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herewith it is certified that the paper titled *"Digital and electronic transactions against VOM"* co-authored by Juliansyah Roy, Eny Rochaida, Rachmad Budi Suharto, and Rizkiawan Rizkiawan has been blind reviewed and accepted for publishing in the issue of the journal *Corporate Governance and Organizational Behavior Review* (ISSN – 2521-1870 (printed version), ISSN – 2521-1889 (online version)) in 2021 (under the condition of English language proofreading).

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DIGITAL AND ELECTRONIC TRANSACTIONS AGAINST VELOCITY OF MONEY

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Abstract

The payment system accumulates through an interbank fund transfer system, banking procedures, and a set of instruments that guarantee the circulation of money (Hancock & Humphrey, 1997). The theory of money expressed by Fisher is very striking and different from Marx's. Marx only emphasizes monetary developments as contemporary capitalism. However, Fisher on the form of money and the function of money in a certain amount (as cited in Ivanova, 2020). The flow of electronic and digital transactions has continued to innovate over the past decade. An important point of this research is to identify electronic transactions and digital transactions against the velocity of money (VoM) in Indonesia. Fisher's theory of money is applied to this study. Through a quantitative approach, time-series data for 2009–2019 was collected from the Bank of Indonesia and BPS-Indonesia. Multiple linear regression analysis is useful in interpreting the data. As a result, we find electronic transactions measured by credit cards appear to have a negative effect on VoM, but the impact is significant. Meanwhile, debit cards actually have a positive and significant effect on the value of VoM. Interestingly, other empirical results explore the relationship of digital transactions represented by e-money with VoM, where the effect is negative and insignificant. This finding is also very relevant to banking efforts to harmonize and adopt advanced technology in the financial system.

Keywords: Credit Card, Debit Card, E-Money, VoM, Time-Series, Indonesia

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DIGITAL AND ELECTRONIC TRANSACTIONS AGAINST VELOCITY OF MONEY

**Juliansyah Roy *, Eny Rochaida **, Rachmad Budi Suharto **,
Rizkiawan ~~Rizkiawan~~ Rizkiawan ****

* *Corresponding authors*: juliansyah.roy@feb.unmul.ac.id
Contact detail: Department of Economics, Faculty of Economics and Business, Mulawarman University, Jl. Tanah Grogot, Gn. Kelua, No. 1, Samarinda City, Province of East Kalimantan, 75117, Indonesia.
** Department of Economics, Faculty of Economics and Business, Mulawarman University.

ABSTRACT

The payment system accumulates through an interbank fund transfer system, banking procedures, and a set of instruments that guarantee the circulation of money (Hancock & Humphrey, 1997). The theory of money expressed by Fisher is very striking and different from Marx. Marx only emphasizes monetary developments as contemporary capitalism. However, Fisher on the form of money and the function of money in a certain amount (Ivanova, 2020). The flow of electronic and digital transactions has continued to innovate over the past decade. An important point of this research is to identify electronic transactions and digital transactions against velocity of money (VoM) in Indonesia. The 'Fisher' theory of money applied to this study. Through a quantitative approach, time-series data for 2009-2019 collected from the Bank of Indonesia and BPS-Indonesia. Multiple linear regression analysis is useful in interpreting the data. As a result, we find electronic transactions measured by credit cards appear to have a negative effect on VoM, but the impact is significant. Meanwhile, debit cards actually have a positive and significant effect on the value of VoM. Interestingly, other empirical results explore the relationship of digital transactions represented by e-money with VoM, where the effect is negative and insignificant. This finding is also very relevant to banking efforts to harmonize and adopt advanced technology in the financial system.

Keywords: Credit card, Debit card, E-money, VoM, time-series, Indonesia.
JEL Classification: D23, F38, E5, C22.

Authors' individual contribution: Conceptualization, Writing, Review, and Editing — J.R; Software, Formal Analysis, Investigation, Data Curation, and Methodology — E.R; Visualization — R.R; Resources and Supervision — R.B.S; Writing —Project Administration — J.R, E.R, R.B.S, and R.R.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

The role of the movement of money because of transactions from economic activities requires monetary policy and guaranteed smooth financial system stability. Prasetyo (2018) evaluates the need for money for transactions to increase in line with the demand for money in society and the intensity of trading volume (Farajnejad & Lau, 2017). As a result, the smooth running of the payment system in economic sectors also influences VoM in Indonesia.

