

The Effect of Debit, Credit and BI-RTGS Card Usage on Indonesia's Economic Growth

Johan Anugrah¹, Izharuddin^{2*}

Department of Development Economics, Faculty of Economics and Business,
University of Bengkulu

Corresponding Author: Izharuddin izharuddin@unib.ac.id

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ABSTRACT

This study aims to analyze the effect of debit, credit and BI-RTGS card usage on economic growth in Indonesia using secondary data from 34 provinces in Indonesia in the period 2019 to 2023. This study uses the panel data linear regression analysis method with the E-views application to process data. The dependent variable used is Gross Regional Domestic Product (GRDP), while the independent variables include debit card usage, credit card usage and Bank Indonesia Real Time Gross Settlement (BI-RTGS) transactions. The results showed that debit card usage, credit card usage and BI-RTGS significantly affect GRDP in Indonesia. The government needs to continue to support the development of non-cash payment systems as an effort to encourage economic growth.

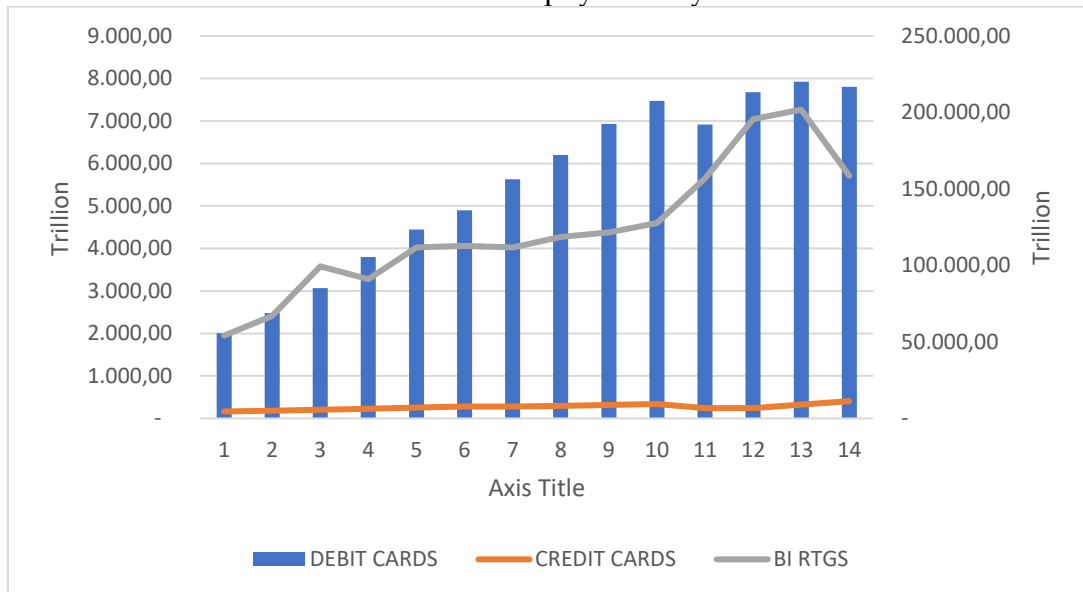
INTRODUCTION

In the ever-evolving digital era, information and communication technology (ICT) has become a key pillar in supporting various economic sectors, including the financial sector. The use of technology in payment systems, such as debit cards, credit cards, and Bank Indonesia's Real Time Gross Settlement system (BI-RTGS), has brought significant changes in the way economic transactions are conducted. This transformation not only improves the efficiency and speed of transactions, but also impacts overall economic growth.

Endogenous economic growth theory states that a country's economic growth is not only influenced by internal factors such as natural resources, capital, and labor, but also by external factors such as knowledge and technology. In this case, technology plays an important role as the main driver of economic growth. Technological innovations in payment systems, debit cards, credit cards, and BI-RTGS, can improve transaction efficiency, reduce costs, and create new opportunities for the financial sector to grow. Financial innovation can accelerate capital productivity, reduce transaction costs and thus stimulate economic growth (Adesete et al., 2020).

