ANALYSIS OF NON-CASH TRANSACTIONS, DEBIT CARDS, CREDIT CARDS, AND ELECTRONIC MONEY, ON THE MONEY SUPPLY IN INDONESIA

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Abstract

This study was conducted to determine the effect between the independent variable, namely non-cash transactions (debit card transactions, credit card transactions, and electronic money transactions) on the dependent variable, namely the Money Supply (M1) in Indonesia. The research was conducted using a quantitative approach and the type of research used secondary data in the form of time series data from 2012-2021 obtained from Bank Indonesia and the Central Bureau of Statistics. The purpose of this study is to determine the effect of non-cash transactions on the money supply in Indonesia during 2012-2021. The analysis model used is multiple linear regression using SPSS. This study also uses the statistical t test, statistical F test, and the coefficient of determination R^2. Based on the results of the research that has been done, it shows that debit card transactions have a positive effect on the amount of money in circulation and credit card transactions have a negative effect on the money supply in 2012-2021. Meanwhile, electronic money transactions have no effect on the money supply in 2012-2021.

Keywords: *Cashless Transactions, Debit & Credit Cards, Electronic Money*

1. INTRODUCTION

The increasing use of non-cash payment systems such as debit cards, credit cards and electronic money has had an impact on the demand for money function where the demand for money is one of the important factors for the central bank in determining its monetary policy. The way people conduct economic transactions is gradually changing as a result of the implementation of non-cash payment methods. This is because the use of this type of payment card has become an alternative transaction tool for people other than money. From a macroeconomic point of view, the demand for money will decrease if the economy as a whole encourages the use of cashless payment cards (Yilmazkuday, 2006).

Advances in technology have led to changes in the payment system. Innovations related to non-cash transactions continue to grow due to changes in people's lifestyles and technological advances (Lintangsari et al, 2018). With this progress, it has changed the payment system, which was previously only known by using cash, whose role has begun to be replaced by non-cash payment instruments. Payment instrument itself is an instrument that can be used to transact. In principle, there are four policies where non-cash payment instruments represent one of them, namely efficiency. Bank Indonesia realizes the

inefficiency and inconvenience of cash transactions so that Bank Indonesia took the initiative to introduce and educate the general public to get used to making non-cash transactions by enforcing non-cash payment methods or Less Cash Society (Firmansyah & Dacholfany, 2018). Advances in payment technology have shifted the role of cash to more efficient and economical types of cashless payments. Banks continue to innovate by adding types of non-cash payments with Payment Using Cards (APMK) in the form of credit cards and debit cards, checks, bilyet giro, debit bills, and electronic payments (e-money).

**Figure 1. Volume of Non-Cash Transactions 2017-2021**
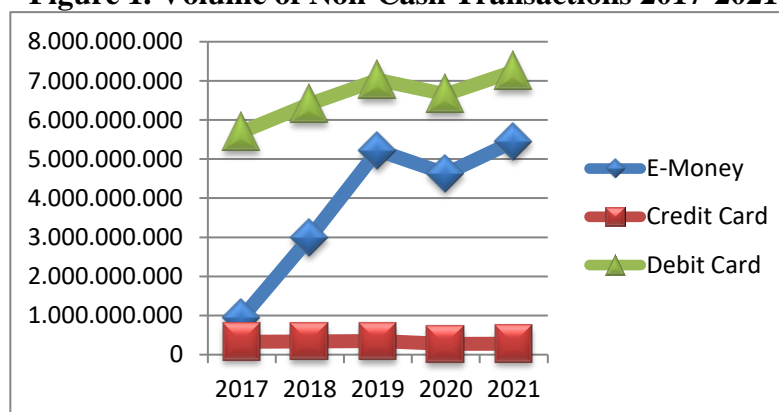
Source: Bank Indonesia (2017-2021)