If the economic activity in a country is healthy, the velocity of money will be faster. The flow of the number of transactions that continue to increase will encourage the acceleration of the velocity of money. However, in certain conditions, it gives different results, for example conflict, war, disaster, and other inhibiting variables (Yuliadi, 2020; Sasono et al., 2021). In the theory of money demand, Berlian et al. (2017) linking transaction patterns and money circulation. The smoothness of the transaction process will be in line with the flow of money significantly.

Advances in technology and the current economy allow the use of cash only to target small-scale types of payments. When compared in terms of convenience and security for relatively large transactions, it is certainly necessary to consider using cash (Ahmad et al., 2021). This encourages the creation of various innovations and creativity in the payment system, resulting in non-cash payments. Recently, there are several non-cash payment instruments such as card-based (debit cards and credit cards), paper-based (transfer form/cheques), and the most popular now are electronic-based. In its journey, now Bank Indonesia, as the monetary policy authority, has disseminated information related to payment technology for public services (Suprapto, 2020; Pusriadi & Darma, 20182017). Rahadi et al. (2020) highlight the behavior of people who are enthusiastic as users of modern technology to take part in the smooth and efficient payment system.

The fantastic figures on the progress of non-cash payments represent it has educated the public on these instruments. This is also a fairly serious phenomenon and certainly describes the economic conditions in many countries, such as Indonesia, from a financial perspective (Wasiaturrahma et al., 2019; Harasim, 2016).

What is interesting to highlight in this study is the gap in the literature on VoM, where the theory of money expressed by 'Irving Fisher' is very striking and different from 'Karl Marx', where Marx only emphasizes monetary developments as contemporary capitalism (e.g. Sotiropoulos et al., 2013; Grossmann, 2007). On the one hand, it based Fisher on the form of money and the function of money in a certain amount. Although the concept of money is more comprehensively focused based on its existence and socio-economics, the concrete form of money can affect the ability of monetary policy to be controlled by a country (Ivanova, 2020). As a result, phenomena arise about conventional and unconventional insights in responding to them. From another perspective, Moreira et al. (2016) have evaluated changes in the amount of money on reflective prices in the USA during the period 1959–2013. The result, in a non-traditional sense, is that money is not neutral based on changes that increase dramatically and have the potential to disrupt economic stability. Mechanisms in the transmission of monetary policy need to seriously considered as part of the implications for dealing with larger economic shocks.

The contribution of this study rests on the relevance and significance of studies that have highlighted by previous findings, so that there is a novelty that has not been reviewed previously which is our focus on the effects of credit cards, debit cards, and e-money on VoM. As an illustration, Ulina & Maryatmo (2021) and Mashabi & Wasiaturrahma (2021) only evaluate non-cash transactions for VoM from the money supply side in Indonesia. Further exploration investigated about VoM being influenced by credit cards, electronic money, and ATMs. In the end, the volume of e-money and credit card transactions had a positive impact on VoM. However, the circulation of money in response to changes in VoM is more elastic than in credit card transactions. From Ulina & Maryatmo (2021) and Mashabi & Wasiaturrahma (2021) his findings, it did not take the debit card element into consideration. In fact, debt transactions still

controlled the monetary cycle in Indonesia. In the long term, electronic money and debt cards still have a significant impact on Indonesia's GDP.

The escalation of the quantity of non-cash transactions is good, so it has implications for the money supply in Indonesia. The payment system accumulates through an interbank fund transfer system, banking procedures, and a set of instruments that guarantee the circulation of money (Hancock & Humphrey, 1997). Through these considerations, it draws attention to explicitly investigate the effects of electronic transactions (credit cards, debit cards, and e-money) on VoM in Indonesia. There are five important sections in research. The introduction outlines the literature gap, study objectives, study significance, and contributions. Then, the theoretical framework contains the relevant literature and the methodology section identifies the techniques applied to review the empirical results. Findings and discussions explain important findings based on research questions, phenomena, and the alignment or differences from previous studies. Lastly is the conclusion, which outlines the vital points, limitations of the study, and future implications.

