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E-Money and Banknote Counterfeiting: Assessing Digital Payment Systems in Indonesia's Crime Prevention

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ABSTRACT

Purpose – This study was undertaken to examine whether the increasing use of electronic money (e-money) in Indonesia has impacted the prevalence of banknote counterfeiting. With the government's push toward a digital economy through the Indonesian Payment System Blueprint 2025, it is crucial to understand how digital payment systems influence traditional forms of financial crime, particularly banknote counterfeiting. The research aims to address this gap by exploring whether e-money can effectively reduce counterfeit activities.

Design/methods/approach – The study employed a qualitative-descriptive approach, utilizing Rational Choice Theory, Strain Theory, Economic Theory of Supply and Demand, and Financial Inclusion Theory as theoretical frameworks. Data was collected from literature reviews, government reports, and expert interviews to assess the correlation between the rise of e-money usage and counterfeiting activities.

Findings – The findings reveal that there is no empirical evidence to suggest a direct link between increased e-money usage and a reduction in banknote counterfeiting in Indonesia. While digital payments are on the rise, other factors such as enhanced currency security features and effective law enforcement play a more significant role in curbing counterfeiting.

Research implications/limitations – The study's findings are limited by the lack of longitudinal data on the relationship between e-money and counterfeiting. Additionally, it focuses on Indonesia's urban context, which may not be generalizable to rural areas or other nations. Future research should explore long-term trends as digital payment systems evolve and examine rural areas for broader applicability

Originality/value – This study provides a unique contribution by addressing a critical gap in the literature on the relationship between e-money and banknote counterfeiting. It highlights the need for policymakers to focus on strengthening existing anti-counterfeiting measures rather than relying solely on the rise of digital payments to solve the issue.

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Introduction

In Indonesia, physical currency dominates the narrow money supply, accounting for 85% of transaction volume (Bank Indonesia, 2021). However, electronic money (e-money) has begun to emerge as an alternative form of payment. The government, through Bank Indonesia, spearheaded a payment revolution by introducing the Indonesian Payment System Blueprint 2025 (Bank Indonesia, 2019a). This system aims to embrace the digital era and foster opportunities for fintech innovation and development.

Digital payments in Indonesia have evolved since the early 2000s, split into retail and wholesale categories. Currently, over 85% of transactions are processed through the National Clearing System (SKNBI), involving 99% of Micro, Small, and Medium Enterprises (MSMEs), which contribute 65% to the Gross Domestic Product (GDP) (BPS, 2024). Two key factors drive the growth of e-money: the doubling of smartphone users from 90 million in 2015 to 180 million (67% of the population) by 2020 (BPS, 2022) and the increase in fintech businesses, from 20 e-wallets managed by banks in 2015 to more than 55 licensed by Bank Indonesia. Among them, GoPay and OVO, launched around 2016, have become top-ranked with active monthly users, integrated with platforms like GoJek, Grab, and Tokopedia, Indonesia's largest e-commerce sites.

In addition to e-wallets, Indonesia is currently developing real-time payment infrastructure (BI-FAST) and standardizing QR codes into the QRIS system since January 2020. This system provides an integrated, cost-efficient, and secure payment solution (Bank Indonesia, 2019b). QRIS enhances connectivity between different e-wallet providers, allowing them to use a single QR code. To create a competitive market, the Indonesian government is also advancing open banking services that facilitate collaboration between banks and fintech firms (BRI, 2024).

With the rise of e-money, platforms for economic exchange, retail transactions through point-of-sale (POS) systems, and financing are transforming, making digital payment options increasingly preferred over cash.

In Indonesia, currency counterfeiting is a serious economic crime, affecting economic stability, public trust, and the reputation of financial institutions. The government, through Bank Indonesia (BI) and law enforcement, has made significant efforts to combat counterfeiting. BI data shows that the number of counterfeit banknotes detected in 2022 increased compared to previous years, with more than 500,000 counterfeit notes in circulation. The most frequently counterfeited denominations are Rp100,000 and Rp50,000 bills. Criminals use both digital and manual techniques to produce counterfeit money, but updated security technologies such as security threads, watermarks, color-shifting inks, and holograms have thwarted many attempts. Additionally, the Indonesian government conducts campaigns to educate the public on how to identify genuine banknotes using the "3D method" (look, feel, tilt). Law enforcement agencies have also stepped up efforts to capture and prosecute counterfeiters (Hariyanto Putro & Soponyono, 2015).

