DOES PERCEPTION ON E-MONEY INFLUENCE TOWARD CASHLESS SOCIETY?
CASE STUDY ON UNIVERSITY STUDENT IN CENTRAL JAVA INDONESIA

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Abstract:. This study aim is to investigate the perception of university students in Central Java Indonesia, choosing cash payment or e-money. The attitudes or perceptions are an essential part of the process of selecting a non-cash financial transaction. These are perceptions of benefit, easiness, and security. Also, addition e-money will contribute to government campaigns on cashless society.This study use the primary data that is obtain through questionnaire to respondents and binomial logistic regression is used to detect the choice. The results showed that the most significant influence on student perceptions was perceived ease. This condition interpreted that the higher facilities contained in e-money facilities, the higher the student interest to use e-money in carrying out an economic transaction. The reality that occurs will encourage students and society to switch to e-money.

Index terms: e-money, cashless society, binomial logistic regression

I. INTRODUCTION

The results of research Moody's Analytics stated that over the last 50 years, the rapid proliferation of electronic payments in particular credit, debit, and prepaid cards has changed how consumers pay for goods and services. Likewise, including how traders manage their businesses and how governments make and collect all kinds of payments. Electronic payments provide consumers with convenient and secure access to their funds, reduce cash, and check to handle for merchants, and expand the pool of customers who are guaranteed to pay [1]. Along with the rapid development of technology, patterns, and payment instruments in economic transactions continue to change. Technological advances in payment instruments are shifting the role of cash as a means of payment to more efficient and economically forms of non-cash payments. Non-cash fees generally make by transferring between banks and intra-bank transfers through the banks' internal network. Besides non-cash payments made by card as a means of payment such as ATM cards, debit cards, and credit cards [2], [3].

In 2014 MasterCard Advisors explored the evolutionary patterns of consumer payments in 33 countries, which account for 85% of global GDP. Across the study sample, a total of $63 trillion in consumer payments is split $21 trillion (34%) in cash and $42 trillion (66%) non-cash payments as of 2011. The study measures the share of cash and non-cash payments for each country, trajectory between 2006 and 2011, and readiness for future conversion.
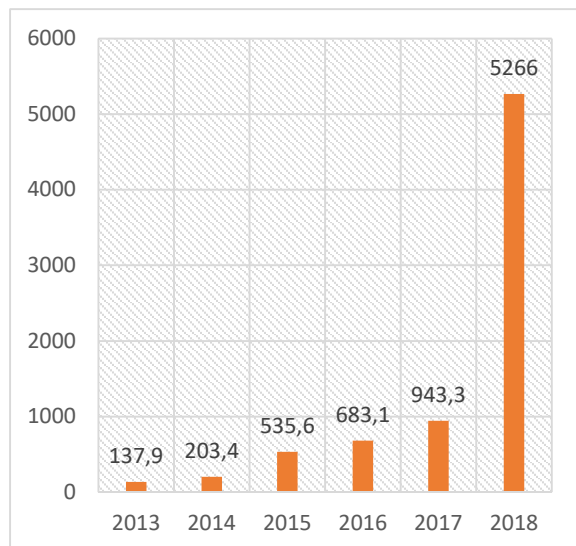
Based on scoring the countries are grouped into four categories: [4]

(1) **Nearly Cashless**: includes Belgium (93%), France (92%), Canada (90%) the UK (89%), and Australia (86%);

(2) **Tipping Point**: United States (80%) and Singapore (69%) are approaching the "tipping point" to becoming nearly cashless, with remaining habitual cash usage;

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shows, the value of digital money transactions during July 2019 reached IDR 12.93 trillion. The positive performance of electronic money and digital banking is in line with the preferences of people and students on campus who have strengthened in making transactions using the financial technology, e-commerce, and e-money technology platforms. Almost all universities in Indonesia have implemented an environmental system without cash. The application of this system intended to create a modern digital environment on campus and to create a cashless society

The following data shows the development of e-money transactions in Indonesia in 2013-2018;

Source: Bank Indonesia
Figure 1: Volume in e-money Transactions in Indonesia 2013-2018 (million)

Figure 1 shows an increasing volume of electronic money transactions in Indonesia. In 2018, the development of e-money transaction volume reached IDR 5.2 billion. Bank Indonesia (BI) revealed the growth of electronic money transactions continues to increase. It gives a signal that the people's preference for digitalization continues to strengthen.