2. THEORETICAL FRAMEWORK

2.1. Payment system

The payment system is an urgent need and has a close correlation with economic activity. The sustainability of the real sector there are always transactions involving economic actors (Tella, 2012). This transaction is a component of the payment system (Yucha et al., 2020).

In the digital eraDigital Era 4.0 which puts forward the technological model revolution (including the payment system), of course, several products such as electronic funds transfer, e-money, transfer form, checks, money orders, credit cards, and debit cards illustrated as dimensions that give birth to updates in the system of payment (Tella & Abdulmumin, 2015).

Figure 1 classifies the forms and categories of payment instruments in Indonesia. There are four parts that have the connotation of each function. It implied the ease of the payment system in achieving certain goals in the fourth section, which functions as a tool in accessing the payment system (Treiblmaier et al., 2008). Examples in payment channels include teller input, internet, phone, and mobile banking, automated teller machines (ATM), and electronic data capturing (EDC).
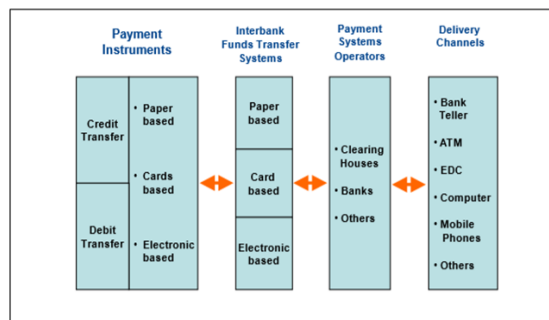
Fig. 1. Structure in payment system
(*Source:* Ali et al., 2019)

Humphrey et al. (2006) popularized in research into the integration between the law, contracts, and economics that facilitate payments (anywhere and anytime). Peaceful settlement also enables all systems, including internet banking, checks, debit cards, credit cards and currency transfer. The economy is growing rapidly, referring to its effective function. On other occasions, comprehensive offers to debtors have become more reliable and easier (Boel, 2019). The payment system has stimulated economic activity, especially for creditors.

The role of the payment system in the progress of a country is undeniable. The urgency, refers to the economy that must continue to run, so that ideally the payment system is a signal of economic progress or decline (Briggs & Brooks, 2011). Mechanisms that support the payment system through the effectiveness of financial flows will have a positive effect on the economy (Motaowa & Kaka, 2008). Transformation in transaction activities, such as non-cash payments, provides a special alternative which is now a priority in efficiently transferring funds from one party to another (Welly et al., 202016).

2.2. The VoM

VoM describes the velocity of money, because there is a movement of a currency in a transaction in a certain period (Qin, 2017). Pambudi & Mubin (2020) and Padhi (2018) emphasize that velocity fixed, but in various cases the value is different and when there is a decrease or increase in payment activity, it will immediately change drastically. This will continue to fluctuate depending on the monetary policy implemented by the government and economic conditions.

VoM is a part of monetary theory, where the perspective of money and non-money has followed the market strategy and the times. The basic philosophy regarding the characteristics of VoM is clearly different from traditional transactions. Frasser & Guzmán (2020) view that the level of liquidity based on the circulation of money, which so far has only concentrated as a means of payment, is now clearly different. From the level of acceptance, the liquidity standard against it explains that the nature of money should refer to the separate essence of natural benefits. Meanwhile, the economic paradigm thinks hard about the function and purpose of the system in a more macro understanding (Pirgmaier, 2021). Market capitalism practices realistic things in response to the monetary market.

2.3. Credit card

The method of payment via credit card offers all the conveniences in every financial transaction payment. However, what customers need to pay attention to are the risks and costs involved in using it (for example Świecka et al., 2021; Oyalami et al., 2020). In its presence, the circulation of credit cards issued by various financial service providers aims to assist them in the consumption process. An important note is that credit cards have the highest risk compared to other types of payment transactions for wasteful users. Two functions are the principal attraction of credit cards, which are useful sources of credit and means of payment.

Crack & Roberts (2015) highlights the analogy that discusses spending from credit cards who predict that this type of payment will become a habit in the future and have implications for VoM.

Every economic transaction, of course, has a positive effect in accelerating the velocity of money (Lauer, 2020). The emergence of credit cards in the payment system implemented by

customers directly provides special convenience in every payment transaction (Vasić et al., 2019). Sometimes, there are special promotions, such as discounts and other forms. Referring to previous concepts and studies, we design the following first hypothesis:

H1: Credit cards have a significant impact on VoM.

