Implications of Using E-money and APMK on the Money Supply: The Case of Indonesia

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ABSTRACT

The innovation of payment systems due to technological development, replace the role of cash to electronic money (e-money) and cards as the lifestyle of people in the transaction method. This study aims to see the influence of the use of e-money as well as debit and credit card against the money supply in Indonesia in short and long term. The data in this research is secondary data in the form of time series which sourced from the Bank Indonesia website, with period from 2015M1 to 2020M2. This study used ECM (Error Correction Model) analysis. The study shows that in the long term the use of e-money and debit cards have a dominant influence, while in the short term have a significant effect on the amount of money circulating in Indonesia. The strong influence of the use of electronic money and means of payment using cards on the money supply, makes the authorities in particular in the monetary policy authority can consider this to take appropriate actions and monetary policy decisions, because as is well known fluctuations in the money supply greatly affect financial system stability in a country. If instruments such as the use of electronic money and APMK are considered in the formulation of policies, this will be more informative in predicting the certainty of the money supply in the society, and it's hoped that the Central Bank will be able to produce effective monetary policies in influencing the real economy in a country.

*Keywords*: E-money, APMK, Money Supply, Error Correction Model

1. INTRODUCTION

Nowadays, technological developments have spread to all aspects of life, including the financial and payment systems. The encouragement of the public's need for a safe, effective and efficient financial and payment system has made banks around the world competing to make innovations so as to produce a new financial and payment system, such as electronic money and card based payment instruments (APMK). (Reiss, 2018)argues that the conversion of paper money to bits has been a gradual adaptive process, and money has changed in digital form. This makes the status of electronic money and paper money have changed in the view of monetary authorities.

Silitonga in (Zunaitin et al., 2017) in Indonesia electronic transactions began in 2007. Provisions

regarding e-money have been regulated in Bank Indonesia regulation No.7/52/PBI/2005. However, this regulation allied with the regulation of the implementation of card payment instruments (APMK). According to (FontianMunzil, 2017) electronic money cards have slightly different characteristics from other payment instruments such as credit cards and ATM/debit cards, but the use of these instruments remains the same as credit cards and ATM/debit cards which are intended to make payments. Payment using an electronic money card does not require an authorization process like a credit card, simultaneously the balance stored on an electronic money card will be reduced according to the fees charged on the transaction. The basic difference between electronic money and card based payment instruments (APMK) according to the

Wikipedia website is that electronic money is prepaid while APMK is access oriented. In 2009 the official e-money regulation was separated from the card payment instrument and a new regulation was made in Bank Indonesia Regulation No.11/12/PBI/2009 about electronic

