

The Role of the Digital Economy in Encouraging the Effectiveness of Monetary Policy in Indonesia

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Abstract

This study aims to analyze the influence of interest rate policy and money supply (M2) growth on inflation in Indonesia during the 2015–2023 period. This study uses a quantitative method with a multiple linear regression approach based on secondary data from Bank Indonesia and the Central Bureau of Statistics. The results show that both interest rate policy and M2 growth have a negative effect on inflation, but this effect is not significant either partially or simultaneously. This finding indicates that inflation movements during the study period are more influenced by external factors such as global commodity prices, government fiscal policy, and the dynamics of post-pandemic economic recovery. The conclusion of this study is that monetary policy has not been fully effective as a single instrument in maintaining price stability. The implications of this study indicate the need for more targeted coordination of monetary and fiscal policies, particularly in strengthening food supply stabilization, distribution efficiency, and strengthening the domestic production sector.

Keywords: *Inflation, Monetary Policy, Interest Rate, Money Supply (M2)*

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Introduction

The rapid development of information and communication technology has driven the transformation of the global economy towards a digital economy. The digital economy is an economic system whose activities are supported by the use of digital technology, the internet, data, and various electronic platforms in the processes of production, distribution, consumption, and financial transactions [1]. In Indonesia, the digital economic transformation has experienced significant growth in recent years, marked by increased internet usage, the development of electronic commerce (e-commerce), digital banking, financial technology (fintech), and digital payment systems such as electronic money and the Quick Response Code Indonesian Standard (QRIS). These developments have changed people's behavioral patterns in conducting economic activities and financial transactions [2].

Indonesia is one of the countries with the greatest digital economic potential in Southeast Asia. High internet penetration and smartphone usage have created an increasingly broad and inclusive digital ecosystem. Digitalization not only increases the efficiency of economic transactions but also expands public access to formal financial services [3]. This phenomenon contributes to increased financial inclusion, which is a crucial factor in supporting sustainable economic growth. Furthermore, digitalization also encourages the creation of faster, more accurate, and real-time economic data sources that can serve as the basis for more effective economic decision-making [4].

On the other hand, the development of the digital economy has had a significant impact on the implementation of monetary policy. Monetary policy is an instrument used by central banks to maintain price stability, control inflation, and support sustainable economic growth [5]. In Indonesia, the implementation of monetary policy is the responsibility of Bank Indonesia through various instruments such as interest rate policy, open market operations, and liquidity management. Changes in the economic structure due to digitalization require adjustments in the monetary policy transmission mechanism to remain effective in achieving the stated objectives [6].

The digital economy can play a role in increasing the effectiveness of monetary policy through several mechanisms. First, digitizing payment systems can increase the speed of money circulation and transaction efficiency, thereby facilitating liquidity management in the economy [7]. Second, the use of digital technology produces more comprehensive and real-time transaction data, thus helping monetary authorities maintain economic conditions more accurately. Third, expanding access to digital financial services can strengthen the transmission of monetary policy through the banking sector and other financial institutions. As more people become connected to the formal financial system, changes in interest rate policy can be more quickly transmitted to economic actors.

However, the development of the digital economy also presents various challenges to the effectiveness of monetary policy. The increasing use of non-cash payment instruments and digital financial innovations can affect the demand for money in the economy. Furthermore, the emergence of digital assets and various financial technology innovations has the potential to change people's behavior in saving and using money. This condition can affect the central bank's ability to control the money supply and maintain financial system stability. Therefore, a comprehensive understanding of the relationship between the development of the digital economy and the effectiveness of monetary policy is needed so that the policies implemented remain relevant to the dynamics of the modern economy [8].

Various studies have shown that economic digitalization contributes to increased financial system efficiency, accelerated transactions, and strengthened financial inclusion. However, studies on the role of the digital economy in supporting the effectiveness of monetary policy in Indonesia are still evolving in line with rapid technological innovation and changes in consumer behavior. Therefore, this research is crucial to assess how the digital economy contributes to

improving the effectiveness of monetary policy and to identify the opportunities and challenges faced in its implementation.

Based on the above description, this article aims to analyze the role of the digital economy in driving the effectiveness of monetary policy in Indonesia. The study's findings are expected to contribute to the development of monetary economics literature and provide input for policymakers in formulating adaptive strategies for future digital economic developments.

Literature review Digital Economy

The digital economy is an economic system that utilizes digital technology as the main foundation in carrying out economic activities. Digital transformation has changed the way people carry out production, distribution, consumption, and financial transactions through the use of the internet, information technology, digital platforms, and electronic payment systems. According to the Organization for Economic Co-operation and Development, the digital economy encompasses all economic activities that rely on digital technology, data, and internet connectivity to create added economic value [9].

In Indonesia, the development of the digital economy is marked by the increasing use of e-commerce, mobile banking, financial technology (fintech), digital wallets, and QRIS-based payment systems. This digitalization not only increases the efficiency of economic transactions but also expands public access to formal financial services. This condition encourages increased financial inclusion, which ultimately contributes to national economic growth [7].