2.4. Debit card

Payments via debit cards apply to make payments for obligations arising from a transaction, including purchases, where the customer's obligations fulfilled instantly by reducing the cardholder's savings at certain banks that may raise funds directly under legal regulations (Kombe et al., 2020).

Equally important, Reddy & Raj (2017) investigates the effect of debit and credit cards on VoM in India. As a result, the use of debit cards triggers a positive increase in VoM. However, credit card accessibility accentuates long-term change as it reduces the value of VoM. According to Bade & Parkin (2011), the massive promotion of debit cards has long increased the demand for currency and marginal utility in VoM. The inclusive measures imposed by the central bank's autonomy on bank channels will lead to a more significant direction for expanding electronic cards in the future.

Yilmazkuday & Yazgan (2011) analyzed the relationship of debit cards and credit cards to VoM in Turkey. With the support of GMM estimates, public enthusiasm for debit cards is higher than for credit cards. Using debit cards has resulted in an increase in the demand for money and vice versa, the use of credit cards has brought a decline for VoM. The greater the enthusiasm for transactions via debit cards, the greater the number of withdrawals in Turkey during the 2002-2006 period. In the USA, the practice of debit cards at various points of sale has grown inclusively and outpaced the intensity of credit cards. Most consumers think that using a credit card has risks compared to a debit card (such as prime interest, transaction fees, and a lifestyle that is extravagant). Microeconomic evidence identified by Borzekowski et al. (2006) shows that the use of debit cards in the USA in recent periods is more consistent and in a stable trend than credit cards. The convenience of consumers in payment choices and household finances is more conditioned as a consumer reaction to carry out all transaction activities.

Changes in technological innovation, of course, make it easier for economic actors in every activity (Gault, 2018). With the existence of ATMs in various locations, it certainly has a positive impact on those who want to withdraw their cash for transactions. The availability of debit cards has a close relationship with payment transactions (Carbó-Valverde & Rodríguez-Fernández, 2014). We propose the second hypothesis:

H2: Debit cards have a significant impact on VoM.

2.5. E-money

The consequences of the value of money in e-money will reduce when consumers carry out payment activities (Widiyati & Hasanah, 2020). The e-money referred to in this study differs from 'single-purpose prepaid cards' such as telephone cards or electronic payments (debit cards and credit cards), because both types are 'prepaid products', but operationally, e-money money intended for various types of payments (multipurpose) based on 'access products'.

The special advantages of e-money compared to cash and other non-cash payment instruments are that it is more convenient and faster than cash (Rizqi & Ady, 2019), for example,

in transactions of small value. This allows customers not to need to provide a certain amount of money in a transaction or have to deviate from change (Wulandari et al., 2016). Then, there will be no systematic error in calculating the change if e-money applied and the transaction settlement process takes a shorter time when compared to debit and credit cards. E-money has offered other advantages, including no owner's signature, PIN code, and online authorization process (Vlasov, 2017). With offline-based transactions, communication costs are minimal. For additional information, e-money cards can refill with electronic value through the facilities provided by the issuer.

The comparison of e-money applications with VoM has been explored in both developed and developing countries. For example, in China, there is an interactive relationship between the circulation of e-money on household consumption, where there is a positive stimulus that brings about behavior change. As a result, through the DSGE model, the impact of e-money can increase VoM, which is characterized by consumer enthusiasm for loans, interest rates, and savings. They have shown the monetary effect accommodated by central bank regulations in China to affect the effectiveness of e-money (Luo et al., 2021).

The case studies in Indonesia and Thailand in 2011-2019 are actually different, where the presence of this type of electronic payment (e-money) has reduced the use of cash. The impact of the increase is that it adds to securities and shares. However, this event caught the attention of Aimon et al. (2021) because in Thailand and Indonesia, there is no significant relationship between e-money and VoM. Using e-money also brought fatal losses to customers in both countries, where the value of VoM actually dropped.

Nowadays, the transition through card based continues to be grown by the customers. Similar to e-money, it simplified the payment system (Lukina & Dolgachev, 2018). Such non-cash payments have an influence on each individual to transact safely and easily. Of course, if the payment made more smoothly, then the change of money will be faster. Consideration of the third hypothesis, proposed:

H3: E-money has a significant impact on VoM.

