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Protection of E-Money in Indonesia: A Viewpoint from Security Aspect

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Abstract: *This study was designed to provide the concept of legal protection for electronic money (e-money) holders from the misuse of e-money in the context of Indonesian constitutional reform. A normative research approach was employed in this study. The results of this study indicated a vacuum of legal protection for e-money holders in Indonesia. E-money abuse problems in Indonesia were regulated by Bank Indonesia (BI) under the regulation number 20/6/PBI/2018, in particular for e-money holders. This finding unveiled that legal protection controls against e-money holders were lacking in Indonesia. This was due to differences in e-money activities or processes from banking transactions. This study has served as a catalyst for legal protection of Indonesian e-money holders to avoid losses due to misuse of electronic money.*

Keywords: *legal protection, misuse of e-money, e-money, transaction*

I. INTRODUCTION

National development is carried out based on economic democracy with the principle of togetherness, efficiency, justice, sustainability, environmental insight, independence, and by maintaining a balance of progress and unity of the national economy (den Elzen et al., 2019). In essence, national development is a development carried out in all fields which are carried out in a sustainable and sustainable manner. Economic development efforts that are being carried out by developing countries in the world are generally oriented towards efforts to improve and elevate the level of living of the people in these countries so that they can live like the people in developed countries (Chimhowu, Hulme, & Munro, 2019).

National development through the economic development of this era is inseparable from the development of technology and trade that has led to a change and become the needs of the community will be fulfilled the needs of life quickly and practically (Crespo Cuaresma & Heger, 2019). With the development of increasingly advanced technology, community needs can also be realized by conducting transactions quickly and practically through electronic means of payment or better known as e-money (Zhang, Zhang, Liu, Renzis, & Schmiedel, 2019). The fast and changing world is currently characterized by technology-supported transactions. Human and human interaction decreases and interactions with technology increase. Self-service technology (SST) is a technology technique that enables customers to carry out independent

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service transactions from service provider employees. These include, internet banking, ATMs, hotel check out, tele and mobile banking, online services, prepaid cards, and many others (Meauter et al, 2000). At present, the service sector is more than just producing world economic activities. Both people and technology when combined into a service system that adaptively calculates and adapts to the value of moving system knowledge (Spehere et al, 2007)

In an effort to support national economic development in the digital era, Bank Indonesia has issued amendments to e-money regulations specifically in Bank Indonesia Regulation (PBI) No. 20/6/PBI/2018 concerning e-money, which replaces Bank Indonesia Regulation (PBI) No. 11/12/ PBI/2009 about e-money. This new regulation aims to (1) restructure the e-money industry in accordance with the applicable payment system principles to increase contributions to growth, inclusion and economic stability, (2) strengthen aspects of consumer protection by establishing a fee structure and floating fund management. mechanisms to be more transparent and accountable, while prioritizing liquidity and insolvency risk mitigation and (3) increasing E-Money security and expanding E-Money revenues through policies to improve transaction security standards and mandatory domestic transaction processing to create interconnected ecosystems in line with the National Payment Gateway (NPG) (Bank Indonesia, 2018).

Increasingly sophisticated technological developments are not inseparable from the system weaknesses of the technology. In addition, there is legal uncertainty in the development of technology; in this case, one of them is transaction with e-money payment methods. In terms of the non-cash payment system, Bank Indonesia has an interest that the non-cash payment system used by the community can be run safely, efficiently and reliably.

The amount of e-money at the end of 2016 grew 49.22% to 51.20 million compared to the end of the previous year of 34.31 million. Registered electronic publishers have 20 companies consisting of nine banks and 11 telecommunications companies. On the one hand, the widespread use of electronic money can reduce the use of cash (Nasution, 2018). Therefore, the development of the use of non-cash payment instruments has received serious attention from Bank Indonesia, given that the development of non-cash payments is expected to reduce the burden of using cash and further improve economic efficiency in the community. Although from an alternative technology, the use of non-cash payment instruments is feasible to replace cash. However, psychological aspects, security, comfort, and public trust in cash are likely to remain obstacles that still need to be faced in the development of non-cash payment instruments.

In its development, the non-cash payment system was strongly influenced by advances in technological development and changes in people's lifestyle (Nasution et al., 2018). With the support of increasingly advanced technology, the community of users and service providers of non-cash payment systems are constantly looking for alternative safer and more efficient non-cash payment instruments (Yeboah-Asiamah, Narteh, & Mahmoud, 2018).