II. LITERATURE REVIEW

Electronic money (e-money) is defined by Bank Indonesia [5] as "a stored-value or prepaid product in which several monetary values stored in electronic equipment. The nominal money saved electronically is made by exchanging a sum of money or by debiting a bank account, which then deposited in the electronic equipment. With electronic equipment that has stored, then the customer can make transactions at many merchants. The nominal value of funds stored in e-money can be reduced or increased depending on usage, and if it has shrunk the nominal value, it can refill. Using e-money does not require an authorization process and is not directly related to a customer's account at the bank. So those payments made through e-money are not charged to the customer's account at the bank". Papadopoulos [5] electronic money is an electronic store of monetary value on a technological device that may widely use for making payments undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument.

Two types of e-money are that are well known to the public, such as prepaid cards or commonly called electronic purses, and digital prepaid (digital cash) [6]. The characteristic of e-purse is the electronic value stored in a chip (integrated circuit) that is on the card. This digital system so a mechanism for transferring funds done by inserting the card into a particular device (card reader) that reads the information on the chip card. Furthermore, prepaid software, or often called digital cash, has the characteristic that electronic value stored on a hard disk on a customer's personal computer. The transfer of funds takes place using the medium of telecommunications networks through the internet, for example, when customers make payment transactions.

Consumer Perception

Schiffman & Kanuk [6] defined perception is essentially a complex psychological process that involves physiological aspects. The psychological or mental process starts from the activity of choosing, organizing, and interpreting so that consumers can give meaning to an object. The method of perception begins with a stimulus that affects the five senses and is called a sensation. The origin of the stimulus is very diverse; some come from outside the individual or from within the individual. External stimulus factors can influence consumer choices, such as contrast or striking differences, novelty, intensity, size of objects, movement, and repetition. External stimulus factors can influence consumer choices, such as contrast or noticeable differences, originality, brightness, Volume of objects, change, and repeat.

Stimulation factors that come from within are hope and motivation. As a result, there will be four crucial factors in consumer perception, namely:

1. Selection Exposure
   Consumers will tend to choose impressions or whatever they see and feel selective. Various information that he remembered would affect his choice.
2. Consumer Selection
   Consumers tend to be selective by paying great attention to the needs that suit consumers and paying low attention to requirement needs that are not or are not yet needed.
3. Perceptual Defense
   Consumers will unconsciously protect themselves from stimuli that are considered harmful to themselves, as well as protect themselves from things that are not following their needs, beliefs, and values.
4. Perceptual Blocking
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Student Perceptions in Using e-money

Referring to the research of Waspada [8] and Ramadhan et al. [7] to detect the extent to which consumers' perceptions in using e-money to conduct economic transactions can be described in more detail as follows:

1. Perception of Benefits
   Perceived benefits are subjective probabilities of potential users who use a particular application to facilitate the performance of their work.
   This simplified performance can result in better physical and non-physical benefits. For example, the results obtained will be faster and with more satisfying results compared to not using products with these new technologies. The following are indicators of the benefits variable, which are measuring the level of benefits perceived by users in making transactions using e-money.
   Indicators can measure the level of benefits:
   a. making transactions faster;
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Convenience is measured using indicators:

a. an extensive merchant network;
b. smooth transactions;
c. easy access/refill access;
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e. ease of getting online services when facing problems;
f. cheaper transaction costs.

3. Security Perception
Referring to Jebran and Dipankar [9] identified that the safety, privacy, and safety risks incurred could affect consumer perceptions. Security level perception shows the level of security and confidentiality felt by users when using e-money to transact. Indicators, namely measure the level of security/protection:

a. not worried about providing information;
b. trust that information is protected;
c. trust that security in electronic devices guaranteed at the time of the transaction.