money. However, due to the rapid development of the use of electronic money in the society, Bank Indonesia changed the regulation regarding the use of electronic money to Bank Indonesia Regulation Number 14/2/PBI/2012.
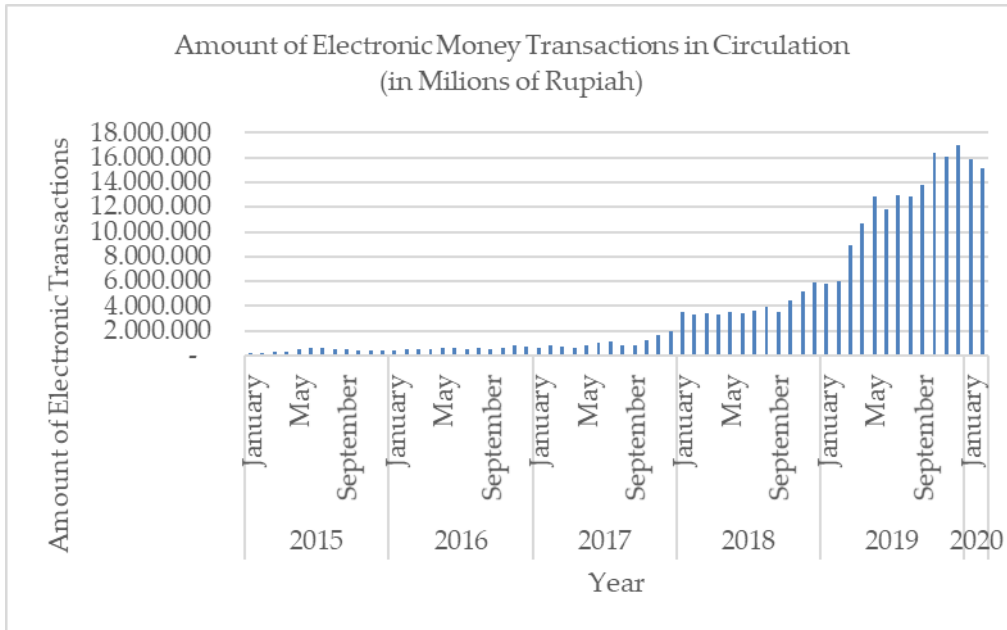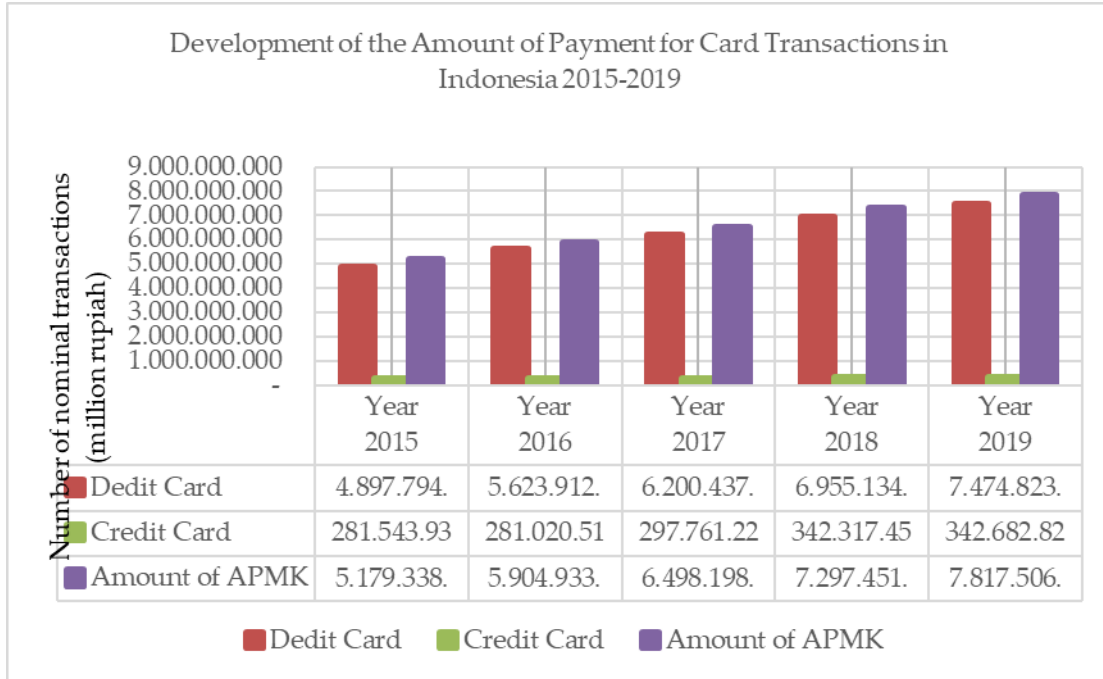

Source: Author's processed results

Graph 1 Developments in the Amount of Electronic Money Transactions in Indonesia 2015M1-2020M2

Graph 1 shows the growth of nominal electronic money transactions in circulation from January 2015 to February 2020. For approximately six years, electronic money transactions have continued to fluctuate. But in 2015 until the second quarter of 2017 the development of electronic money transactions was quite stable, a significant change occurred in the next quarter. Where in January 2017 electronic money supply transactions amounted to 665.791 million rupiahs, continuing to increase to 812,212 million rupiahs in February of the same year. This has made the way of life of today's society has begun to change from using cash as a means of making transactions to using non cash payment instruments. This implies that

the lifestyle of today's society has begun to change from using cash as a means of making transactions to using non-cash payment instruments. According to (Kirbrandoko, 2018) the use of smartphone based electronic money is influenced by perceived benefits and perceived ease of use. The ease of transaction offered by this payment system innovation is undeniable, thus creating public interest in switching from using cash to electronic money. In addition to electronic money, technological developments in the payment system in the form of payment instruments using cards (AMPK) such as debit cards and credit cards also occur.