The non-cash payment instrument in the form of e-money refers to the smart card. Basically, the security and comfort aspects are very important factors in conducting transactions (Nasution, 2018). In addition, changes in the pattern of life of the community accompanied by an increase in the efficiency of life patterns require the availability of telecommunication facilities and transportation that is so fast that obstacle to distance and time can be reduced. The development of telecommunications and transportation also has a

large influence on financial transactions, especially related to the way parties make payments (Wang, Yu, & Jin, 2019).

This non-cash payment instrument, especially the types of payment using electronic cards or payment instruments, were initially known as credit cards which later developed types of payment instruments using other cards, namely debit cards (debit cards) and deposit cards (stored value card). The emergence of these cards with various types has given the user the choice to choose the method of payment that suits their individual needs. However, it raises important regulatory issues related to customer protection related to e-money (Lotz & Vasselin, 2019).

Unlike other payment instruments that use a minimum amount of transactions and the additional cost is quite expensive, e-money non-cash payment instruments can be used to make payment transactions in small amounts with relatively small transaction costs (Gürkaynak & Yilmaz, 2015). By means of e-money payment, it is possible for non-bank institutions to become the issuers of payment instruments and provide opportunities to the wider community to be able to use e-money facilities without having to become customers first (Haryadi, Harisno, Kusumawardhana, & Warnars, 2018).

Electronic payments are payments that utilize information and communication technologies such as Integrated Circuit (IC), cryptography and communication networks. The development of electronic payments with the latest innovations is in the form of e-money whose characteristics are different from other electronic payments, because the use of e-money does not require an authorization process and is not directly related to the customer's account at the bank, because e-money is a stored value product monetary value has been recorded in the prepaid payment instrument (Giri, Apriliani, & Sofia, 2019).

Electronic money (or digital money) is used in internet transactions by electronic means. Generally, these transactions involve the use of computer networks (such as the internet and digital price storage systems). Whereas according to the provisions of Bank Indonesia, Regulation Number 20/6/PBI/2018 concerning Electronic Money article 1 paragraph 3, Electronic Money is a payment instrument that fulfills the following elements: a) issued on the basis of money deposited before the issuer; b) the value of money is stored electronically on a media server or chip; and c) the value of electronic money managed by the issuer is not a deposit as referred to in the Act governing banking (Riskinanto, Kelana, & Hilmawan, 2017).

The initial purpose of using e-money is for practicality, only once the transaction is successfully executed, besides that it does not need to bring cash if you want to buy something. But basically e-money does not aim to completely replace the cash function. On the other hand, not all traders can accept payment transactions via e-money. In other words, there is no e-money card that can meet all needs (Carta, Fenu, Reforgiato Recupero, & Saia, 2019) .

Unlike credit or debit cards, e-money cards do not require data confirmation or authorization of a Personal Identification Number (PIN) when it is used as a payment instrument and are not directly related to the customer's account at the bank (Solomon, 1999). This is because e-money is a product of stored value where a number of values of monetary value have been recorded in the payment instrument used (Wonglimpiyarat, 2016). This allows the card to be transferable and can be used by anyone while the balance is still sufficient, of course it will be dangerous if the e-money card is lost, then the remaining balance can be used by others (Fujiki & Tanaka, 2014). While the top up value of an e-money card is not included in the

inventory of the bank that issued the card. So if there is theft or e-money is misused by another person in this case not an e-money holder, then its existence cannot be tracked and the card cannot be blocked (Singh & Best, 2019) .

Albeit the practicality offered by e-money transactions, it is necessary to have legal protection for e-money users based on the advancement of science and technology as a driver for productivity and efficiency of goods and services.

II. METHOD

This study employed a normative approach in examining current regulations on the application of cards and e-money practices in Indonesia. This study aims to provide the concept of legal protection for e-money holders from e-money abuse in Indonesia. This study assesses the current rules and regulations regarding the abuse and protection of e-money and thus finds a circular hole in connection with legal protection for holders of electronic money. In particular, this study deployed Bank Indonesia Regulation Number 20/6/PBI/2018, in particular for e-money.

III. DISCUSSION

E-money abuse

Electronic money was originally better known as a stored deposit card, which is a card that serves to store a fund with the amount deposited. Its function is nearly the same as a debit card, but a stored valued card does not store the identity of the user or card holder (Guo, Dong, & Wang, 2019).

Bank Indonesia Regulation Number 20/6/PBI/2018 concerning e-money also mentions related to identity recording in article 3 paragraph (2) letter b, namely: recording user identity data in the form of: 1) unregistered, i.e. e-money whose user identity data is not registered and not registered with the issuer; and 2) registered, namely e-money whose user identity data is registered and registered with the issuer (Zanin, Papo, Romance, Criado, & Moral, 2016).