2.4 Cashless Society

According to Parmar [10] a society without cash (cashless society) describes an economic situation where financial transactions do not conduct with money in physical form or coins. However, the operation carries out through the transfer of digital information between the parties to the sale. MasterCard introduces a framework for assessing travel without cash in a country [11]. There are three indicators to study the progress of a society related to a cashless society, which consists of:

1. Share is the ratio between cash and non-cash payments to consumers;
2. A trajectory is the distribution of dividends during a specified period;

3. Readiness is a prerequisite condition, which is related to access to financial services, macro-economic and cultural factors, the scale of traders and competition as well as technology and infrastructure

Among the three indicators to measure the progress of a society without cash, the readiness indicator is the essential part of determining a country's journey to move from money to non-cash (cashless society).
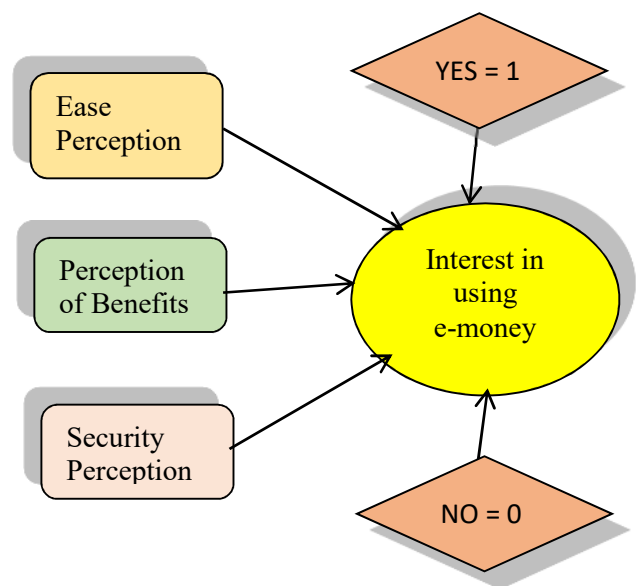
Research Framework

Figure 3: Research Framework

III. METHODOLOGY

This type of research is descriptive research, while the research method will using quantitative methods. A quantitative descriptive approach is a technique of collecting, managing, simplifying, presenting, and analyzing data so that it can provide a regular picture of an event with observations that state with numbers [7].

The discussion will refer to the results of field observations, namely surveys where information obtained from respondents using a questionnaire and Likert scale as the measurement scale. The Likert scale/range used to measure a person's response or

response to material objects. The answers to each instrument that uses a Likert level/scale have gradations from very positive to very negative. Likert range/scale is always odd, and there are still neutral or undecided choices.

The object of this research is students who live in Central Java, who currently use payment instruments in conducting economic transactions both in cash (cash) and non-cash (e-money). Regarding non-cash payments (electronic money), this study includes 2 (two) types. The first type is chip-based electronic money; e-money is generally in the form of cards such as e-Money, Flazz, Brizzi, and others of the same kind. The second type is server-based electronic money. This type of e-money is usually in the form of applications such as Go-pay, OVO, LinkAja, and others of the same kind.

The method of data analysis in this study uses the binomial logit model. This model is used to determine two choices of consumers in the use of e-money in the future. Logistic regression is one type of regression that links one or several independent variables with the dependent variable in the form of categories, usually 0 and 1. This type of independent variable in the way of classes distinguishes logistic regression from multiple regression or other linear regression.

The binomial logit model is a way to quantify the relationship between the probability of two choices, with some of the characteristics are chosen [12]. A possibility is number 1 (YES) and 0 (NO). In general, Logit analysis can describe as follows:

$$L1 = \log + \frac{Pi}{1-Pi} = bo + \sum_{j=1}^{k} \quad bj + Xij \quad (1)$$

where:
- Because P is between 0 and 1, the logit value is unlimited (between $-\infty$ to ∞)

- Linear in X, but probability P is not. The main difference between the Logit and LPM models because the probability of LPM increases linearly with X
- The bi coefficient measures how far the change in L is due to the change in X by 1 unit.