2.6. Conceptual construction

We formed the research model framework based on two components in the payment's modernization system, including electronic transactions and digital transactions, to advance VoM (see Figure 2). Here, operationally, electronic transactions limited to two forms (credit cards and debit cards), while the digital transactions referred to are e-money. Thus, the influence of the three on VoM will see. Electronic transactions and digital transactions as independent variables, while the dependent variable is VoM. Please note, these two variables have different roles. The independent variable as a factor reviews its effect on the dependent variable (for example, Lestari et al., 2021; Ulfah et al., 2021). It will only influence directly the dependent variable from the two independent variables, whether the relationship is significant or otherwise.
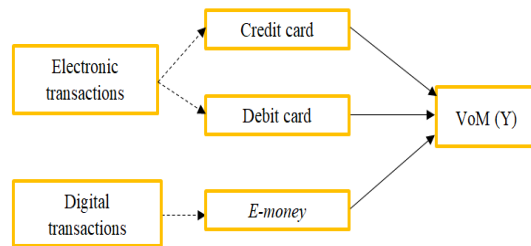
Fig. 2. Model framework
(*Source:* own elaboration)

Money velocity is the average annual velocity of money from one unit of currency used to exchange services and goods produced (Miskhin, 2009). Financial stability predicts the extent to which it based the condition of the velocity of money on economic activity. The debate from relevant studies that discusses the authorization of central banks in the world, describes that with an orderly economic enthusiasm, it will be in line with economic conditions such as political, social and cultural stability that support inclusive economic growth (Fernández et al., 2021; Adrian & Liang, 2018; Ahmed et al., 2020; Frenkel & Rapetti, 2009).

3. METHODOLOGY

3.1. Measurements and design

This study only concentrates on four variables, namely VoM, credit cards, debit cards, and digital transactions. In order to avoid double interpretation, each of these components has an original design. Here, there is an operational definition related to the size of the variable.

First, VoM is the acceleration of money circulation in a certain period, for example month to month, quarterly, and year to year (Sharma & Syarifuddin, 2019; Padhi, 2018). For the case study in this study, we apply the unit of account year to year. Second, credit cards as non-cash payment instruments applied by customers or cardholders who have met the criteria include acquirers in transactions for certain services and goods (e.g. Trinh et al., 2020; Al-Nuemat; 2017; Banker et al., 2021). Third, debit cards are instruments for non-cash-based payments, many of which are intended with an obligation for the cardholder to immediately reduce savings in direct transactions of goods or services (Mynuddin, 2017; Qureshi et al., 2018). Fourth, digital transactions which are commonly interpreted as 'e-money' are non-cash payment devices that make it easy for customers through reloading cards for every transaction of goods or services (e.g. Vozniuk et al., 2021). Technically, the instruments for credit cards, debit cards, and digital transactions use the Rupiah (IDR) size.

3.2. Data collection

This research is quantitative based to investigate the role of non-cash payment instruments on VoM in Indonesia. We compiled data based on the duration per quarter of 2010 to 2019. We focused secondary data on time-series data through information got through two government institutions (BPS-Indonesia and Bank of Indonesia). Regarding other needs, we also collect data from the literature reporting issues relevant to the current situation (for example, Wasiaturrahma

et al., 2019; Titalessy, 2020).

3.3. Data processing

The data that has collected then processed and tabulated using multiple linear regression. The technique aims to project the magnitude of the influence in a relationship, where there are several independent variables on the dependent variable (Herawati et al., 2020). Therefore, it is necessary to empirically prove whether there is a relationship between a causal function involving several variables. The function of the regression equation in this study planned:

$$Y = \alpha + \beta 1 X 1 + \beta 2 X 2 + \beta 3 X 3 + e \quad (1)$$

Where Y = VoM, = constant, = regression coefficient, X1 = credit card, X2 = debit card, X3 = e-money, and e = residual factor. IBM SPSS software supports statistics and makes data entry easier.

We selected the criteria for the feasibility of the model in two sessions. In the first stage is the classical assumption (normality, multicollinearity, heteroscedasticity, and autocorrelation). The second plan includes correlation, coefficient of determination, simultaneous test, and partial test (Zainurossalamia et al., 2021).