Development of the Amount of Payment for Card Transactions in Indonesia 2015-2019

	Year 2015	Year 2016	Year 2017	Year 2018	Year 2019
Dedit Card	4.897.794.	5.623.912.	6.200.437.	6.955.134.	7.474.823.
Credit Card	281.543.93	281.020.51	297.761.22	342.317.45	342.682.82
Amount of APMK	5.179.338.	5.904.933.	6.498.198.	7.297.451.	7.817.506.

Source: Author's processed results

Graph 2 Development of the Amount of Payment for Card Transactions in Indonesia 2015-2019

Graph 2 shows the nominal development of debit and credit card transactions from 2015-2019. In 2015 and 2016, the nominal debit card transactions amounted to 4,897,794,435 and 5,623,912,646 million Rupiah. Furthermore, in 2017 the nominal debit card transactions of 6,200,437,636 continued to increase to 2019 amounting to 7,474,823,816 million Rupiah. From the above table it can be concluded that the use of debit cards has increased every year. As for the development of credit card usage within five years, it continued to fluctuate, and had declined in 2016 with a nominal transaction amount of 281,020,518 million Rupiah. Furthermore, from 2017 to 2019 the nominal transactions of credit cards continue to increase.

Based on the results of the study (Xu et al., 2019) stated that the differences in payment mechanisms between cash payments and electronic payments affect the behavior of sellers in setting prices. The results show that cash payments facilitate the mental imaging process, thereby increasing people's desire for money and driving higher sales prices. According to Abidin in (Rahayu&Nugroho, 2020) explained that an increasingly sophisticated

and easy payment system can optimize people's purchasing power, the more people who use electronic money, can reduce users of cash or checks. Consistent with research (Fujiki& Tanaka, 2014), the results show that electronic money replaces cash in the society, because with the increased use of electronic money, people don't need to carry cash directly. From some of the literature above it can be concluded that the increasing interest of the public to switch to using non cash transaction tools such as electronic money and card based payment instruments (APMK), this will facilitate a person in making transactions, and change the behavior of the public's so that make people hold little cash. Of course this will affect the money supply in the society.

Based on research conducted by (Nirmala & Widodo, 2011) the use of APMK resulted in decreased cash holdings, while M1 and M2 increased. Growth in non-cash transactions also induces GDP and a slight decrease in prices, implications for monetary policy, a decrease in the BI rate and the cost of monetary policy. Meanwhile, according to (Berentsen, 2012)

concluded that the widespread use of digital money can increase pressure on the central bank to reduce the number of mandatory reserves and reduce the reserve ratio to help domestic banks compete with foreign intermediaries that may increasingly attract (transactions) deposits from residents across the computer network public. And digital money has the potential to replace the central bank's currency, digital money is a credible threat to paper currencies because digital money is specifically designed to make small value payments in retail transactions and will therefore reduce transaction costs for consumers and businesses.

According to (Chen et al., 2012) that the rapid development of electronic money, accelerating the circulation of money, increasing electronic money owned by the public and reducing the demand for cash, thereby reducing currency ratios and enlarging monetary multipliers. Not only that, (Choi, 2019) in his research also mentioned that the use of debit cards can affect the demand for cash. And (Al-Laham et al., 2009) found that increasing the use of electronic money would limit the ability of the central bank to control the money supply, increase the velocity of money, make lower seignior age income, reduce reserves, reduce international monetary control, and change multipliers money. From some of these studies it can be concluded that the use of non-cash payment instruments such as electronic money and card based payment instruments has an influence on the money supply, and the existence of innovations in this payment system has the potential to influence monetary policy in a country.