IV. DISCUSSION

Descriptive Analysis
In this descriptive analysis will be illustrated about the characteristics of respondents in this study. Features described include the sex of the respondent and level of education.
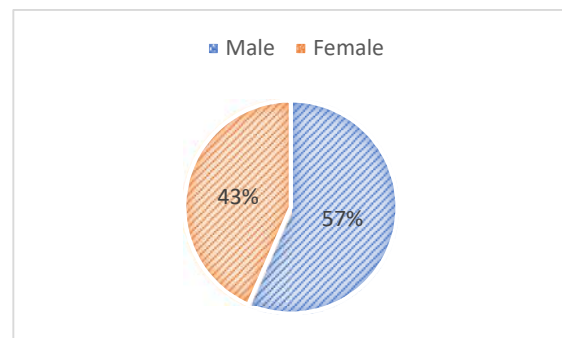

Figure 4: Gender of respondents

In figure 4 shows the sex of the respondents. It describes of 175 respondents, 57 percent are male, and the remaining 43 percent are female.
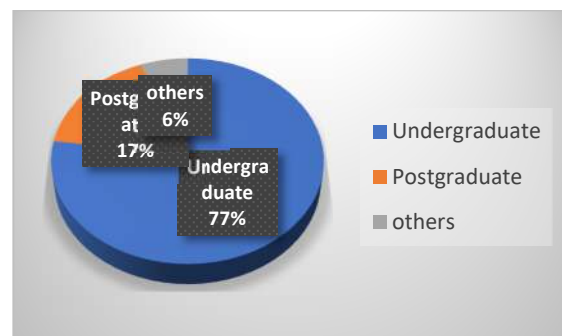

Figure 5: Education Level of Respondents

The level of education in Figure 5, illustrated by the level of education or knowledge of the respondents in this study, where 77 percent are undergraduate

students, 17 percent are graduate students and, 6 percent are others.

The Binomial logit regression model

The first step in interpreting the results of the binomial logit regression model is to analyze the same goodness of fit. Three indicators used in the goodness of fit, namely omnibus tests, model summary, and Hosmer Lemeshow. The use of these indicators will determine whether the model is excellent or robust to interpret the role of the independent variable on the dependent. The model did determine the value of the dependent variable (Y) as a form of student's willingness to use e-money in the future.

Table 1
Omnibus Tests of Model Coefficient

Chi-square	df	Sig.
16,971	3	,001
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The Omnibus test used to detect the influence of EP, BP, and SP independent variables simultaneously affecting the dependent variable (eY). The significance value of omnibus tests must be below 0.05, using a 95 percent confidence level. Based on the regression output in table 1, the significance value of the model is 0.001, because this value is smaller than 0.05, it concludes that the variables used in this study together affect the willingness of students to use e-money in the future.

Table 2
Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	211,725ᵃ	,092	,627

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

In the Summary model, mainly the Nagelkerke R square value shows the variation of independent variables to explain the dependent variable. Output table 2 shows that the independent variables (EP, BP, and SP) can define the dependent variable by 62.7 percent. While the other variables, the remaining 37.3 percent is explained by other variables outside the model.

Table 3
Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8,597	8	,377

The Hosmer and Lemeshow Test conducted to test; there is a difference between the observations and the predicted results of the model. The value of the Hosmer and Lemeshow test will be significant if the value is above 0.05. Table 3 shows the results of the Hosmer and Lemeshow Test value of 0.37. The amount of this value interprets to be higher than the standardized value of 0.05. The interpretation is that the binomial logistic regression model can able to explain the relationship of the independent variables (EP, BP, and SP) to the dependent variable (eY).

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Table 4
Cintingency Table for Hosmer and
Lemeshow Tests

		eMoney = 0		eMoney = 1		Total
		Observed	Expected	Observed	Expected	
Step 1	1	13	12,297	6	6,703	19
	2	13	9,257	5	8,743	18
	3	9	8,179	9	9,821	18
	4	6	6,822	12	11,178	18
	5	4	6,186	14	11,814	18
	6	4	5,268	13	11,732	17
	7	5	5,124	13	12,876	18
	8	2	4,473	16	13,527	18
	9	3	3,144	13	12,856	16
	10	4	2,249	11	12,751	15

Based on table 4 shows the frequency of observations and expectations from the data. In the first observation, students who are willing to use e-money (e-Money = 1) produce a value of 6, and the expectation is 6.70. From these results, it concludes that the difference in value between the two is not too far away so that the model can be said to be appropriate. Then on the second observation, students who are not willing to use e-money (e-Money = 0) produce a score of 13 and expectations of 12.29. Because the results of the two values do not disagree far, it says that the model is appropriate.