The regression method is a suitable alternative technique for discussing the application of electronic transactions and digital transactions to support the progress of VoM in Indonesia. Multiple linear regression analysis has a prominent advantage over the others. Its relevance to the variable component is the accuracy of extracting and generalize and the extraction of data patterns is time-series. In addition, multiple regression can accommodate the level of knowledge even though it is uncertain or prediction-based, parallel calculations are shorter (Uyanık & Güler, 2013).

4. FINDING AND DISCUSSIONS

Money circulation is an important dimension that can be estimated to determine financial stability. From period to period, the value of financial turnover certainly has a different picture. We certainly considered internal factors and external factors as an absolute requirement in the circulation of money in Indonesia.

Table 1 presents the flow of money in Indonesia in five periods. We can interpret this that the velocity of money is still in a stable stage even though it has fluctuated, especially in 2012. The development of the velocity of money is also a reference for policy decisions related to economic stability, which has a dominant influence on the economic system. Many aspects become the parameters of the calculation, one of which is the smoothness of the payment system in Indonesia.

Table 1. VoM value in Indonesia, 2009–2013

Year	VoM
2009	10
2010	10
2011	10
2012	9

Year	
2013	10
Average	9.8

It noted that the dynamics of the value of financial transactions for a decade occurred. Table 2 displays transactions based on non-cash payment instruments, including debit cards, e-money, and credit cards. Credit card activities in 2009 amounted to Rp. 166,736,635, which experienced a significant increase until 2019, reaching Rp. 338,347,867. The trend of increasing transactions from year to year continues to increase. Non-cash payment instruments via debit cards also experienced a positive appreciation. In their daily life, debit cards are easier for the public to use than other types, where in 2019 it skyrocketed to Rp 6,408,118,393. Debit cards are also a tool for fellow banks or intra-banks. Especially for e-money as a new product that is being campaigned and launched by the central bank in the design of the non-cash payment movement, at the beginning of its appearance it did not get more enthusiasm than the other two products. At least, in 2009, the transaction had touched IDR 2,560,591 to reach IDR 2,922,698,905 in 2018.

Table 2. Credit card, debit card, and e-money transactions in Indonesia, 2008–2018 (Rp)

Year	Credit Card	Debt Card	E-money
2009	166,736,635	1,353,809,463	2,560,591
2010	182,624,722	1,561,161,673	17,436,631
2011	199,036,427	1,812,075,881	26,541,982
2012	209,352,197	2,262,299,433	41,060,149
2013	221,579,851	2,824,108,310	100,623,916
2014	239,098,519	3,461,149,865	137,900,779
2015	254,320,061	4,077,696,164	203,369,990
2016	281,325,840	4,574,387,633	535,579,528
2017	305,052,297	5,196,512,452	683,133,352
2018	327,377,665	5,196,512,452	943,319,933
2019	338,347,867	6,408,118,393	2,922,698,905

An accurate regression model has a normally distributed residual achievement. We applied checks in normality through the Kolmogorov-Smirnov test. The normality criterion is symbolized by Asymp. Sig. (2-tailed) must be greater than 5%, so that the data and residuals normally distributed. Table 3 concludes that the sample data is free from interference with normality because $p > 0.05$.

Table 3. One-sample Kolmogorov-Smirnov test

Measurement		Unstandardized Residual
N		40
Normal Parameters[a,b]	Mean	0.000
	Std. Deviation	0.273
Most Extreme Differences	Absolute	0.119
	Positive	0.119
	Negative	-0.115
Test Statistic		0.119

Asymp. Sig. (2-tailed)	0.160

Table 4. Collinearity statistics and DW-test

Measurement	Tolerance	VIF	D-W
Credit Card	0.886	1.129	
Debit Card	0.890	1.123	1.509
E-money	0.994	1.006	

The assumption of correlation is a sign of whether the regression model correlated and ideally not orthogonal. The orthogonal variable is the correlation between the independent variables equal to zero. Specifically, the data must be free from multicollinearity interference. With specifications through the variance inflation factor (VIF), the conditions must be less than 10 (Gujarati, 2012). The criteria based on the SPSS output concluded that the regression model did not contain multicollinearity, where CC, DC, and e-money got VIF <10.