Therefore, the existence of this payment instrument innovation needs to get special attention from policy makers such as the Central Bank to pay more attention to the impact of this financial innovation, so that the Central Bank is able to create monetary policies and actions that are right on target for the creation of financial system stability a country.

According to research (Wei, 2018) the existence of financial innovations that continuously affect people's lifestyles and economic growth in a country, especially the spread of third party payments to cash in circulation.

The substitution effect produced by this demand deposit is significant. At the same time, this reduces the rate of cash leakage, which in turn increases the ability to create commercial bank credit and ultimately increases the money supply. And (Qin, 2017) in his research explained that electronic money will have an impact on money supply, increasing M0 and M1. Electronic money has a negative impact on cash spent. Conversely, it has a positive influence on M1 and electronic money will also affect the control power of the central bank. Based on these problems, the main studies that will be discussed in this study are:

1. How does the use of electronic money effect on money supply in Indonesia in the short and long term?

2. How does the use of card base payment instruments (AMPK) effect on money supply in Indonesia in the short and long term?

Based on this, the purpose of this study was to identify the effect of the use of electronic money and card payment tools (APMK) on the money supply in Indonesia in the short and long term.

2. METHODS

The data used in this study are data of Electronic Money Transactions (EM), Nominal APMK Transactions, represented by amount of Debit Card (KD) and Credit Card (KK) transactions and the amount of Money Supply (JUB) as dependent variables. The money supply in this study is the money supply in the narrow money, in this study also uses control variables such as the exchange rate of Rupiah against the US Dollar (KURS), Inflation Rate (INF) and the BI Interest Rate (BIRATE) the use of control variables is useful in overcoming the problem of omitted variable bias which is problems that occur in the regression model due to incorrect model. The data in this study are secondary data in the form of time series, sourced from the Bank Indonesia website. The research period is 2015M1-2020M2. To see effect of the three independent variables on

short term and long term money supply in Indonesia, stationary test using Augmented Dickey Fuller (ADF), estimation of long-term equation, Co-integration test using Engle-Granger Test, Estimation of Long-Term Equation, Error Analysis Correction Model (ECM) and Classic Assumption Test consisting of Normality Test, Multicollinearity Test, Heteroscedasticity Test, and Autocorrelation Test. Stationary test was performed using Augmented Dickey Fuller (ADF), estimation of long term equations, Co-integration tests using the Engle-Granger Test, Estimation of Short Term Equations, Error Correction Model (ECM) Analysis and Classical Assumption Test consisting of Normality Test, Multicollinearity Test, Heteroscedasticity Test, and Autocorrelation Test. This study uses the general model of Error Correction Engle Granger, where in the study (Astuti, PutriYuni, 2018) the general models of EC Engle Granger are :

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta X_t + \alpha_2 EC_{t-1} + e_t \qquad (1)$$

where

$$EC_{t-1} = Y_{t-1} - (\beta_0 + \beta_1 X_{t-1}) \qquad (2)$$

with

EC_{t-1} : Disequilibrium error

α_0 : A constant

α_1 : Short term coefficient

β_1 : Long term coefficient

e_t : Error component in EC Engle Granger

a_2 : The imbalance correction coefficient in the form of an absolute value that explains

how fast the time needed to get the balance value

3. RESULTS AND DISCUSSION

3.1 Stationarity test

The first test conducted in this study is the stationarity test, this test aims to see whether the data used in this study are stationary or not. Non-stationary data can cause spurious regression. According to (Astuti, PutriYuni, 2018) direct regression is common in trend data. The dependent variable and independent variable data both show a tendency to increase over time. The data is not stationary in level, but if analyzed together it will be stationary, usually will be stationary at the first differentiation. In a simple linear regression equation, direct regression can occur if between the dependent variable (Y_t) and the independent variable (X_t) has a value $\beta = 0$.