Electronic payment systems have become a medium that facilitates the circulation of money, especially in developing countries (Simon Oyewole et al., 2013) so that this will have an impact on the economy. Indonesia, as one of the largest economies in Southeast Asia, has undergone a significant digital transformation in recent years, especially in the payment sector where there has been a significant increase in the use of debit cards, credit cards, and the Bank Indonesia Real Time Gross Settlement system (BI-RTGS). These technologies not only speed up and simplify the transaction process, but also bring a positive impact on economic growth.

Table 1. Transaction value of non-cash payment system in indonesia 2010-2023



Source: BPS and BI, 2024

In Figure 1, it can be seen that the transaction value of the non-cash payment system in indonesia from 2010 to 2023 tends to increase. In 2023, the

transaction value of payments using debit cards reached IDR 7,805.62 trillion, showing a decrease from the previous year by 21.49% year-on-year (yoy). Meanwhile, credit cards experienced more stable growth. In 2023, the value of credit card transactions reached IDR 405.33 trillion, up 20.16% from the previous year. This growth reflects the rapid adoption of digital payments in Indonesia, driven by the convenience and security offered. The same goes for BI-RTGS, as a large-value payment system. In 2023, the recorded transaction value of BI-RTGS was IDR 158,678.79 trillion. The theory on economic growth shows the positive impact of innovation and technological progress on economic growth (Srivastava & Rezabek, 2022). On the other hand, according to (Yucha et al., 2020) although digital payments are growing very rapidly, cash payments still dominate due to limited infrastructure that is not yet adequate to support digital payment systems outside urban areas.

In research conducted by (Ramadanti & Kistanti, 2024) found that using non-cash payment systems such as credit cards and debit cards can increase economic growth. Similar results were also found by (Chukwunulu, 2019; Marginingsih & Sari, 2019) which states that non-cash payments have a positive impact on economic growth. Where this means that when the use of non-cash payments increases, there will also be an increase in economic growth. However, different results were found by (Cahyani et al., 2023) which states that non-cash payments such as debit and credit cards have no effect on economic growth.

Because of this, the purpose of this study is to analyze the effect of non-cash payments on economic growth in Indonesia. Where the focus of this research analysis is on the effect of transaction value using debit cards, credit cards, and BI-RTGS on GRDP. This research is expected to provide new insights into how non-cash payments can increase economic growth in Indonesia. By understanding their influence, policies can be designed to maximize the benefits of non-cash transactions, while minimizing the potential risks that may arise.

LITERATURE REVIEW

Endogenous Economic Growth Theory

Economic growth is an important indicator in measuring the welfare of a country. One of the most influential theories is the endogenous growth theory pioneered by economist Paul Romer. Paul Romer argued that economic growth is not only influenced by internal factors such as natural resources, capital, and labor, but also by external factors such as knowledge and technology. This endogenous growth theory places importance on the role of technological progress. Since long-term economic growth comes from the growth rate of economic output per person, it will depend on the level of productivity. In turn, productivity will depend on the progress of technological change, which depends on innovation and human capital.

According to Romer, technology enables innovation, which in turn can increase productivity. The use of technology can speed up the production process, reduce costs, and improve product quality. Thus, firms can produce more output with the same or fewer inputs, which will increase overall productivity. Technology also plays an important role in improving human resources. Technology-related education and training can improve the skills and

capabilities of the workforce, which in turn can increase productivity and innovation.

Debit Card

Debit cards have indeed become a very important payment tool in everyday life, especially in the context of the ever-evolving digital economy. With easy access to funds and the ability to make transactions quickly, debit cards allow consumers to participate in the digital economy more actively. Debit cards are payment cards that are used by directly reducing the balance of the account owner (Ramadanti & Kistanti, 2024). One of the main advantages of a debit card is the direct access it provides to the user's bank account funds.

The use of debit cards is also driving the growth of the digital economy. With easy and fast transactions, consumers are more likely to make online purchases, which in turn supports e-commerce businesses and digital service providers. This creates a positive loop that strengthens the economy and opens up new opportunities for entrepreneurs and consumers. Research conducted by (Marginingsih & Sari, 2019) using quantitative descriptive methods, this study shows that non-cash transactions, namely debit card usage, have a significant positive effect on economic growth in Indonesia.