The next criterion is autocorrelation. This aims to test whether the multiple linear regression method has a correlation between the confounding error in the observation with the previous period (Casson & Farmer, 2014). Table 4 also summarizes the achievements of Durbin Watson (D-W) of 1,509. Therefore, this value included in the D-W value criteria (-2 to 2) or the research model does not occur autocorrelation.
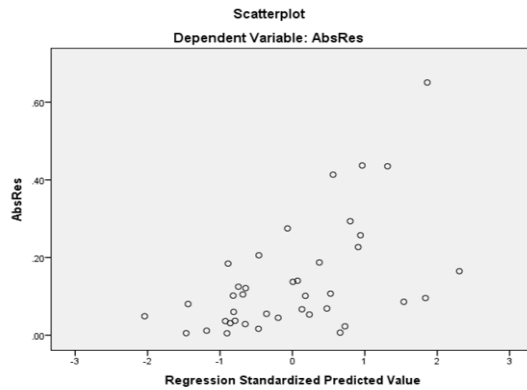
Fig. 3. Patterns in heteroscedasticity
(*Source:* result from SPSS)

We applied heteroscedasticity testing using the Glejser test method (Glejser, 1969; Machado & Silva, 2000). You will see the absolute residual value of the CC, DC, and e-money probabilities on VoM. In this study, scatterplot images are used to detect heteroscedasticity problems. Figure 3 defines the distribution pattern as points on the scatterplot that spreads below and above. Because the distribution of the data distribution does not form a certain pattern, the conclusion is that it is free from heteroscedasticity.

Table 5. Correlation and determination of CC, DC, and e-money on VoM

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.801	0.641	0.611	0.208

(*Source:* result from SPSS)

Table 5 validates the coefficients and coefficients of determination. These two modeling requirements have different specifications. For correlation (R), it aims to understand the closeness of a relationship, where the greater the acquisition of R, the closer the relationship in the variable. Then, the coefficient of determination (R2) will interpret the magnitude of the residual factors outside the model (Nakagawa et al., 2017). The achievement of the R value of 80.1% which gives a signal if the three variables that affect VoM classified closely because of the range 0.75–1. For R2, 64.1% of exogenous factors (CC, DC, and e-money) form VoM, while there were 35.9% of factors not reviewed in this study.

Table 6. Simultaneous effects of CC, DC, and e-money on VoM

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.780	3	0.927	21.438	0.000
	Residual	1.556	36	0.043		
	Total	4.336	39			

(*Source:* result from SPSS)

In the simultaneous relationship, Table 6 interprets the F-test, where the F-count is 21.438 or above the F-table of 2.86 (21.438> 2.86). With p <0.05, CC, DC, and e-money simultaneously affect VoM with significant results.

Table 7. Partial effect of CC, DC, and e-money on VoM

Hypothesis	Coefficient	Sig.	Prediction
H1: CC – VoM	-0.571	0.000	Significant
H2: DC – Vom	0.164	0.000	Significant
H3: E-money - VoM	-0.041	0.113	Not Significant

(*Source:* result from SPSS)

Through Table 7, we found that the first and second hypotheses have accepted, because CC and DC have a significant effect on VoM (p <0.05). On the one hand, the third hypothesis rejected, where the proportion of e-money on VoM actually had an insignificant effect (p> 0.05). That way, from the three hypotheses proposed, only two proposals meet the categories. The functional relationship of the factors that affect VoM over ten periods predicted and predicted:

$$Y = 8.929 – 0.571\ X1 + 0.\ 164\ X2 – 0.041\ X3 + 0.359\ e \qquad (2)$$

Referring to the regression equation, representing the constant value in VoM reaching 8.929, which gives a signal that if the independent variables (CC, DC, and e-money) are zero, then VoM will increase by 892.9% during 2009-2019. Of the three, only one will increase VoM

growth, namely DC by 16.4% and with the presence of CC and e-money, on the contrary, it will reduce VoM in Indonesia by 57.1% and 4.1%, respectively.

Ideally, credit cards are a popular means of payment favored by the upper middle class, especially those who are rich. This type of course has an impulsive impact on people's purchasing power if they do not balance it with the repayment ratio on credit cards, then the daily trend is debt.