Identification is one of the differences between e-money and other payment instruments in the form of credit or debit cards. The use of e-money will provide advantages or advantages compared to using cash or other non-cash payments, the use of e-money is more convenient than cash, especially for small-value transactions, because the transaction does not need to have a certain amount of money and must save change, besides it can reduce errors in calculating change (Wonglimpiyarat, 2016).

Unlike other payment cards, transactions using e-money are easier because using e-money does not require a signature or PIN authorization process. The use of e-money also has several weaknesses, including the following: a) it is not a deposit as referred to in the Banking Act, so the value of electronic money is not guaranteed by the Deposit Insurance Corporation; b) does not require data confirmation or authorization process; c) not directly related to the customer's account in the tub, because the card holder does not have to be a customer at the issuing bank; d) transferable and balance can be used by anyone if the card is lost; e) does not include bank inventory, so it cannot be tracked if the card is lost; f) if the lost card cannot be

blocked and the value of lost electronic money will not be replaced; g) can be used as a suggestion for money laundry (Fujiki & Tanaka, 2014).

Misuse of cards by other parties can occur with theft by other parties or negligence from the card owner itself. After the card is on the other hand, misuse can of course be used in a variety of ways, one of which is to shop directly to the merchant, because when the card is lost the card can be used without authorization by the merchant and cannot be tracked (Halpin & Moore, 2009).

Payment cards such as e-money are vulnerable to misuse through theft, because they do not include the owner's identity (anonymous digital cash) and their functions that can be done without the help of selve serve (Kim, Kim, & Kim, 2019).

The disadvantage of this system is that the required data ("money") is stored on the user's computer, so if the user formats the hard drive, he will lose his electronic money. In addition, to improve the implementation of this system, it is necessary to include more financial institutions that will receive "ecash" (Knapp, 1999).

Therefore, the level of security in e-money is an important aspect considering the losses that can be incurred for both the issuer and the cardholder. Crime attempts to penetrate e-money security systems can occur at the level of users, traders or publishers. Security risks in the use of electronic money consist of several factors, namely: 1) theft; 2) duplication of devices; 3) changes / duplication of data / software; 4) message changes; 5) transaction rejection (rejection); 6) damage (Nasution, 2018).

With a number of possible crimes through e-money, there is a need for security measures through the supervision system, data maintenance systems both on individual equipment and at the publisher's database center as well as the ability to track transactions. In the case of e-money, it can be used to conduct transactions directly between e-money holders, the level of security used needs to be considered given the existence of the timetable since the transaction was carried out until recording at the database center, so it would be more difficult to detect misuse (Liébana-Cabanillas, Molinillo, & Ruiz-Montañez, 2019).

In order to reduce the risk or loss due to the misuse of e-money, the organizer of e-money must be regulated in realizing a strong and transparent legal framework and is able to guarantee the protection of e-money card holders (Rochman, Ashton, & Wiharjo, 2017).

The e-money issuer must apply the principle of customer protection in carrying out its activities by conveying information in writing to the cardholder. The obligation of providers of electronic payment systems to electronic card holders is based on the fact that the organizer and card holder are not equal and that the interests of e-money card holders are very vulnerable to the purpose of the organizer who has the knowledge and expertise not possessed by the cardholder (Pieris & Widiary, 2007).

Regulation of protection against e-money holders

In Bank Indonesia Circular Number 11/11/DASP of 2009 concerning e-money, further regulated the implementation of operational risk management implementation of providers of electronic money orders must increase the security of electronic money technology to reduce the level of crime and misuse of electronic money while increasing public confidence in electronic money as a means of payment.

Increasing the security of e-money is a legal safeguard against e-money users as consumers, as consumers based on the Consumer Protection Act have several rights, namely: a. the right to comfort, security and safety in consuming goods or services; b. the right to choose goods or services and obtain said goods or services in accordance with the exchange rate and conditions and guarantees promised; c. the right to information that is correct, clear and honest regarding the conditions and guarantees of goods or services; d. the right to be heard opinions and complaints about the goods services used; e. the right to obtain advocacy, protection, and efforts to properly resolve consumer protection disputes; f. the right to get consumer guidance and education; g. the right to be treated or served correctly and honestly and not discriminatory; h. the right to get compensation, compensation or reimbursement, if the goods or services received are not in accordance with the agreement or not as appropriate; i. rights stipulated in other statutory provisions. However, the consumer protection law is not enough to provide protection for e-money holders in the event of abuse. On the other hand e-money is only regulated through a Bank Indonesia Regulation and does not contain legal protection against e-money holders (Tao et al., 2019).