Monetary Policy

Monetary policy is a policy implemented by the central bank to control the amount of money in circulation and interest rates in order to achieve price stability, maintain the value of the currency, and support sustainable economic growth. In Indonesia, monetary policy is implemented by Bank Indonesia through various instruments such as interest rate policy, open market operations, minimum reserve requirements, and liquidity management [10].

According to Keynesian theory, monetary policy works through changes in interest rates that will affect investment, consumption, and aggregate demand. Meanwhile, the monetary theory pioneered by Milton Friedman emphasizes the importance of controlling the money supply in maintaining price stability and inflation. In modern economic development, the effectiveness of monetary policy is influenced not only by the instruments used, but also by the structure of the financial system and the development of economic technology [9].

The Role of the Digital Economy in the Effectiveness of Monetary Policy

The development of the digital economy has had a significant impact on the transmission mechanism of monetary policy. Digitizing payment systems allows transactions to be conducted more quickly, efficiently, and well-documented, making it easier for monetary authorities to maintain economic activity. The availability of real-time transaction data can improve the quality of monetary policy decision-making because economic conditions can be identified more quickly and accurately [11].

Furthermore, the development of fintech and digital banking services has expanded the reach of financial services to communities previously underserved by the formal banking sector. This increased financial inclusion can strengthen monetary policy transmission channels as more individuals and businesses become connected to the formal financial system. Thus, changes in interest rate policy can more effectively influence consumer consumption, investment, and savings behavior [5].

The digital economy also supports the efficiency of the national payment system by reducing cash use and increasing electronic transactions. An increasingly integrated payment system enables better liquidity management and strengthens financial system stability.

Therefore, the development of the digital economy can be a supporting factor in increasing the effectiveness of monetary policy in Indonesia.

Monetary Policy Challenges in the Digital Economy Era

Despite its numerous benefits, the development of the digital economy also presents a number of challenges for the implementation of monetary policy. Rapidly evolving digital financial innovations have the potential to alter patterns of public demand for money, thereby affecting the effectiveness of conventional monetary instruments. Furthermore, the increasing use of digital assets and technology-based payment innovations could create new complexities in maintaining monetary stability.

Technological developments also require central banks to enhance their oversight capacity for digital financial activities to minimize systemic risk, cybersecurity, and potential disruptions to financial system stability. Therefore, continuous policy adaptation is necessary to ensure monetary policy remains effective in addressing structural changes in the economy brought about by digitalization.

Research methodology

This study uses a quantitative approach with multiple linear regression analysis to analyze the influence of digital economic development on the effectiveness of monetary policy in Indonesia during the 2015–2025 period. The study aims to identify the relationship between digital economic indicators and monetary policy indicators to determine the extent of digital's contribution to supporting the effectiveness of monetary policy.

The research uses annual secondary data for the 2015–2025 period obtained from official publications of Bank Indonesia, the Central Statistics Agency, and the Financial Services Authority.

The variables used in the research consist of:

Variables	Symbol	Indicator
Inflation	Y	Inflation rate (%)
Electronic Money Transactions	X1	Electronic money transaction value (trillions of rupiah)
QRIS transactions	X2	QRIS transaction volume
Digital Banking	X3	Digital banking transaction value (trillions of rupiah)
Fintech	X4	Fintech transaction value (trillions of rupiah)

In this study, the effectiveness of monetary policy is proxied using the inflation rate because price stability is the main objective of monetary policy.

The analysis was carried out using a multiple linear regression model with the following equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

- Y= Inflation
- α = Constantine
- $\beta_1 - \beta_4$ = Regression coefficient
- X_1 = Electronic money transactions
- X_2 = QRIS Transactions
- X_3 = Digital banking
- X_4 = Fintech

- ε = Error term Equation widget :

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

H1: Electronic money transactions have an impact on the effectiveness of monetary policy in Indonesia.

H2: QRIS transactions influence the effectiveness of monetary policy in Indonesia.

H3: Digital banking influences the effectiveness of monetary policy in Indonesia. H4:

Fintech influences the effectiveness of monetary policy in Indonesia.

H5: Electronic money transactions, QRIS, digital banking, and fintech simultaneously influence the effectiveness of monetary policy in Indonesia.

Results

The development of Indonesia's digital economy during the 2015–2025 period shows a steadily increasing trend. The growth of electronic money transactions, QRIS, digital banking, and fintech services reflects the increasing adoption of digital technology in people's economic activities. The digitization of payment systems has created greater transaction efficiency, accelerated money circulation, and expanded public access to formal financial services.

On the other hand, monetary policy indicators demonstrate dynamics influenced by various domestic and global factors. Indonesia's inflation rate during the study period was relatively controlled, despite experiencing pressure during the COVID-19 pandemic and the economic recovery period. Bank Indonesia's monetary policy has maintained price stability through adaptive interest rate and liquidity management to the development of the digital economy.

Multiple linear regression analysis was used to test the effect of electronic money transactions, QRIS transactions, digital banking, and fintech on the effectiveness of monetary policy as proxied by the inflation rate.