Despite these advancements, counterfeiters have improved their methods, producing fake money that closely resembles genuine notes, from paper weight to watermarks. As printing technologies become more sophisticated, uncovering counterfeiting cases becomes increasingly challenging.

Given these two contrasting phenomena the rise of e-money and the persistent issue of banknote counterfeiting it raises the question of whether the advent of e-money can reduce the incidence of currency counterfeiting. This research aims to explore this issue by examining relevant theories and existing scientific studies related to the relationship between e-money and currency counterfeiting. Addressing the endogeneity of factors influencing both e-money usage and counterfeiting behavior will be critical to understanding the dynamics at play.

Methods

This research employs a descriptive qualitative method with a literature review approach deemed relevant to address the research questions. The research design focuses on analyzing the dialectical relationship between the concrete social phenomenon of currency counterfeiting and the more abstract social, economic, and political structures. A qualitative approach was chosen because it provides deeper insights into the connection between currency counterfeiting and the rise of electronic money within the dynamic context of social, legal, and government policies.

The population and sample in this study consist of literature related to the use of electronic money and the phenomenon of counterfeiting in Indonesia. Informants for the study include experts in finance, digital security, and data from official institutions such as Bank Indonesia, which offer valuable insights into the trends of currency counterfeiting and the growth of electronic payment systems. The sample was drawn from previous studies, relevant policies, and official economic and legal documents.

Data collection techniques involved a comprehensive literature review of books, journal articles, government reports, and policies related to electronic payment systems and currency counterfeiting. The data collection also included the exploration of relevant theories, such as Rational Choice Theory, Strain Theory, Supply and Demand Theory, and Financial Inclusion Theory, to better understand the relationship between the study's two main variables.

Data analysis techniques followed a descriptive qualitative approach, focusing on in-depth interpretation of the collected data. The analysis involved mapping the relationship between variables, identifying patterns, and assessing the connection between increased use of electronic money and currency counterfeiting. Validation of the findings was ensured through data triangulation from multiple sources, including academic literature and expert interviews, to guarantee the accuracy and reliability of the study’s conclusions.

Result

The study identifies four key theories that elucidate the phenomenon of counterfeiting, notably focusing on Rational Choice Theory (RCT), Strain Theory, Supply and Demand Theory, and Financial Inclusion Theory.

Rational Choice Theory (RCT): This theory posits that individuals engage in criminal activities, such as counterfeiting, when they believe the perceived benefits outweigh the costs. The evaluation of potential gains and risks influences the decision-making process of counterfeiters. For example, if the financial rewards are perceived as higher than the likelihood of detection and punishment, individuals are more likely to engage in counterfeiting behaviors. Research by Thomas et al. (2022) supports this notion by examining the relationship between community characteristics and individual preferences toward criminal activities.

Strain Theory: Developed by Robert K. Merton, this theory suggests that individuals may resort to criminal actions, including counterfeiting, when they are unable to achieve socially accepted goals through legitimate means. Economic strain, particularly in the context of high

unemployment or financial pressure, can lead individuals to view counterfeiting as a viable escape route. Cullen & Wilcox (2010) further affirm that significant disparities in income can exacerbate the likelihood of criminal behavior.

Supply and Demand Theory: This framework explains the proliferation of counterfeit currency as a function of high demand for cash and low production costs. In contexts where cash transactions remain prevalent, such as in Indonesia, the demand for physical currency creates opportunities for counterfeiters to operate effectively (Taillard, 2018).

Financial Inclusion Theory: This theory examines how transitions from cash to digital transactions affect financial access and inclusivity. Studies indicate that digital financial services can promote economic growth and reduce poverty, particularly in developing nations (Demirgüç-Kunt & Singer, 2017; Saha & Qin, 2022). However, gaps in digital financial service access persist across different demographic groups, potentially limiting the positive impacts of financial inclusion.

Impact of Electronic Money on Counterfeiting

The emergence of electronic money has significantly altered the landscape of currency counterfeiting. As payment systems shift from cash to digital, the demand for physical currency declines, leading to a corresponding decrease in counterfeiting activities. Achord et al. (2018) argue that the transition to digital payments diminishes the circulation of cash, subsequently reducing the prevalence of counterfeit money. Furthermore, Brandl et al. (2024) note that the advent of electronic payment systems may decrease social disparities, thereby lowering crime rates, including counterfeiting.