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Tabel 5
Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	EasyPerception	,122	,067	3,344	1	,067	1,130	,991	1,288
	BenefitPerception	-,020	,079	,066	1	,798	,980	,839	1,145
	Security Perception	,078	,062	1,591	1	,207	1,081	,958	1,221
	Constant	-2,960	1,022	8,386	1	,004	,052		

a. Variable(s) entered on step 1: EasyPerception, BenefitPerception, SecurityPerception.

To explain the odds ratio parameter, we base it on table 5. The most significant response variable influencing students using e-money is perceived ease (EP), which is 1.288. The positive interpretation of the B value of 0.122 indicates a positive relationship between perceived ease and willingness to use e-money by students.

A series of tests have to carry out, and then the next step is to form the binomial logistic regression equation, as follows:

$$(eY/1-eY)=-2,960+0,122EP-0,020BP+0,78SP \quad (3)$$

and the binomial logistic regression model is:

$$\mathbf{Prob} = \frac{\exp(-2,960 + 0,122EP - 0,020\,BP + \mathbf{0,78\,SP})}{1+\exp((-2,960 + 0,122EP - 0,020\,BP + \mathbf{0,78\,SP})} \quad (4)$$

Via output in equation binomial logistic regression above so that concludes that the opportunity for students who are willing to use e-money, more influenced by the perceived ease factor (EP) of 0.122; benefit perception (BP) of -0.020 and security perception (SP) of 0.78.

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CONCLUSION

The results showed that the most significant influence on student perceptions was perceived ease. This condition interpreted that the higher facilities contained in e-money, the higher the student interest to use e-money in carrying out an economic transaction. The reality that occurs will encourage students and society to switch to e-money.

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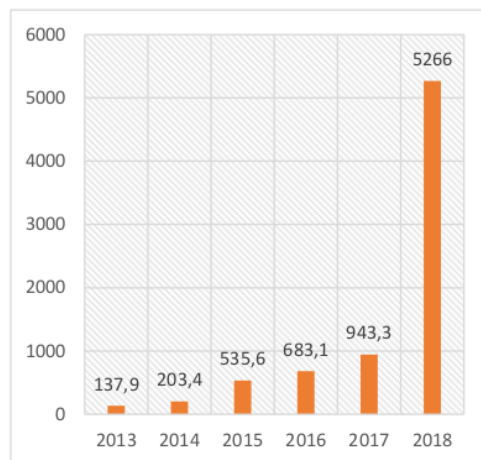Based on scoring the countries are grouped into four categories: [4]
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2. A trajectory is the distribution of dividends during a specified period;

3. Readiness is a prerequisite condition, which is related to access to financial services, macro-economic and cultural factors, the scale of traders and competition as well as technology and infrastructure

Among the three indicators to measure the progress of a society without cash, the readiness indicator is the essential part of determining a country's journey to move from money to non-cash (cashless society).
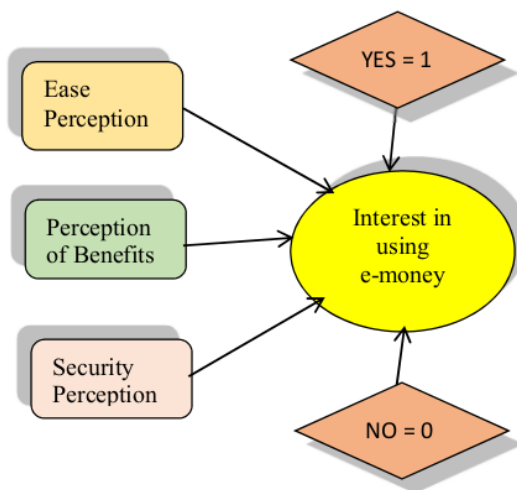
Research Framework

Figure 3: Research Framework

III. METHODOLOGY

This type of research is descriptive research, while the research method will using quantitative methods. A quantitative descriptive approach is a technique of collecting, managing, simplifying, presenting, and analyzing data so that it can provide a regular picture of an event with observations that state with numbers [7].
The discussion will refer to the results of field observations, namely surveys where information obtained from respondents using a questionnaire and Likert scale as the measurement scale. The Likert scale/range used to measure a person's response or

response to material objects. The answers to each instrument that uses a Likert level/scale have gradations from very positive to very negative. Likert range/scale is always odd, and there are still neutral or undecided choices.