Enforcement and application of the law, especially in Indonesia, often face obstacles related to the development of society which is faster than the development of legislation, so that developments in society become the starting point of the existence of a regulation. When associated with legislation, especially regarding the protection of e-money card holders in conducting transactions, that the law should be able to respond to changes that occur, meaning that regulations can accommodate problems arising from the development of times through the improvement of legislation, especially in legal protection for e-money holders (Halpin & Moore, 2009).

In relation to e-money, the establishment of legislation must also apply to business actors or publishers; there must be a match or consistency between the regulations promulgated and the implementation. These rules must be promulgated and formulated clearly and can be understood by the card holder as the object of the arrangement (Downie, 2017).

Electronic transaction system is a computer system that includes hardware and software from a computer, including telecommunications networks or electronic communication systems. The existence of this information system is the application of information technology based on telecommunications networks and electronic media which functions to design, process, analyze, display and transmit or disseminate electronic information. Transaction activities through electronic media systems are virtual activities that have a very real impact even though the evidence tools are electronic (Suparni, 2009).

Legal problems in electronic systems will occur if the system used to carry out electronic transactions fails and results in losses. If this happens, then who should be responsible for the failure of the transaction (Fadoju et al., 2018). An understanding of the form of responsibility for carrying out electronic payments using electronic money starts from the legal relationship that occurs between the issuer and the cardholder in a contract or agreement between the issuer and e-money card holder. That is, that for every e-money card purchase, the card is registered in the name of a legitimate card holder and has a registration number, so that when there is a loss or other type of crime, the card issuer can block it, as a form of protection to e-money card holders (Singareddy, Chandrasekaran, Annamalai, & Ranjan, 2018).

Article 3 of the Electronic Information and Transaction Law is governed by principles and objectives as a means to create good use of information technology and electronic transactions that must be carried out, namely based on the principles of legal certainty, benefits, prudence, good will, and freedom of choice technology or technology neutral (Nasonov, 2017).

Referring to the principle of legal certainty in Article 3, in this case the e-money card holder has not obtained legal certainty if the e-money card is misused by another person. Whereas Bank Indonesia Regulations related to e-money only regulate the e-money system and do not regulate the protection of e-money holders if e-money is misused by other people (Tao et al., 2019).

There is a need for regulations that can accommodate and provide legal certainty if e-money is misused by others to cause a loss to legitimate e-money holders. In addition to legal protection, on the other hand electronic providers, especially e-money payments can increase the security of e-money cards themselves so that they can minimize the losses that will be experienced by e-money card holders (Choi, 2019).

IV. Conclusion

E-money cards are different from other payment cards, which is in the use of e-money does not require an authorization process from the owner of e-money, because the purpose of e-money issuance is for fast and efficient transactions. But in the use of e-money there are weaknesses caused by the absence of authorization from e-money, this is very vulnerable to being misused by others. In addition, the use of e-money also does not save the identity of the e-money owner himself. So if there is loss or theft of e-money cards, the card cannot be blocked. In addition, the law also does not accommodate the protection of e-money holders in the event of abuse. Therefore, there needs to be protection from the law to provide legal certainty and increase the security of e-money cards themselves and also require the registration or authorization of e-money card holders, so that when an e-money card is lost it can be blocked by the card issuer and the effort is a form of protection for the card holder and minimizes the loss due to the loss of the e-money card.

REFERENCES

1. Becirovic, S. (2014). Challenges Facing E-Money. University Journal of Information Technology and Economics. Volume1 No 1.
2. Carta, S., Fenu, G., Reforgiato Recupero, D., & Saia, R. (2019). Fraud detection for E-commerce transactions by employing a prudential Multiple Consensus model. *Journal of Information Security and Applications*, *46*, 13–22. https://doi.org/10.1016/j.jisa.2019.02.007
3. Chimhowu, A. O., Hulme, D., & Munro, L. T. (2019). The 'New' national development planning and global development goals: Processes and partnerships. *World Development*, *120*, 76–89. https://doi.org/10.1016/j.worlddev.2019.03.013
4. Choi, H. S. (2019). Money, debit card, gross-settlement risk, and central banking. *The North American Journal of Economics and Finance*, *50*, 100993. https://doi.org/10.1016/j.najef.2019.100993