Table 1. Stationary Test Results

Variable	Root Test Unit on	ADF Test Statistic	Critical Values 5%	Prob.*	Information
Money Supply (JUB)	1st Difference	-3.857688	-2.91765	0.0044	Stationary
E-money (EM)	1st Difference	-6.413527	-2.91086	0.0000	Stationary
Debit Card (KD)	1st Difference	-3.845173	-2.921175	0.0047	Stationary
Credit Card (KK)	1st Difference	-3.389332	-2.921175	0.0160	Stationary
Exchange Rate (KURS)	1st Difference	-7.177805	-2.91086	0.0000	Stationary
Inflation Rate (INF)	1st Difference	-5.674611	-2.91173	0.0000	Stationary
Interest Rate (BIRATE)	1st Difference	-5.472804	-2.91086	0.0000	Stationary

Source: Author's processed results

Based on the table processed above, the stationary test is performend on each variable in the study, namely the variable money supply (JUB), e-money (EM), debit card (KD), credit card (KK), as well as on control variables such as exchange rates (KURS), inflation (INF) and interest rates (BIRATE). In the table above it is known that all variables in this study are stationary at the first difference level, this can be determined by comparing the value of the ADF Test Statistics that is greater than the critical value. In addition, this is also supported by the probability value that is smaller than alpha value of 1%, 5%, 10%.

After doing stationarity tests on all data in the study, cointegration testing is also needed. cointegration test is performed to see whether the regression residuals produced are stationary or not, cointegration testing in this study is carried out with the Engle-Granger Test, which is to look at the stationarity of the residual regression results. According to (AT Basuki, 2016) cointegration test is used to give an early indication that the model used has a long term relationship (cointegration relation). Cointegration test results are obtained by forming a residual obtained by regressing the independent variable on the dependent variable OLS. The residual must be stationary at the level of level to be said to have cointegration.

3.2 *Cointegration Test*

Table 2. Results of the Engle-Granger Cointegration Test

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.146664	0.0000
Testcal values :	1% level	-3.542097	
	5% level	-2.910019	
	10% level	-2.592645	

Source: Author's processed results

In the results of the processed data above, it was found that residual (RES) stationary at the level is seen from the t-statistically significant value at the critical value of 5% (Prob. 0.0000). Therefore, it can be said that the data is

cointegrated, and there is a long term balance between the variables used in this study. After cointegration test done, and it was found that there is a long-term relationship, next thing to do is to estimate the long term equation.

Table 3. Estimated Long Term Equations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	164.8892	155.1733	1.062613	0.2926
EM	1.29E-05	1.39E-06	9.265082	0.0000
KD	1.08E-06	1.80E-07	5.989583	0.0000
KK	-1.21E-05	4.48E-06	-2.705992	0.0091
KURS	0.077706	0.012917	6.015979	0.0000
INF	3.398348	5.726325	0.593461	0.5553
BIRATE	-56.13733	6.135586	-9.149465	0.0000
R-squared	0.968246	Mean dependen var		1265.756
Adjusted R-squared	0.964782	S.D. dependent var		186.0082
S.E. of regression	34.90705	Akaike info criterion		10.04926
Sum squared resid	67017.63	Schawarz criterion		10.28942
Log likehood	-304.5271	Hannan-Quinn criter.		10.14355
F-statistic	279.5133	Durbin-Watson stat		2.113047

Prob(F-statistic)	0.000000

Source: Author's processed results

From the processed data above, we can form a long term equation from the money supply:

JUB = C(1) + C(2)*EM + C(3)*KD + C(4)*KK + C(5)*KURS + C(6)*INF + C(7)*BIRATE

JUB = 164.889+ 1.291*EM + 1.078*KD - 1.213*KK + 0.078*KURS + 3.398*INF - 56.137*BIRATE

The equation above can be seen that some variables have a positive relationship with the money supply and some other variables have a negative relationship with the money supply. The variables that have a positive relationship with the money supply are e-money (EM), debit cards (KD), exchange rates (KURS) and inflation rates (INF), and other variables that have a negative relationship are credit cards (KK) and interest rate (BIRATE). Variables have the most dominant influence on the money supply are e-money, credit cards, exchange rates, and interest rates. This shows that e-money (EM), credit card (KK), exchange rate (KURS) and interest rate (BIRATE) variables have a higher ability to influence the money supply. Meanwhile the variable has the weakest influence which is the inflation rate (INF).