However, this shift also ushers in new forms of cybercrime. As more individuals adopt digital payments, criminal activities have increasingly transitioned to the digital realm, encompassing data theft and illegal financial transactions. This evolution is documented by Watters (2023), highlighting how technological advancements facilitate new criminal opportunities.

Central Bank Digital Currency (CBDC)

The proposal for Central Bank Digital Currency (CBDC) arises as a potential solution to mitigate risks associated with cash counterfeiting. CBDCs could decrease reliance on physical currency, subsequently reducing the opportunities for counterfeiting (Fahad & Bulut, 2024). The implications of CBDC adoption extend beyond crime prevention, potentially enhancing the efficiency and security of payment systems while providing central banks with greater control over monetary policy (International Monetary Fund, 2023).

Conclusions on the Dynamics of Counterfeiting and Payment Systems

This research elucidates the intricate relationships between counterfeit currency, the shift toward electronic payment systems, and the emergence of cybercrime. The decline in physical cash demand due to increased digital transactions serves as a deterrent to counterfeiting, aligning with RCT principles regarding risk assessment and reward perception. Conversely, the rise of digital transactions has fostered new types of economic crime, illustrating a complex interplay between technological advancements and criminal behavior.

In summary, the transition to digital payment systems has fundamentally altered the motivations and opportunities surrounding counterfeiting, suggesting that continued exploration into the implications of technological advancements on criminal behavior is necessary. Future studies should aim to investigate the long-term effects of these changes, particularly in regions where cash remains a primary mode of transaction.

Discussion

The findings of this study shed light on the multifaceted nature of counterfeiting through the lens of several key theoretical frameworks. Rational Choice Theory (RCT) provides a compelling foundation for understanding why individuals engage in counterfeiting; the perceived benefits, such as financial gain, can outweigh the risks involved. This aligns with Thomas et al. (2022), who found a connection between community dynamics and criminal behavior, reinforcing the idea that rational calculations significantly influence decision-making in illicit activities.

Strain Theory further enriches our understanding by illustrating how socioeconomic pressures, such as unemployment and income disparity, can drive individuals toward counterfeiting as an alternative means of achieving their goals. Cullen & Wilcox (2010) echo this perspective, suggesting that economic strain can precipitate criminal behavior when legitimate avenues are blocked. This highlights the need for broader socioeconomic policies that address income inequality and provide legitimate opportunities for individuals, potentially reducing the allure of counterfeiting.

The application of Supply and Demand Theory reveals how high demand for cash, especially in regions with limited banking infrastructure like Indonesia, fuels the counterfeiting market. This underscores the necessity for initiatives aimed at reducing reliance on physical currency through improved banking access and digital financial literacy.

The implications of Financial Inclusion Theory are particularly pertinent in today's rapidly evolving financial landscape. While digital financial services have the potential to enhance economic participation, disparities in access remain a significant barrier. Addressing these gaps is crucial for realizing the full benefits of financial inclusion, which may also deter counterfeiting by providing legitimate financial alternatives.

Moreover, the impact of electronic money on counterfeiting is substantial. As noted, the transition from cash to digital transactions decreases the circulation of physical currency, thus reducing counterfeiting opportunities (Achord et al., 2018). However, this shift also opens avenues for new forms of cybercrime, as evidenced by Watters (2023), highlighting the need for continuous monitoring and adaptive strategies to combat evolving criminal threats in the digital age.

The proposal of Central Bank Digital Currency (CBDC) as a strategy to mitigate counterfeiting risks is particularly noteworthy. By reducing dependence on physical cash, CBDCs can enhance the security of payment systems while simultaneously curbing opportunities for counterfeiting (Fahad & Bulut, 2024). The broader implications for monetary policy control further position CBDCs as a vital innovation in the fight against counterfeiting

Conclusion

In conclusion, this research underscores the intricate relationship between counterfeiting, the evolution of payment systems, and the emergence of new forms of economic crime. Theoretical frameworks, such as RCT, Strain Theory, Supply and Demand Theory, and Financial Inclusion Theory, collectively illuminate the dynamics at play in counterfeiting behaviors and highlight the need for a multifaceted approach to address these challenges.