The object of this research is students who live in Central Java, who currently use payment instruments in conducting economic transactions both in cash (cash) and non-cash (e-money). Regarding non-cash payments (electronic money), this study include 2 (two) types. The first type is chip-based electronic money; e-money is generally in the form of cards such as e-Money, Flazz, Brizzi, and others of the same kind. The second type is server-based electronic money. This type of e-money is usually in the form of applications such as Go-pay, OVO, LinkAja, and others of the same kind.

The method of data analysis in this study uses the binomial logit model. This model is used to determine two choices of consumers in the use of e-money in the future. Logistic regression is one type of regression that links one or several independent variables with the dependent variable in the form of categories, usually 0 and 1. This type of independent variable in the way of classes distinguishes logistic regression from multiple regression or other linear regression.

The binomial logit model is a way to quantify the relationship between the probability of two choices, with some of the characteristics are chosen [12]. A possibility is number 1 (YES) and 0 (NO). In general, Logit analysis can describe as follows:

$$L1 = \log + \frac{Pi}{1-Pi} = bo + \sum_{j=1}^{k} \quad bj + Xij \qquad (1)$$

where:
- Because P is between 0 and 1, the logit value is unlimited (between $-\infty$ to ∞)

- Linear in X, but probability P is not. The main difference between the Logit and LPM models because the probability of LPM increases linearly with X
- The bi coefficient measures how far the change in L is due to the change in X by 1 unit.

IV. DISCUSSION

Descriptive Analysis
In this descriptive analysis will be illustrated about the characteristics of respondents in this study. Features described include the sex of the respondent and level of education.
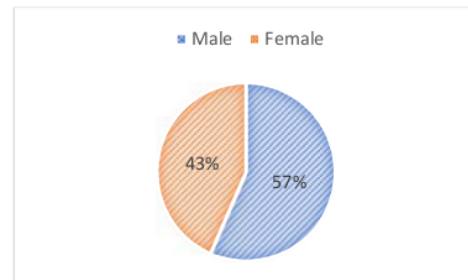

Figure 4: Gender of respondents

In figure 4 shows the sex of the respondents. It describes of 175 respondents, 57 percent are male, and the remaining 43 percent are female.
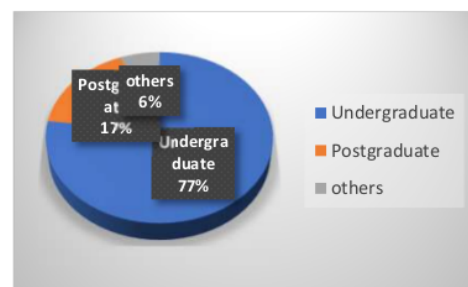

Figure 5: Education Level of Respondents

The level of education in Figure 5, illustrated by the level of education or knowledge of the respondents in this study, where 77 percent are undergraduate

students, 17 percent are graduate students and, 6 percent are others.

The Binomial logit regression model

The first step in interpreting the results of the binomial logit regression model is to analyze the same goodness of fit. Three indicators used in the goodness of fit, namely omnibus tests, model summary, and Hosmer Lemeshow. The use of these indicators will determine whether the model is excellent or robust to interpret the role of the independent variable on the dependent. The model did determine the value of the dependent variable (Y) as a form of student's willingness to use e-money in the future.

Table 1
Omnibus Tests of Model Coefficient

Chi-square	df	Sig.
16,971	3	,001
16,971	3	,001
16,971	3	,001

The Omnibus test used to detect the influence of EP, BP, and SP independent variables simultaneously affecting the dependent variable (eY). The significance value of omnibus tests must be below 0.05, using a 95 percent confidence level. Based on the regression output in table 1, the significance value of the model is 0.001, because this value is smaller than 0.05, it concludes that the variables used in this study together affect the willingness of students to use e-money in the future.