From this equation explains that e-money has a significant positive effect on the money supply, where if the e-money transactions increases, it will be followed by an increase in the money supply (M1) in Indonesia. When there is an increase in electronic money transactions by 1 unit, it will be followed by an increase in the money supply by 1,291 units at the value of the money supply. The results of this study show the same results as what was shown in the study (Qin, 2017) which explains that electronic money will have an impact on the money supply, increasing M0 and M1. Electronic money has a negative impact on cash spent. Conversely, it has a positive influence on M1 and electronic money will also affect the control power of the central bank. Meanwhile, according to (Lu, 2017) in his research also found that the effect of cash substitution and the effect of cash conversion caused by electronic money will change the scale

of the base currency and the structure of the level of money supply, the proportion of cash in circulation will decrease and the proportion of reserves will increase. With the development of electronic money, there will be loans to make deposits, the central bank will increase the supply of base money. The same with research conducted (Aliha et al., 2019) which states that e-money has a significant positive effect on money demand. And this is strengthened by the results of research conducted (Priyatama&Apriansah, 2010) explaining that e-money can act as a factor that changes the function of money demand and increases money circulation in the economy which also means increasing money circulation. This means that the use of electronic money can change the demand for cash and affect the money supply in a country, where if the use of electronic money is increasingly popular among the people of a country will make an increase in the money supply in the country.

While the use of credit cards has a significant negative effect on the money supply, where an increase in the use of credit cards (KK) will cause the money supply to decrease. When the use of credit cards increases by 1 unit, it will be followed by a decrease in the money supply by 1,213 units in the value of the money supply. This is the opposite of what was explained (Geanakoplos& Dubey, 2010) in his literature that the widespread use of credit cards can increase efficiency in trading but, credit card use also increases the velocity of money, so this can cause inflation without monetary intervention. Similarly, the study (Alih et al., 2018) entitled "Investigating the Relationship Between Financial Innovation and Money Demand in Malaysia: An ARDL Approach to Co-Integration" shows the results that the credit card variable in error correction has a positive and significant impact on demand long term incoming cash. It can be concluded from the studies above that the use of credit cards doesn't reduce the money supply but instead makes the money supply increase. However, the results of this study have similarities with a study entitled "Exploring

Money Demand Dynamics in Malaysia either the Inclusion of Financial Innovations" conducted by (Aliha et al., 2019) states that in the long run credit cards have a negative effect on money demand, this means credit card use can reduce the amount of cash circulating in the society. Likewise, what happens to the exchange rate variable (KURS) and interest rates (BIRATE), where an exchange rate has a significant positive effect on the money supply, while the interest rate has a significant negative effect on the money supply.

3.3 Error Correction Model Analysis

After cointegration testing is done and known that the data in the study are cointegrated and there is a long term relationship between the variables used in the study. Therefore, an error correction model analysis (ECM) needs to be use to see the imbalance (disequilibrium) in the short term.

Table 4. Estimated Error Correction Model (ECM)

Variable	Coefficience	Std. Error	t-Statistic	Prob.
C	5.286847	4.099588	1.289605	0.2028
D(EM)	8.44E-06	6.01E-06	1.404472	0.1660
D(KD)	5.65E-07	1.52E-07	3.725373	0.0005
D(KK)	-5.34E-06	3.27E-06	-1.630024	0.1090
D(KURS)	0.045318	0.016989	2.667431	0.0101
D(INF)	-5.461270	9.428833	-0.579210	0.5649
D(BIRATE)	2.243541	16.57257	0.135377	0.8928
RES(-1)	-0.777839	0.130230	-5.972825	0.0000
R-squared	0.492512	Mean dependen var		9.629508
Adjusted R-squared	0.425485	S.D. dependent var		36.71452
S.E. of regression	27.82842	Akaike info criterion		9.611706
Sum squared resid	411011.30	Schawarz criterion		9.888541
Log likehood	-285.1270	Hannan-Quinn criter.		9.720200
F-statistic	7.347989	Durbin-Watson stat		2.147676
Prob(F-statistic)	0.000004			