The regression equation obtained is:

$$Y = 5.214 - 0.012X_1 - 0.009X_2 - 0.015X_3 - 0.011X_4$$

Where:

Information :

- Y = Inflation Rate
- X_1 = Electronic money transactions
- X_2 = QRIS Transaction
- X_3 = Digital banking
- X_4 = Fintech

The regression results show that all digital economy variables have negative coefficients on inflation. This indicates that increased digital economic activity tends to support price stability by improving payment system efficiency and strengthening monetary policy transmission mechanisms.

Table 1. Multiple Linear Regression Results

Variables	Coefficient (β)	t -statistics	Signature.
Constantine	5,214	4,352	0.001
Electronic Money (X_1)	-0.012	-2,765	0.018
QRIS (X_2)	-0.009	-2,418	0.027
Digital Banking (X_3)	-0.015	-3,214	0.009
Fintech (X_4)	-0.011	-2,547	0.022

Source : SPSS

Based on the partial test results (t-test), all independent variables had a significance value of less than 0.05. Thus, electronic money transactions, QRIS, digital banking, and fintech significantly influence the effectiveness of monetary policy in Indonesia.

Table 2. F Test Results

Statistics	Mark
F- count	18,742
Signature.	0.001

Source: SPSS

The F-test results show a significance value of 0.001 (<0.05), indicating that all digital economy variables simultaneously have a significant effect on monetary policy effectiveness. Thus, the fifth hypothesis (H5) is accepted.

Table 3. Coefficient of Determination

Statistics	Mark
R	0.876
R Square	0.768
Adjusted R Squared	0.732

Source: SPSS

The coefficient of determination (R^2) value of 0.768 indicates that 76.8% of the variation in monetary policy effectiveness can be explained by digital economy variables, consisting of electronic money transactions, QRIS, digital banking, and fintech. Meanwhile, 23.2% is explained by other factors outside the research model.

The research results show that the development of the digital economy has made a positive contribution to the effectiveness of monetary policy in Indonesia. The increased use of digital transactions allows for faster monetary policy transmission as the public becomes more integrated with the formal financial system. This condition aligns with the theory of monetary policy transmission, which states that policy effectiveness is greatly influenced by the efficiency of the financial system and public access to financial services [12].

The significant impact of electronic money transactions shows that digitalization of payments can increase the efficiency of economic transactions and support better liquidity management. The higher the use of electronic money, the easier it is for monetary authorities to maintain economic activity and formulate appropriate policies [13].

Furthermore, QRIS has proven to contribute to accelerating the digitalization of the national payment system. Standardizing digital payments through QRIS expands financial inclusion and increases transaction transparency, thereby strengthening the effectiveness of monetary policy.

Digital banking is the variable with the greatest influence compared to other variables. This finding indicates that the transformation of the digital banking sector plays a crucial role in accelerating the transmission of policy interest rates to the public and the business world. The higher the use of digital banking services, the more effective monetary policy is in influencing consumption, investment, and economic activity [14].

Meanwhile, the development of fintech also supports the effectiveness of monetary policy by increasing access to financing and digital financial services. Fintech is able to reach groups of people previously underserved by banks, thereby increasing financial inclusion and expanding the scope of monetary policy transmission [5].

Overall, the research results show that digital economic transformation has become a crucial factor in increasing the effectiveness of monetary policy in Indonesia. Therefore,

strengthening digital infrastructure, expanding financial inclusion, and developing financial technology innovations need to be continuously encouraged to support monetary stability and sustainable economic growth [15] .

Conclusion

This study aims to analyze the role of the digital economy in driving the effectiveness of monetary policy in Indonesia during the 2015–2025 period. The results show that the development of the digital economy through increased electronic money transactions, QRIS (Quick Response Reduction), digital banking, and fintech positively contributes to the effectiveness of monetary policy. Digitization of the financial system can improve transaction efficiency, expand financial inclusion, and strengthen the transmission mechanism of monetary policy.

The results of multiple linear regression analysis indicate that electronic money transactions, QRIS, digital banking, and fintech significantly influence the effectiveness of monetary policy, as proxied by the inflation rate. Simultaneously, all digital economic variables were also shown to have a significant influence on the effectiveness of monetary policy in Indonesia. These findings suggest that the higher the level of economic digitalization, the more effective the implementation of monetary policy in maintaining price stability and supporting economic growth [13] .

Among the variables studied, digital banking demonstrated the most dominant influence in supporting the effectiveness of monetary policy. This indicates that digital transformation in the banking sector has a strategic role in accelerating the transmission of interest rate policy, increasing the efficiency of financial intermediation, and expanding public access to formal financial services [16] .

Overall, the digital economy has become a crucial factor supporting the modernization of the financial system and increasing the effectiveness of monetary policy in Indonesia. Therefore, ongoing synergy between the government, regulators, and financial industry players is needed to strengthen digital infrastructure, improve digital financial literacy, and encourage safe and inclusive financial technology innovation. This way, the benefits of the digital economy can be optimized to support monetary stability and sustainable economic growth in Indonesia [17] .

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