H1: The value of Debit Card transactions affects Gross Domestic Product

Credit Card

A credit card is a non-cash payment instrument issued by a bank or financial institution, allowing the holder to purchase goods and services on the condition that the borrowed amount is repaid at an agreed time. This payment instrument functions on the principle of credit, where the bank or card issuer pays first the obligation for transactions made by the cardholder. Then, the cardholder is obliged to repay the amount, which can be done in full or by installment payments.

The use of credit cards can benefit the seller or service provider as it expands the reach of customers who may not have sufficient cash at the time. From a macroeconomic perspective, credit cards can contribute to economic growth by facilitating consumption, which is one of the main components of a country's gross domestic product (GDP). Consumption driven by credit card usage can trigger production and sales, which in turn can create jobs and increase income. By facilitating consumption and investment, credit cards can help increase economic activity. research conducted by (Aprilia, 2022; Dewanta & Putri, 2022) in his research found that credit cards have an effect on economic growth.

H2: The value of Credit Card transactions affects Gross Domestic Product

BI RTGS

The BI-RTGS (Bank Indonesia Real-Time Gross Settlement) system is a payment system operated by Bank Indonesia. BI-RTGS, or Bank Indonesia-Real Time Gross Settlement, is an electronic payment system used for real-time and

individualized large-value fund transfers. The system is designed to facilitate interbank transactions quickly and efficiently. By using BI-RTGS, interbank fund transfers can be made in real-time, thereby increasing the efficiency of the financial system in Indonesia. Research conducted by (Rahman & Nur Fatwa, 2024) regarding BI-RTGs found that the use of a payment system by means of BI-RTGS has a significant effect on economic growth. This is because the BI-RTGS system facilitates faster and safer transactions, which allows funds to move and be used more efficiently in the economy. This can increase investment, consumption, and other economic activities that ultimately contribute to economic growth.

H3: The value of BI RTGS transactions affects Gross Domestic Product

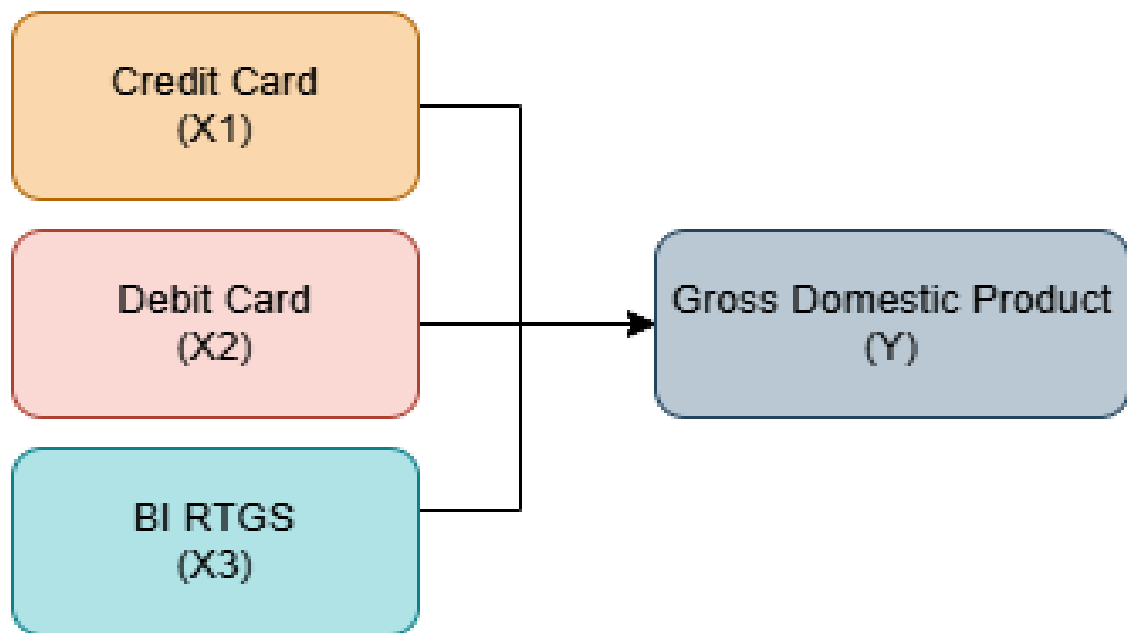


Figure 1. Conceptual Framework

METHODOLOGY

The research method used in this study is panel data linear regression analysis using secondary data on 34 provinces in Indonesia in the period 2019 to 2023. The dependent variable in this study is Gross Regional Domestic Product (GRDP), while the independent variables include the value of debit/ATM card transactions, the value of credit card transactions, and the value of Bank Indonesia Real Time Gross Settlement (BI-RTGS) transactions. Data is obtained from Bank Indonesia and the Central Bureau of Statistics (BPS). The analysis will be conducted using the E-views application to estimate a regression model that will reveal the relationship between the independent and dependent variables. The following is the econometric model that will be used:

$$PDRB_{it} = \beta_0 + \beta_1 DEBET_{1it} + \beta_2 KREDIT_{2it} + \beta_3 BIRTGS_{3it} + \varepsilon$$

Where:

GDP : Gross Domestic Product (Billion Rupiah)

- DEBIT: Debit Card Transaction Value (Billion Rupiah)
- CREDIT : Credit Card Transaction Value (Billion Rupiah)
- BIRTGS : BI-RTGS Transaction Value (Billion Rupiah)
- ε : Error term
- $\beta_{(0)}$: Constant
- $\beta_1 \dots \beta_3$: Regression coefficient of independent variable
- t : Year t

RESEARCH RESULT

In the panel data regression method, before estimating the regression, the stage that must be done is to select the regression model. Model determination uses several tests, namely the chow test, hausman test and lagrange multiplier test. The following are the test results of determining the regression model to be used.

Table 1. Model Determination Test Results

Chow Test	Cross-section	843.185263
	Chi- square	
	Prob	0.0000
Hausman Test	Cross-section	243.923173
	Random	
	Prob	0.0000

Source: Data Processed, 2024

Based on the results of this test, the Fixed Effect model is the selected model because the probability value of the Chow test is smaller than 0.05 and likewise the Hausman test has a probability value smaller than 0.05. Furthermore, after conducting the best model determination test, a fixed effect model regression equation is made to see the effect of the use of debit cards, credit cards, and BI-RTGS on economic growth in Indonesia.

Table 2. Multiple Linear Regression Results

Variables	Coefficient	t-Statistic	Prob.
C	250818.2	34.10913	0.0000
DEBIT	0.195495	9.564906	0.0000
CREDIT	2.591098	8.473630	0.0000
BI-RTGS	0.020355	8.114360	0.0000
R-square	0.998449		
Prob(F-statistic)	0.000000		

Source: Data Processed, 2024

Thus, the equation of the estimation is obtained as follows:

$$PDRB = 250818.2 + 0.195495DEBITS + 2.591098CREDITS + 0.020355BIRTGS$$

Based on the regression results with the Fixed Effect Model (FEM), it shows that there is a constant value of 250818.2 with a probability of 0.0000. The R-square value of 0.9981 indicates that about 99.84% of the variation in GRDP can be explained by independent variables such as debit card usage, credit card usage and Bank Indonesia Real Time Gross Settlement (BI-RTGS) transactions. Likewise, the probability value of the F-statistic is 0.0000 (<0.05), which means that simultaneously the independent variables in this study can affect the dependent variable. This means that the model in this study is very effective in predicting changes in GRDP.

DISCUSSION

In the t test (partial), this study shows that the use of debit cards has a coefficient of 0.195 with a probability value of 0.000 which means that the use of debit cards has a positive and significant effect on GRDP. Where, every increase of 1 billion rupiah in the use of debit cards will increase GRDP by 0.19 billion rupiah. This is in accordance with research conducted by (Marginingsih & Sari, 2019). The use of debit cards is supported by technological innovations in the payment system that allow transactions to be faster and more efficient than cash transactions. This encourages people to make transactions more often, both for consumption and investment. The use of debit cards allows people to shop in various places, both online and offline. When debit card usage increases, people's purchasing power also tends to increase. With the ease of access and transactions, individuals can be more flexible in planning their spending. This not only affects consumers, but also businesses who see an increase in sales. This increased consumption contributes to broader economic growth.

Similarly, the use of credit cards has a coefficient of 2.591 with a probability value of 0.000, which means that the use of credit cards has a positive and significant effect in influencing GRDP, every increase of 1 billion rupiah in the use of credit cards will increase GRDP by 2.59 billion rupiah. The results of this study are in line with previous research (Aprilia, 2022; Dewanta & Putri, 2022). This significant use of credit cards can be caused because when people use credit cards for shopping, they tend to spend more money than if they only used cash. This is because credit cards provide the flexibility to make payments in installments. Thus, the increase in consumption not only impacts retail sales, but also other sectors such as services, transportation, and tourism.