Source: Author's processed results

From the ECM test the equation is obtained in the short term:

D(JUB) = C(1) + C(2)*D(EM) + C(3)*D(KD) + C(4)*D(KK) + C(5)*D(KURS) + C(6)*D(INF) + C(7)*D(BIRATE) + C(8)*RES(-1)

D(JUB) = 5.287 + 8.445*D(EM) + 5.647*D(KD) - 5.336*D(KK) + 0.045*D(KURS) - 5.461*D(INF) + 2.2435*D(BIRATE) - 0.778*RES(-1)

Shows that the RES coefficient in the model is significant and is negative for the estimated money supply (JUB). The ECM estimation results above show that in the short and long run the variables us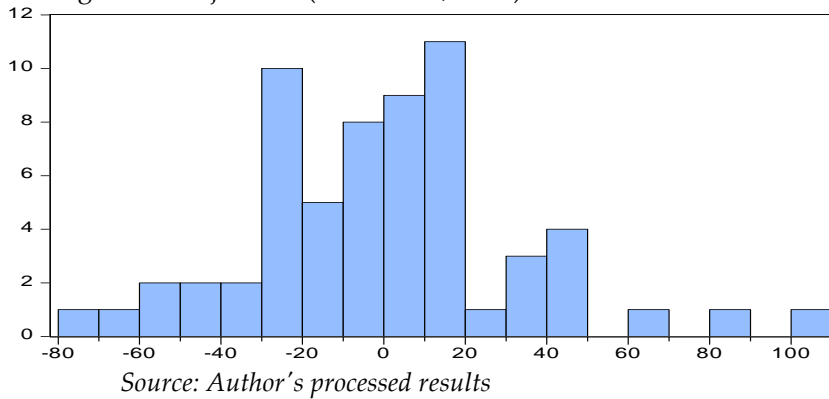ed in this study significantly influence the money supply. With an R2 of 0.4925 or 49.2% it can be said that the types of independent variables entered in the model are good enough, because only about 50% of the diversity of the dependent variable is influenced by independent variables outside the model.

The processed data above illustrates that in the short term changes in the use of debit cards and exchange rates have a significant positive effect on the money supply, assuming ceteris paribus. Where if the debit card usage increases, it will be followed by an increase in the money supply (M1) in Indonesia. When an increase in the use of debit cards by 1 unit, it will be followed by an increase in the money supply by 5,647 units in the value of the money supply. Likewise, what happens to the exchange rate variable (KURS), if the exchange

rate (KURS) of the rupiah against the dollar increases or appreciates, it will cause an increase in the money supply. Where when the exchange rate increases by 1 unit will be followed by an increase in the money supply by 0.045 units in the value of the money supply. Whereas for variables such as e-money (EM), credit cards (KK), inflation rates (INF) and interest rates (BIRATE) in the short term don't have a dominant influence in influencing the movement of the money supply (JUB) in Indonesia. The results in this study are the same as what was found by (Aliha et al., 2019) according to him in Malaysia in the short term debit cards and e-money have a negative impact on money demand. Meanwhile, debit cards have a positive effect. So, it can be concluded that in Indonesia the use of debit cards in the short term can increase the use of cash due to changes in money demand so that the money supply increases, whereas for the use of e-money and credit cards in the short term don't have enough power to influence the money supply in Indonesia.

Based on the short term equation using the ECM method produces RES coefficient. This coefficient measures the regress and response of each period that deviates from equilibrium. According to Widarjono in (AT Basuki, 2016) the

RES imbalance coefficient in the form of an absolute value explains how fast the time is needed to get the balance value. The RES coefficient value on the processed data above is 0.778 which means that the difference between the money supply and the balance value is 0.778 which will be adjusted within 1 year.

3.4 Classic Assumption Test Results

This test is performing to determine whether or not there are deviations that occur in the results of research in the regression equation. The classic assumption test consists of a normality test, a multicollinearity test, a heteroscedasticity test and an autocorrelation test.