Non-cash transactions continue to increase, as seen from the volume of non-cash transactions from 2017 to 2021, which has increased by 27%. This increase is also predicted by the increasing number of facilities/functions of ATM cards, which are not only used for cash withdrawals or checks but can also be used for other types of payments such as payment of electricity bills, telephone bills and others (Bambang et al, 2006). This is also driven by the advancement of technology and the increasing prevalence of e-commerce payments using cards (Lubis, 2019). In the volume of credit transactions, an increase occurred in 2018 and 2019, but in the following year it decreased by 21% and still tends to decline in 2021. The increase in the volume of e-money transactions is greater than debit cards, due to the rapid development of technology in Indonesia. In 2021, the increase in the volume of electronic money transactions reached 478%. This large percentage is driven by the ease with which electronic money can be used for micro and retail payments faster than cash payments (Hidayati et al, 2006). On the other hand, electronic money can be accessed through smartphones that can be accessed anytime and anywhere such as TCASH, Dompetku, XL Tunai, BBM Money, DoKu, OVO, Go- Pay, LinkAja, Dana and others as well as several electronic money activities using cards issued by Bank Indonesia including Flazz cards from BCA, e-money cards from Bank Mandiri, Bank Mega e-money cards, Brizzi cards from BRI (Abidin, 2015). In 2020, it can be seen that the development of the three non-cash transactions together has decreased in transaction volume. The decline is due to the emergence of the Covid-19 pandemic which has begun to penetrate Indonesia. As the

policy of restricting economic activities was put in place, people started to complain about the worsening economic situation so the regulations started to be loosened. Therefore, the volume of debit card and e-money transactions increased again in 2021. Meanwhile, credit card transactions have not seen a significant increase.

With the increasing use of digital payment instruments, the electronic money used will continue to grow. On the other hand, the money supply in society is determined by two economic aspects, namely demand and supply. In addition, the money supply is also controlled by the central bank and other economic factors that can include the banking/financial sector and the public. The actions and reactions of these factors determine the money supply in a certain period of time, although it is basically the authority of the monetary authorities (Manurung & Rahardja, 2004). The growth of the money supply can give an idea that an economy is doing well to grow and develop. The economy is said to be more advanced if the use of cash is getting smaller and the use of demand deposits and/or near money is increasing or getting bigger (Asfia, 2009). Referring to a recent study by Salima & Wahyuningsih (2020), it was found that the use of non-cash payment instruments tends to increase every year. The increase in the public in using non-cash transactions is spurred by the ease of transactions that can encourage a decrease in transaction costs and in time will stimulate economic growth. In addition to easier transactions, non-cash transactions are also expected to reduce the demand for money issued by the central bank and will affect the implementation of the central bank's duties in controlling monetary policy (Costa Storti & De Grauwe, 2001). Monetary authorities estimate that non-cash transactions will lead to transparency in money circulation and can slow down the money supply. That is, the greater the level of use of non-cash transactions will reduce the amount of money demand (Wijayanta & Widyaningsih, 2006; Azka, 2017). The following illustrates the circulation of money in Indonesia from 2017-2021.

Figure 2: Money supply (M1) 2017-2021
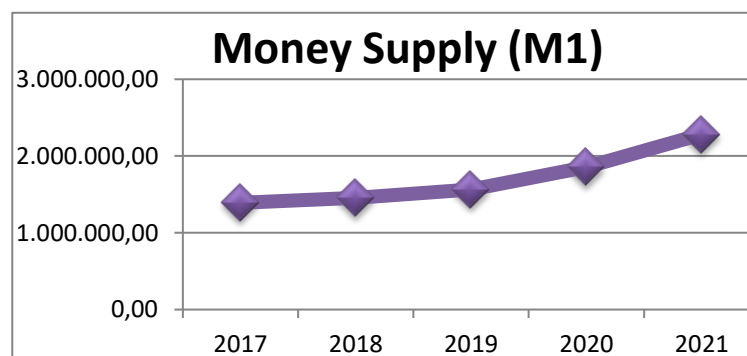
Source: Central Bureau of Statistics, Data Processed (2017-2021)

Based on the graph above, it can be seen that the picture of money circulation in the community has increased over the past 5 years. Bank Indonesia makes monetary targets in

order to maintain the stability of the financial system, one of which is through the money supply. With the increase in the amount of money circulating in the community which is also accompanied by an increase in the volume of non-cash payment transactions, there is a gap between the results of previous research and the data on the money supply (M1).