This finding is in line with the estimates of Hodson et al. (2014) and Pham & Doan (2020) because the coverage space of a credit card has an enormous risk. This payment system also has a dominant link to economic stability. Sometimes it can have a negative impact on serious disruptions to the payment system. This non-cash type can also read from an ATM and there are crisis problems in the ASEAN region related to debt instruments. A glamorous and excessive lifestyle will have a serious effect on VoM because the transaction flow is not smooth and hampers macroeconomic stability.

The interesting description also highlights the increasing use of debit cards, supported by ATMs, so that it becomes a pretty fantastic benchmark. Community transactions are more effective for daily transaction needs via debit cards than credit cards. Like withdrawing money, economic activity (buying and selling) has become a culture that cannot separate from their choice of using a debit card. This pattern is growing in economic activity regarding the availability of infrastructure in Indonesia and providing convenience, so that customer interest is also in surplus.

Kosse (2013) adds that debit cards have a direct impact on improving the economy of people in each class (lower, middle, and lower). In its easy application and integrated into the savings book, it affects the circulation of money transactions in economic sectors. The precautionary motive is the only powerful reason, where every economic transaction is in a predictable situation. In addition, debit cards are a favorite choice for customers because it is very easy to save money and can take immediately depending on needs. Payment instruments with credit cards are also more dominant in influencing the velocity of money. Macro-economically, monetary stability in a country also determined by many dimensions.

The level of people's trust in less cash is still not optimal. This has a double effect on the acceleration of money, where the movement is also small. Al-Laham et al. (2009) and Durgun & Timur (2015) highlight e-money as a legal means of payment among consumers and the level of trust in e-money continues to grow, although this non-cash instrument is not yet widely popular. Although not very effective, the benefits are like other payment tools and have minimal advantages. For example, if customers can transact easily via credit cards and debit cards, then e-money is not a top priority, but is still an alternative. Of course, the output does not have a significant effect on the wheels of money circulation.

We should note that, since its appearance in Indonesia in 2009, e-money such as PayPal, OVO, and other varieties have not received a response and enthusiasm from the public (Putra et al., 2020; Canil & Rosser, 2010). Although e-money is a legal means of payment, this requires trust through revitalizing facilities for users. Big jobs are certainly the concentration of service providers and the government to continue to carry out socialization related to information about the convenience of e-money. For future reference, it is necessary to consider the application of e-money because it requires a long term and actual proof.

5. CONCLUSIONS

This study has the ambition to verify VoM, which is influenced by the enthusiasm of customers who use electronic transactions and digital transactions in Indonesia from 2009 to 2019. Through a careful calculation scheme with statistical parameters, namely multiple linear regression, empirical findings find that credit cards and debit cards have an effect significant for VoM. Although the credit card effect is negative at the moment, but in the future it will be a scenario that needs to be considered. It aimed the results of the next analysis at the impact of e-money on VoM, where this type of digital transaction has spoken little to increase VoM because the relationship is not significant. Customer trust is relatively small in e-money, because the economic climate in developing countries such as Indonesia differs from other countries.

Debit card users are increasingly lively and users are free to transact. An inclusive economy also supported this in Indonesia. However, banks also need to tighten the security system so that it protects them from criminal acts (such as hackers).

Massive campaigns are becoming more focused in the presence of e-money. The phenomenon that is not effective in using e-money because regulatory reforms that the lower middle class have not touched does not accompany it. Implementation that needs to be reached by the central bank (Bank of Indonesia) to provide guidance on the modernization of non-cash payments evenly. With non-cash movements, ~~they~~ Bank of Indonesia project at least this instrument to have an explicit impact on customer response.

Practical and theoretical contributions increasingly transformed through these findings, so the role of the government needed to maintain a consistent velocity value in order to maintain monetary stability in Indonesia. No less important concern is the use of credit cards, which must balance with regulatory consistency, so that customers can still trust and feel safe when transacting non-cash.

This paper is urgent to be reviewed in depth because of the pressure from academics who are involved in the monetary and banking fields in responding to the intensity in the transformation of digital transactions that always change from time to time. Some of the striking limitations of this study lie in the data, where the data does not consider periods, such as month to month or comparison with quarterly data. In other words, we can see explicitly the discovery and in more detail. In the next agenda, vital work for further research is to consider the weaknesses of this study. There is a combination of data that compares variables outside this version and more observation periods if there are more varied and growing results.

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