3.5 Normality Test Results

Normality test is intended to test whether the standardized residual values in the regression model are normally distributed or not. The residual value is said to have normal distribution if the standardized residual value is mostly close to the average value. Generally, not fulfilled normality due to extreme values in the data taken.

Source: Author's processed results

Graph 3 Normality Test Results

In the above processed data the residual testing is carried out using the Jarque-Bera fallow test. It's known that the residuals in the study are normally distributed, this is known by looking at the comparison of the Jarque-Bera probability values

calculated with an alpha level of 5%. It can be seen that the calculated JB probability value of 0.059 is greater than the alpha level of 5% so this indicates that the residuals are normally distributed.

3.6 Multicollinearity Test Results

Multicollinearity testing in research is used to see whether or not there is a relationship (correlation) between fellow independent variables. If there is a relationship between independent variables, the regression coefficient tends not to be significant.

Table 5. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	24078.76	1225.179	NA
EM	1.94E-12	4.156019	2.571355
KD	3.24E-14	459.9205	11.79027
KK	2.01E-11	663.3918	6.369583
KURS	0.000167	1712.808	2.374001
INF	32.79080	29.12464	3.060503
BIRATE	37.64542	65.49703	2.521292

Source: Author's processed results

Multicollinearity test results using VIF (Variance Inflation Factors), can be seen in the Centered VIF column table. It can be seen that the VIF value in all variables does not exceed 10, this indicates that there is no multicollinearity problem for the variables in this study.

3.7 Heteroscedasticity Test Results

Heteroscedasticity occurs when residuals and predictive values have correlations or relationship patterns. This pattern of relationships is not only limited to linear relationships, but in different patterns it is also possible. The heteroscedasticities test in this study used the Glejser method.

Table 6 Heteroscedasticity Test Results

Heteroskedasticity Test: Glejser

F-statistic	1.514144	Prob. F(6,55)	0.1908
Obs*R-squared	8.789306	Prob. Chi-Square(6)	0.1858
Scaled explained SS	9.604000	Prob. Chi-Square(6)	0.1423

Source: Author's processed results

In the heteroscedasticity test results above shows the value of prob. F count of 0.1908 is greater than the alpha level of 5%, this proves that there is no heteroscedasticity problem in the research model.

3.8 Autocorrelation Test Results

The autocorrelation test aims to find out whether or not there is a correlation between members of a series of observational data that are broken down according to time (time series). Testing autocorrelation in this study uses the LM Test method. LM Method Test requires lag or institutional, in this study lag is determined by the trial error method of comparing the absolute value of the Akaike and Schwarz criteria with the smallest value.

Table 7 Autocorrelation Test Results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.210667	Prob. F(2,53)	0.8107
Obs*R-squared	0.488993	Prob. Chi-Square(2)	0.7831

Source: Author's processed results

From the autocorrelation test results above, it is known that the calculated F Probability value of 0.8107 is greater than the alpha level of 5% so that no autocorrelation occurs in the ECM model.

4. CONCLUSIONS

The existence of new innovations in the payment system is a very important issue to consider in the study of financial literature. The use of electronic money and payment instruments using cards is increasingly popular among the public, so this has changed the role of cash in the midst of society. The impact of payment instrument innovation certainly requires more attention to be studied again, given the certainty of the money supply is very important for institutions that have the authority such as a central bank to take monetary policy in order to maintain the stability of a country's financial system. How the impact arising from the use of electronic money (e-money) and card-based payment instruments (APMK) on the money supply in Indonesia has been discussed in this study.

The conclusions obtained from the results of this study are (1) In the long term the use of electronic money for transactions has a significant positive effect on the money supply, while in the short term the use of electronic money is not strong enough to be able to influence the money supply in Indonesia. (2) The use of a payment instrument using a debit card has a significant negative effect on the money supply in the long term, where if the use of credit cards increases, the money supply in the society will decrease, in contrast to what happens in the short term, the use of credit cards it doesn't have a low ability to influence the money supply, but the use of debit cards that have a higher ability to influence the money supply in Indonesia.

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