As we move forward, it is essential to prioritize initiatives that promote digital financial literacy and access, particularly in regions where cash transactions dominate. The findings suggest that enhancing financial inclusion not only empowers individuals but also diminishes the appeal of counterfeiting as a viable alternative for financial gain.

The transition to digital payment systems necessitates a proactive stance towards addressing potential new forms of cybercrime that may arise. Future research should focus on the long-term effects of these shifts, particularly in areas still heavily reliant on cash, to develop comprehensive strategies that can adapt to the evolving landscape of financial transactions and associated criminal behaviors. By fostering collaboration among policymakers, financial institutions, and communities, we can build a resilient framework that mitigates the risks of counterfeiting while enhancing the benefits of digital financial services.

Declarations

Author contribution statement

The lead author participated in the conceptualization and design of the study, analysis, interpretation of data, and initial drafting of the paper. Each author contributed to the critical revision of the content for intellectual rigor and provided final approval for the published version. All authors are responsible for every aspect of the work

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The data that support the findings of this study are available from the corresponding author upon reasonable request. Due to privacy and ethical considerations, the data are not publicly accessible.

References

Achord, S., Chan, J., Collier, I., Nardani, S., & Rochemont, S. (2018). A cashless society: benefits, risks, and issues - Abstract of the London Discussion. In British Actuarial Journal (Vol. 23). https://doi.org/10.1017/S1357321718000223

Bank Indonesia. (2019a). Blueprint Sistem Pembayaran Indonesia 2025 Bank Indonesia: Menavigasi Sistem Pembayaran Nasional di Era Digital. https://www.bi.go.id/id/publikasi/kajian/Documents/Blueprint-Sistem-Pembayaran-Indonesia-2025.pdf

Bank Indonesia. (2019b). QRIS. Retrieved 12 Oktober from ttps://www.bi.go.id/QRIS/default.aspx

Bank Indonesia. (2021). Analisis Perkembangan Uang Beredar (M2) - Desember 2021. https://www.bi.go.id/id/publikasi/laporan/Pages/M2-Desember-2021.aspx

Beck, T., Demirguc-Kunt, A., & Honohan, P. (2009). Access to Financial Services: Measurement, Impact, and Policies. The World Bank Research Observer, 24(1), 119-145. https://doi.org/10.1093/wbro/lkn008

Biro Pusat Statistik. (2022). Statistik Telekomunikasi Indonesia 2022. https://www.bps.go.id/id/publication/2023/08/31/131385d0253c6aae7c7a59fa/statistik-telekomunikasi-indonesia-2022.html

Biro Pusat Statistik. (2024). Produk Domestik Bruto Indonesia Triwulanan 2020-2024. https://www.bps.go.id/id/publication/2024/10/09/7290b829d2eaa972e4968d19/produk-domestik-bruto-indonesia-triwulanan-2020-2024.html

Brandl, B., Hengsbach, D., & Moreno, G. (2024). Small money, large profits: how the cashless revolution aggravates social inequality. Socio-Economic Review. https://doi.org/10.1093/ser/mwad071

BRI. (2024). Apa Itu Open Banking: Panduan Perbankan Terbuka Terlengkap. https://developers.bri.co.id/id/news/apa-itu-open-banking-panduan-perbankan-terbuka-terlengkap

Cronin, B. (2016). Multiple and mixed methods research for economics. In T. L. F. S. Lee & B. Cronin (Eds.), Handbook of Research Methods and Applications in Heterodox Economics (pp. 286-300). Edward Elgar Publishing Limited. https://doi.org/10.4337/9781782548461.00022

Cullen, F. T., & Wilcox, P. (2010). Merton, Robert K.: Social Structure and Anomie. In Encyclopedia of Criminological Theory. https://doi.org/10.4135/9781412959193.n171

Demirgüç-Kunt, A., & Singer, D. (2017). Financial inclusion and inclusive growth: A review of recent empirical evidence. World bank policy research working paper(8040). https://doi.org/10.1596/1813-9450-8205

Dow, S. (2002). Economic Methodology: An Inquiry.