To maintain the stability of the financial system, Bank Indonesia as the monetary authority sets monetary targets so that the stability of the Indonesian economy is maintained, namely through the money supply. The money supply in society needs to be supported by the payment system. Thus, non-cash payments are currently something that needs to be monitored so as not to have a negative impact on monetary goals. Researchers are interested in examining non-cash transactions as an independent variable on the grounds that they see the efforts of Bank Indonesia and the government in controlling the money supply and the implementation of cashless which is expected to consider the money supply in society. In addition, the study of the impact of non-cash transactions on the money supply is still a current issue that needs to be reviewed along with the emergence of many financial technology (fintech) that can affect Indonesia's economic conditions.

In research conducted (Panjaitan, 2021) debit card variables and electronic money have a positive and significant effect on the money supply M1 in Indonesia. Meanwhile, the credit card variable has a negative and significant effect on the M1 money supply in Indonesia. This is also in accordance with research from Lintangsari et al (2018) which explains that e-money and Automatic Teller Machine (ATM) Debit transactions have a significant effect on money supply (M1) while ATM Credit has no significant effect on money supply (M1).

From the description above, the author tries to identify optimal decision making related to monetary policy, especially non-cash payments and money supply. The objectives in this study are as follows to determine the effect of debit card transactions, credit card transactions, and electronic money transactions on the money supply (M1) in Indonesia.

2. RESEARCH METHOD

This type of research is quantitative research. This research uses time series data from 2012-2021. The data in this study are secondary data obtained from Bank Indonesia publications, the Central Bureau of Statistics, as well as publications and previous research relevant to this research. The samples used in this study are non-cash transactions including debit card transactions, credit card transactions, and electronic money transactions as well as data on the money supply in Indonesia. Data processing in this study uses multiple linear regression. The data used in this study will be processed with the help of the SPSS program.

The regression equation in this study can be formulated as follows:

$$Y1 = \beta1\ X1 + \beta2\ X2 + \beta3\ X3 + e2$$

Description:
Y1 = Money Supply

$\beta 1 \ldots \beta n$ = regression coefficient
X1 = Debit Card Transaction
X2 = Credit Card Transactions
X3 = Electronic Money Transactions
e = Error Term

3. RESULTS AND DISCUSSION

The rapid development of technology has an impact on economic activities, as a result the means of payment used in transactions continues to change. The development of the payment system replaces the role of paper money or cash into non-cash payment instruments, with the benefits provided from non-cash making it easier for people to make transactions because it is more practical, safe and efficient (Ismanda, 2019). This can be seen from the growth in the transaction value of debit/ATM cards, credit cards, and e-money which tend to increase from year to year in Figure 4.

Figure 4. Graph of Non-Cash Transaction Volume for the Period 2012-2021
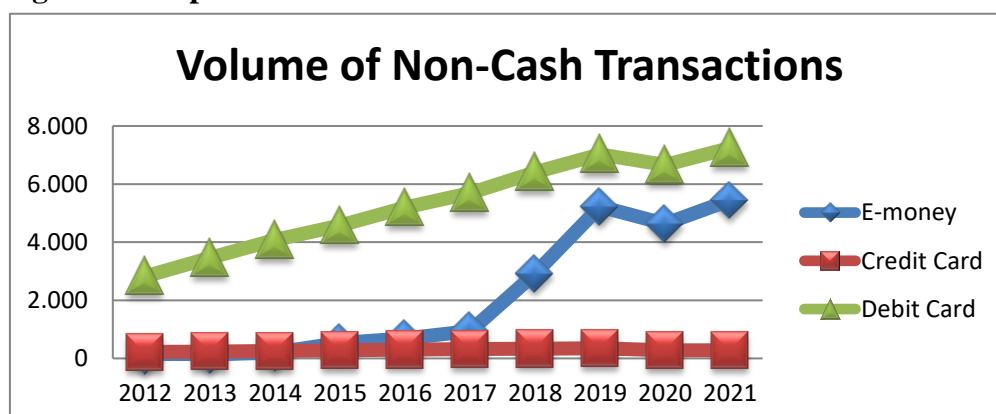
Source: Bank Indonesia (2012-2021)

