because they are only close to 0.19, namely

Confirmation (0.059), Perceived Usefulness (0.112), and User Interface (0.237). Table II presents the yield values of R^2.
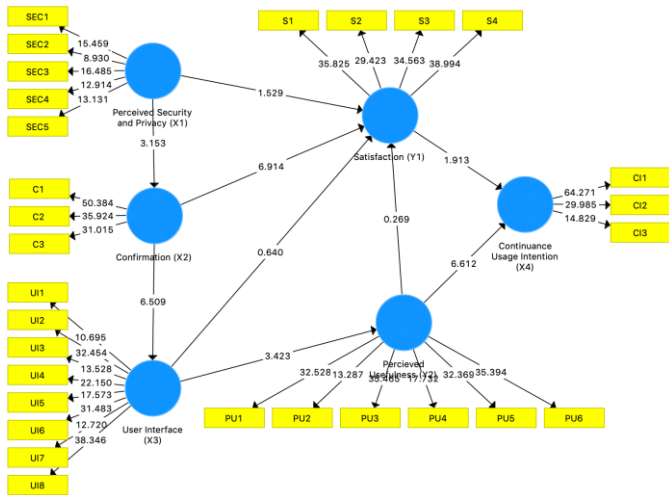

Fig. 2. Bootstrapping Results.

TABLE II. R-square Value

Variable	R Square
Confirmation	0,059
Continuance Usage Intention	0,262
Perceived Usefulness	0,112
Satisfaction	0,425
User Interface	0,237

b. Hypothesis Test, SmartPLS 3.3.2 uses a nonparametric test to determine the significant level of the path coefficient, where the t-statistic generated by running the bootsrapping algorithm in SmartPLS 3.2.7 is used to determine whether the proposed hypothesis is accepted or not. The hypothesis is accepted if the path coefficient value is above 0.1 or below -0.1 and the t-statistic value is above 1.64 (one tailed hypothesis) (Kock, 2015). The following is a table of Path Coefficients (Original Sample, Mean, STDEV, T-Values) resulting from bootstrapping smartPLS 3.3.2 which is the basis for decision making.

TABLE III. Hypotheses Testing Summary.

H	Path	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	Conclusion
H1	C -> S	0,600	6,977	0,000	Accepted
H2	C -> PU	0,312	4,048	0,000	Accepted
H3	SEC -> C	0,243	3,403	0,001	Accepted
H4	C ->UI	0,422	6,699	0,000	Accepted
H5	S -> CI	0,142	1,973	0,049	Accepted
H6	PU -> S	-0,022	0,259	0,795	Rejected
H7	PU -> CI	0,454	6,656	0,000	Accepted
H8	UI -> PU	0,125	1,416	0,157	Rejected
H9	UI -> S	0,049	0,639	0,523	Rejected
H10	SEC-> S	0,115	1,514	0,131	Rejected

Table III shows all variable relations having original sample values with the range -0.022 to 0.600. There are four insignificant paths namely PU -> S, UI -> PU, UI -> S, SEC-> S, while the other six paths are significant.

D. Research Model Result

Based on the analysis and data processing carried out using the SEM and SmartPLS 3.3.2 methods, a continuous usage intention model for the LinkAja application was formed in accordance with this research. The resulting model is shown in Figure 3 below.
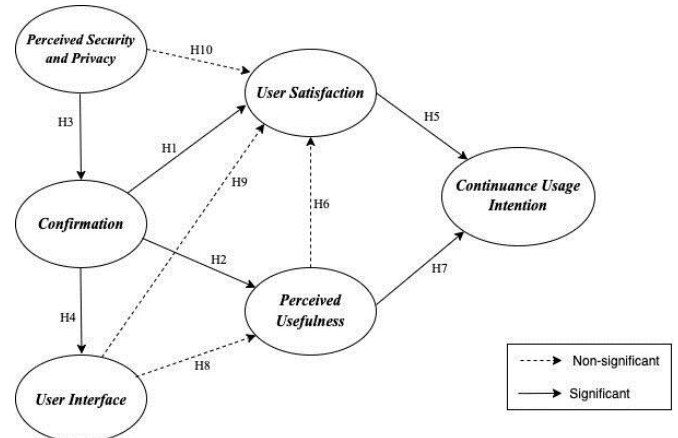

Fig. 3. Research Model Result

E. Research Implication

The results of this research hypothesis testing prove and report the Expectation Confirmation Model (ECM) model developed by Battrachjee (2011). In addition, this study has been based on previous research, namely Continuance Usage Intention of LinkAja application, a very significant measurement of perceived usefulness and user satisfaction. This study also proves the results of research conducted by Mouakket & Bettayeb (2015), Oghuma et al. (2016), and Susanto, Chang and Ha (2016) regarding the effect of a technology perspective on perceived usefulness and user satisfaction.

Furthermore, this study found that the Confirmation variable was the variable that had the most significant influence on user satisfaction. It is recognized that confirmation as a perception of service consumption is important in directing user perceptions, for example, perceived usefulness, perceived security and privacy, user interface and user satisfaction when using the LinkAja application. in general, especially when using e-wallet services. This study also proves that post-adaptation confirmation of users indirectly affects Continuance Usage Intention of LinkAja application on an ongoing basis.

The results of this research can be used as input for the LinkAja application to develop factors that require special attention to improve the quality of the LinkAja application by Increase the security and privacy factors of users (Perceived Security and Privacy), User interface and Perceived usefulness of the application.

V. CONCLUSION

A. Conclusion

The Based on the analysis of the tests carried out in this final project, it can be concluded that:

1. This study shows that of the 10 hypotheses proposed in this study, six are accepted and the other four are rejected.

2. This study supports the ECM theory, in which the hypothesis of Perceived usefulness and User satisfaction has a significant positive relationship to Continuous usage intention. In addition, the Confirmation variable has a positive significant effect on User satisfaction, Perceived usefulness, Perceived security and privacy, and User interface.

3. Four hypotheses are rejected, namely Perceived usefulness has a negative and insignificant effect on User satisfaction. Then, the User interface has no significant effect on Perceived usefulness and User satisfaction. And lastly, Perceived security and privacy does not have a significant effect on User satisfaction.

4. The recommendations that the author can give based on this research for the LinkAja application are to improve Perceived usefulness, User interface, and Perceived security and privacy so that LinkAja could increase the User satisfaction. Because with the increase in User satisfaction, the user's intention to use the application on an ongoing basis (continuance usage intention) increases. Things to do is by developing a user-friendly system such as using a more familiar menu icon and increasing the size of the menu icon and a larger writing font so that it is easily recognized by the user. Furthermore, adding a new payment feature that can make payments directly for various e-commerce in Indonesia, for example Shopee, Tokopedia, and others. In addition, adding a password feature before the user enters the application and will make payment transactions through the LinkAja application, the password can be inputted manually or by biometric features such as fingerprints or face recognition belonging to the user.

B. Suggestions

The suggestions for further research or analysis in this final project are as follows:

1. It is recommended to use a larger sample size (approx. 300 to 400) for more reliable data analysis and higher accuracy.

2. It is recommended to use other exogenous variables, for example trust, service quality and so on which are still related to research, because these exogenous variables can further influence the use of endogenous variables and user satisfaction, so that the coefficient of final determination becomes more large, and the variable is classified as a strong variable.

3. Research in the form of a comparative analysis between the LinkAja application and similar applications can be carried out to determine competitiveness, competitive advantage and the possibility of expanding Indonesia's financial technology or fintech.

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