Fahad, S., & Bulut, M. (2024). Central bank digital currencies: a comprehensive systematic literature review on worldwide research emergence and methods used. American Journal of Business, 39(3), 137-157. https://doi.org/10.1108/ajb-12-2023-0210

Hariyanto Putro, B. P., & Soponyono, E. (2015). Kebijakan Hukum Pidana dalam Penanggulangan Tindak Pidana Pemalsuan Uang. Jurnal Law Reform, 11(2). https://doi.org/10.14710/lr.v11i2.15763

Hidayah, N., Waspada, I., & Sari, M. (2023). The Dynamics of Cashless Society: A Systematic Review. Advanced International Journal of Business, Entrepreneurship and SMEs, 5(15), 07-16. https://doi.org/10.35631/AIJBES.515002

Hoover, K. B. (2023). General Strain Theory. In Encyclopedia of Domestic Violence (pp. 1-10). https://doi.org/10.1007/978-3-030-85493-5_664-1

Horan, C., & Saiedian, H. (2021). Cyber Crime Investigation: Landscape, Challenges, and Future Research Directions. Journal of Cybersecurity and Privacy, 1(4), 580-596. https://doi.org/10.3390/jcp1040029

International Monetary Fund. (2023). Central Bank Digital Currency: Virtual Handbook. https://www.imf.org/en/Topics/fintech/central-bank-digital-currency/virtual-handbook

Levitas, R. (2023). There's no such thing as 'the economy', stupid: using Utopia to imagine society 'after money'. Review of Evolutionary Political Economy, 4(3), 467-479. https://doi.org/10.1007/s43253-023-00096-9

Mann, L., & Roche, S. (2022). Recent Trends in Banknote Counterfeiting. https://www.rba.gov.au/publications/bulletin/2022/jun/pdf/recent-trends-in-banknote-counterfeiting.pdf

Nosál, J. (2023). Crime in the Digital Age: A New Frontier. In The Implications of Emerging Technologies in the Euro-Atlantic Space (pp. 177-193). https://doi.org/10.1007/978-3-031-24673-9_11

Pickbourn, L., & Ramnarain, S. (2016). Separate or symbiotic? Quantitative and qualitative methods in (heterodox) economics research. In T. L. F. S. Lee & B. Cronin (Eds.), Handbook of Research Methods and Applications in Heterodox Economics (pp. 73-91). Edward Elgar Publishing Limited. https://books.google.co.id/books?id=XA3xCwAAQBAJ https://doi.org/10.4337/9781782548461.00011

Prasetyo, P. E., & Putri, C. A. (2020). Money Supply, Counterfeit Money, and Economic Growth Effect to E-Money Transaction. Efficient: Indonesian Journal of Development Economics, 3(1), 634-649. https://doi.org/10.15294/efficient.v3i1.35951

Purva Khera, Stephanie Y Ng, Sumiko Ogawa, & Sahay, R. (2021). Digital Financial Inclusion in Emerging and Developing Economies: A New Index. In: International Monetari Fund,.

Putrevu, J., & Mertzanis, C. (2023). The adoption of digital payments in emerging economies: challenges and policy responses. Digital Policy, Regulation and Governance, 26(5), 476-500. https://doi.org/10.1108/dprg-06-2023-0077

Reinke, R. (2023). Power structures in economics and society: Some remarks on the future of non-mainstream economics. Journal of Philosophical Economics, Volume XVI(Symposium: Is there a future...). https://doi.org/10.46298/jpe.11130

Saha, S. K., & Qin, J. (2022). Financial inclusion and poverty alleviation: an empirical examination. Economic Change and Restructuring, 56(1), 409-440. https://doi.org/10.1007/s10644-022-09428-x

Taillard, M. (2018). Counterfeiting. In Economics and Modern Warfare (pp. 153-157). https://doi.org/10.1007/978-3-319-92693-3_17

Tay, L.-Y., Tai, H.-T., & Tan, G.-S. (2022). Digital financial inclusion: A gateway to sustainable development. Heliyon, 8(6). https://doi.org/10.1016/j.heliyon.2022.e09766

Thomas, K. J., Baumer, E. P., & Loughran, T. A. (2022). Structural predictors of choice: Testing a multilevel rational choice theory of crime. Criminology, 60(4), 606-636. https://doi.org/10.1111/1745-9125.12314

Wahi, R. (2024). Digital Payments and Economic Growth in Developing Countries - Investigate how the adoption of digital payment systems is driving economic growth and financial inclusion in developing nations. International Journal of Novel Reserach and Development, 9(7).

Watters, P. A. (2023). Cybercrime and Cybersecurity. https://doi.org/10.1201/9781003406730