Based on the statistics of transaction development and also the level of volume transacted, both from Payment Instruments Using Cards (APMK) and from e-money, there has been a significant development or increase in the last 10 years. The use of ATM/Debit cards from 2012 amounting to 2.824 million transactions has increased from year to year until 2021 the transaction volume reached 7.241 million transactions. This increase is predicted by the increasing number of facilities/functions of ATM cards, which are not only used for cash withdrawals or checks but can also be used for other types of payments such as payment of electricity bills, telephone bills and others (Bambang et al, 2006).

The same thing happened with credit cards, where in 2012 the number of credit cards circulating in Indonesia was recorded at 222 million cards and by 2021 the volume of credit card usage has reached 282 million transactions. Bank Indonesia noted that the most significant increase each year occurred in the volume of electronic money (e-money) usage,

which in 2012 amounted to 101 million transactions and became 5,450 million transactions in 2021. However, in 2020 the three non-cash transactions simultaneously experienced a decrease in transaction volume due to the COVID-19 pandemic.

Development of Money Supply

The money supply in this study is the dependent variable, where the money supply uses secondary data taken through the BI website and processed in graphical form. The graph below shows that the money supply in Indonesia from 2012-2021 has always increased, and has not even decreased at all. Changes in the money supply are determined by the results of interactions between people.

Figure 5 Growth Chart of JUB (M1) for the Period 2012-2021
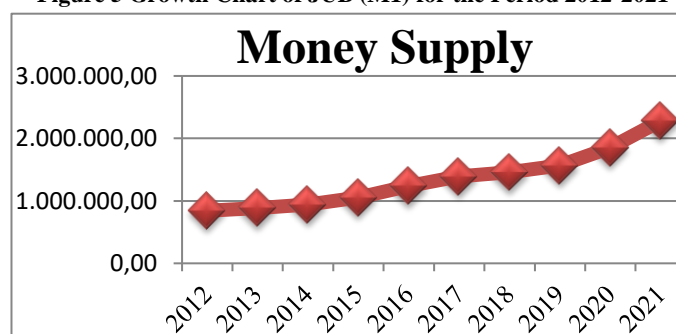
Source: Central Bureau of Statistics, data processed (2012-2021)

Based on Figure 5, it can be seen that the money supply in Indonesia from 2012 to 2021 continues to experience a significant increase. This indicates that the need for money each year is increasing along with the human needs themselves. The amount of money in circulation (M) in 2012 amounted to 841,721.50 billion rupiah and continued to increase until 2021 amounting to 2,282,157.25 billion rupiah. Symptoms of increasing money supply (M1) are also related to money that is increasingly needed as a medium of exchange and requires money to facilitate the transaction process.

Multiple Linear Regression Results

Table 1. Regression Analysis Results of the Effect of Non-Cash Transactions on the Money Supply (M1) in Indonesia

Y1 = Money Supply			
Description	**B**	**t count**	**Sig.**
Constant	963776.385	3.572	0.012
Debit Card Transactions	0.000	4.762	0.003
Credit Card Transactions	-0.007	-3.882	0.008
Electronic Money Transactions	-3.220E-5	-0.652	0.538

Fcount	50.170		0,000
Ftable	4.757063		
Ttable	2.446912		
R²	0.962		
Adjusted **R²**	0.942		

Source: Secondary Data processed, 2023

Based on the estimation results above, it can produce the following equation values:

$$JUB = 963776.385 + 0.000X1 - 0.007X2 - 3.220E\text{-}5X3 + e$$

Hypothesis Testing

Based on the results in table 1. Above with the dependent variable is the money supply, it is obtained that the variable debit card transactions significant value of 0.003 which means a significant effect on the money supply, this is indicated by the significant value of the variable is smaller than the significant level (0.003 <0.05). The credit card transaction variable has a significant value of 0.008, which means that the credit card transaction variable has a significant effect on the money supply (0.008 <0.05). Electronic money transaction variable has a significant value of 0.538 or greater than the significant level (>0.05) so it does not have a significant effect on the money supply.