Table 2
Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	211,725ᵃ	,092	,627

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than ,001.

In the Summary model, mainly the Nagelkerke R square value shows the variation of independent variables to explain the dependent variable. Output table 2 shows that the independent variables (EP, BP, and SP) can define the dependent variable by 62.7 percent. While the other variables, the remaining 37.3 percent is explained by other variables outside the model.

Table 3
Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8,597	8	,377

The Hosmer and Lemeshow Test conducted to test; there is a difference between the observations and the predicted results of the model. The value of the Hosmer and Lemeshow test will be significant if the value is above 0.05. Table 3 shows the results of the Hosmer and Lemeshow Test value of 0.37. The amount of this value interprets to be higher than the standardized value of 0.05. The interpretation is that the binomial logistic regression model can able to explain the relationship of the independent variables (EP, BP, and SP) to the dependent variable (eY).

Table 4

Cintingency Table for Hosmer and Lemeshow Tests

		eMoney = 0		eMoney = 1		Total
		Observed	Expected	Observed	Expected	
Step 1	1	13	12,297	6	6,703	19
	2	13	9,257	5	8,743	18
	3	9	8,179	9	9,821	18
	4	6	6,822	12	11,178	18
	5	4	6,186	14	11,814	18
	6	4	5,268	13	11,732	17
	7	5	5,124	13	12,876	18
	8	2	4,473	16	13,527	18
	9	3	3,144	13	12,856	16
	10	4	2,249	11	12,751	15

Based on table 4 shows the frequency of observations and expectations from the data. In the first observation, students who are willing to use e-money (e-Money = 1) produce a value of 6, and the expectation is 6.70. From these results, it concludes that the difference in value between the two is not too far away so that the model can be said to be appropriate. Then on the second observation, students who are not willing to use e-money (e-Money = 0) produce a score of 13 and expectations of 12.29. Because the results of the two values do not disagree far, it says that the model is appropriate.

Tabel 5

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	EasyPerception	,122	,067	3,344	1	,067	1,130	,991	1,288
	BenefitPerception	-,020	,079	,066	1	,798	,980	,839	1,145
	SecurityPerception	,078	,062	1,591	1	,207	1,081	,958	1,221
	Constant	-2,960	1,022	8,386	1	,004	,052		

a. Variable(s) entered on step 1: EasyPerception, BenefitPerception, SecurityPerception.

To explain the odds ratio parameter, we base it on table 5. The most significant response variable influencing students using e-money is perceived ease (EP), which is 1.288. The positive interpretation of the B value of 0.122 indicates a positive relationship between perceived ease and willingness to use e-money by students.

A series of tests have to carry out, and then the next step is to form the binomial logistic regression equation, as follows:

$$(eY/1\text{-}eY)=\text{-}2,960+0,122EP\text{-}0,020BP+0,78SP \qquad (3)$$

and the binomial logistic regression model is:

$$\mathbf{Prob} = \frac{\exp(-2,960 + 0,122EP - 0,020\,BP + \mathbf{0,78\,SP})}{1+\exp((-2,960 + 0,122EP - 0,020\,BP + \mathbf{0,78\,SP})} \qquad (4)$$

Via output in equation binomial logistic regression above so that concludes that the opportunity for students who are willing to use e-money, more influenced by the perceived ease factor (EP) of 0.122; benefit perception (BP) of -0.020 and security perception (SP) of 0.78.

CONCLUSION

The results showed that the most significant influence on student perceptions was perceived ease. This condition interpreted that the higher facilities contained in e-money, the higher the student interest to use e-money in carrying out an economic transaction. The reality that occurs will encourage students and society to switch to e-money.

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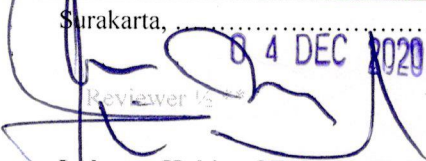
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