As the main infrastructure in large-value payment transactions, the use of BI-RTGS transactions has a coefficient value of 0.020 with a probability of 0.000, which means that the use of BI-RTGS has a positive and significant effect on GRDP. Where, every increase of 1 billion rupiah in the use of BI-RTGS will increase GRDP by 0.02 billion rupiah. Where the results of this study are in line with research conducted by (Rahman & Nur Fatwa, 2024). This is because BI-RTGS enables fast and accurate electronic fund transfers, increasing the efficiency of interbank transactions. This contributes to accelerating the flow of funds and economic activity, which in turn supports GRDP growth. The BI-RTGS system can also support export and import performance by facilitating the payment of

international trade transactions. This helps in accelerating the trade process and increasing the sector's contribution to GDRP.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this study, it can be concluded that the use of debit/ATM cards, credit cards, and the BI-RTGS system significantly influences economic activity by facilitating more efficient financial transactions. The increasing use of debit and credit cards demonstrates a shift in consumer behavior toward non-cash transactions, which can directly boost public consumption due to the ease and speed of payments. Furthermore, the BI-RTGS system, as a large-value payment infrastructure, plays a vital role in enhancing the efficiency of interbank transactions, particularly in supporting high-volume and time-sensitive trade transactions such as exports and imports. The positive influence of these payment systems indicates that the integration and modernization of financial technology contribute substantially to the acceleration of economic transactions and overall economic growth.

In addition, the findings highlight the growing importance of a robust and secure digital payment ecosystem in supporting national financial and economic stability. The adoption of non-cash instruments not only facilitates convenience for consumers and businesses but also improves transparency and traceability in financial activities, which can help reduce fraud and increase trust in the financial system. However, this transformation also brings challenges, particularly in terms of equitable access to digital infrastructure and the varying levels of financial literacy across different segments of the population. Therefore, ensuring inclusiveness and public understanding of these technologies remains a critical component of successful implementation.

Recommendations

In light of the conclusions above, several recommendations can be put forward to enhance the effectiveness of non-cash payment systems in Indonesia. Firstly, the government, in collaboration with financial institutions, should continue to invest in the development and expansion of non-cash payment infrastructure, with particular emphasis on improving access in rural and underdeveloped regions. Increasing the availability of point-of-sale (POS) terminals, expanding mobile banking services, and ensuring stable internet connectivity are essential steps toward creating a more inclusive digital financial environment.

Secondly, financial literacy programs must be intensified to help the public understand the benefits, security aspects, and responsible use of debit and credit cards, as well as the broader digital payment ecosystem. Campaigns should be targeted not only at urban populations but also at rural communities, small businesses, and older demographics who may be less familiar with such technologies. Moreover, collaboration between the government, Bank Indonesia, educational institutions, and fintech companies can foster a more comprehensive financial education strategy that is adaptable to various user segments.

Lastly, future research is encouraged to build upon these findings by incorporating additional variables such as mobile payments, QR-based

transactions, and e-wallets, which have become increasingly popular. Expanding the observation period and utilizing primary data through interviews or field surveys could provide a more nuanced understanding of user behavior, technological challenges, and regional differences in adoption rates. By doing so, researchers can offer more in-depth insights and policy suggestions that align with the evolving digital financial landscape in Indonesia.

ADVANCED RESEARCH

This research is highly relevant in the context of accelerating the digitization of the national financial system. However, for further development, it is recommended that the scope of variables be expanded to include other digital payment instruments such as e-wallets, QRIS, and mobile banking to provide a more comprehensive picture. In addition, methodological approaches that examine long-term causal relationships, such as VECM or ARDL, can be used to explore the direction of the influence of payment systems on economic growth. Research can also focus on sectoral impacts, such as the effect on MSMEs or trade, as well as considering regional and demographic variations to see differences in adoption and contribution between regions. Integration with the financial inclusion index and comparative analysis before and after the pandemic can also add depth to the analysis and policy significance of the research results.

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