F Statistical Test

Based on table 1. above with the dependent variable, namely the amount of money in circulation, shows that the calculated F value of 50,170> F table of 4.757063 and a significance value of 0.000 <0.05. This shows that simultaneous testing of Debit Card Transactions, Credit Card Transactions, and Electronic Money Transactions variables has an influence on the Money Supply.

Coefficient of Determination

Based on table 1. above with the dependent variable, namely the money supply, it is found that the results of measuring the accuracy of the model by referring to the Adjusted R Square value of 0.942 which shows that the effect of debit card transactions, credit card transactions and electronic money transactions is 94.2% while the remaining 5.8% is influenced by other variables not used in this study.

4. DISCUSSION

Effect of Debit Card Transactions on the Money Supply

The results of hypothesis testing that have been carried out show that the debit card transaction variable has a positive effect on the money supply with a significant value of 0.003 less than the significant level of 0.05. The regression coefficient value is 0.000, which means that every additional debit card transaction of 1 million transactions, the money supply will remain and the variable debit card transactions have a significant effect on the money supply with the assumption that the variable credit card transactions and electronic money transactions are considered constant. This is in line with the results of research by Panjaitan (2021) which shows that the volume of debit cards has a positive and significant effect on the money supply (M1) in Indonesia.

These results show that the greater the transactions using debit cards, the more the money supply will increase. This is because debit card transactions are increasing every year. People are increasingly demanding that transactions are easier and more efficient. This is in accordance with research (Lintangsari in Aminy, 2022) that the development of card-based payments has led to the erosion of the function of savings into savings that can be withdrawn at any time. Savings using debit cards are classified as part of current accounts in the narrow money supply (M1). So, if the value of transactions using debit cards is growing, it will increase the amount of money in circulation. However, research conducted by (Wicaksono & Huda, 2023; Sari, 2020) explains that credit card transactions have no significant effect on the M1 money supply.

Effect of Credit Card Transactions on Money Supply

The results of hypothesis testing that have been carried out show that the variable credit card transactions have a negative effect on the money supply with a significant value of 0.008 smaller than the significant level of 0.05. With a regression coefficient of -0.007, which means that every additional credit card transaction of 1 million will reduce the level of money supply by Rp 0.007 billion, assuming that the variable debit card transactions and electronic money transactions are considered constant. The results of this study are in line with research (Novitasari, 2019; Panjaitan, 2021) that credit card transactions have a negative and significant effect on the money supply.

The increasing number of credit card transactions will have an impact on the decreasing money supply. The results are in line with the theory put forward by Asfia (2009) that if the value of M2 is considered constant and the value of credit cards included in the near money classification increases, it will reduce the value of the money supply M1. This result is in accordance with research conducted by (Puspitasari et al, 2021; Wicaksono &

Huda, 2023; Sari, 2020) which obtained research results that credit cards have no statistically significant effect on the money supply in the narrow sense of M1 in Indonesia.

Effect of Electronic Money Transactions on Money Supply

The results of hypothesis testing that have been carried out show that the electronic money transaction variable has no effect on the money supply with a significant value of 0.538 greater than the significant level of 0.05. The results of this study differ from research conducted by Wijaya et. al. (2021), which states that the e-money variable and the volume of electronic transactions have a positive and significant effect on the money supply (M1) in Indonesia, and also research from Azhar et. al. (2020) which explains that e-money can act as a factor that changes the money demand function and increases money turnover 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.

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