5. Crespo Cuaresma, J., & Heger, M. (2019). Deforestation and economic development: Evidence from national borders. *Land Use Policy*, *84*, e347–e353. https://doi.org/10.1016/j.landusepol.2018.12.039
6. den Elzen, M., Kuramochi, T., Höhne, N., Cantzler, J., Esmeijer, K., Fekete, H., … Vandyck, T. (2019). Are the G20 economies making enough progress to meet their NDC targets? *Energy Policy*, *126*, 238–250. https://doi.org/10.1016/j.enpol.2018.11.027
7. Downie, C. (2017). Business actors, political resistance, and strategies for policymakers. *Energy Policy*, *108*, 583–592. https://doi.org/10.1016/j.enpol.2017.06.018
8. Fadoju, O. S., Evbuomwan, G., Olokoyo, F., Oyedele, O., Ogunwale, O., & Kolawole, O. O. (2018). Dataset for electronic payment performance in Nigerian banking system: A trend analysis from 2012 to 2017. *Data in Brief*, *20*, 85–89. https://doi.org/10.1016/j.dib.2018.07.046
9. Fujiki, H., & Tanaka, M. (2014). Currency demand, new technology, and the adoption of electronic money: Micro evidence from Japan. *Economics Letters*, *125*(1), 5–8. https://doi.org/10.1016/j.econlet.2014.07.032
10. Giri, R. R. W., Apriliani, D., & Sofia, A. (2019). Behavioral Intention Analysis on E-Money Services in Indonesia: Using the modified UTAUT model. *Proceedings of the 1st International Conference on Economics, Business, Entrepreneurship, and Finance (ICEBEF 2018)*. Presented at the Proceedings of the 1st International Conference on Economics, Business, Entrepreneurship, and Finance (ICEBEF 2018), Bandung, Indonesia. https://doi.org/10.2991/icebef-18.2019.17
11. Guo, D., Dong, J., & Wang, K. (2019). Graph structure and statistical properties of Ethereum transaction relationships. *Information Sciences*, *492*, 58–71. https://doi.org/10.1016/j.ins.2019.04.013
12. Gürkaynak, G., & Yilmaz, I. (2015). Regulating payment services and electronic money: A comparative regulatory approach with a specific focus on Turkish legislation. *Computer Law & Security Review*, *31*(3), 401–411. https://doi.org/10.1016/j.clsr.2015.03.009
13. Halpin, R., & Moore, R. (2009). Developments in electronic money regulation – the Electronic Money Directive: A better deal for e-money issuers? *Computer Law & Security Review*, *25*(6), 563–568. https://doi.org/10.1016/j.clsr.2009.09.010
14. Haryadi, D., Harisno, Kusumawardhana, V. H., & Warnars, H. L. H. S. (2018). The Implementation of E-money in Mobile Phone: A Case Study at PT Bank KEB Hana. *2018 Indonesian Association for Pattern Recognition International Conference (INAPR)*, 202–206. https://doi.org/10.1109/INAPR.2018.8627055
15. Kim, M., Kim, S., & Kim, J. (2019). Can mobile and biometric payments replace cards in the Korean offline payments market? Consumer preference analysis for payment systems using a discrete choice model. *Telematics and Informatics*, *38*, 46–58. https://doi.org/10.1016/j.tele.2019.02.003
16. Liébana-Cabanillas, F., Molinillo, S., & Ruiz-Montañez, M. (2019). To use or not to use, that is the question: Analysis of the determining factors for using NFC mobile payment systems in public transportation. *Technological Forecasting and Social Change*, *139*, 266–276. https://doi.org/10.1016/j.techfore.2018.11.012
17. Lotz, S., & Vasselin, F. (2019). A NEW MONETARIST MODEL OF FIAT AND E-MONEY: FIAT AND E-MONEY. *Economic Inquiry*, *57*(1), 498–514. https://doi.org/10.1111/ecin.12714

18. Nasonov, A. (2017). What's the future for biometrics in global payments? *Biometric Technology Today*, *2017*(8), 5–7. https://doi.org/10.1016/S0969-4765(17)30182-0
19. Nasution, M. I. P., Suendri, Samsudin, Zufria, I., Triase, Fakhriza, M., & Ikhwan, A. (2018). *Biometrics for e-money transaction*. 020301. https://doi.org/10.1063/1.5066942
20. Riskinanto, A., Kelana, B., & Hilmawan, D. R. (2017). The Moderation Effect of Age on Adopting E-Payment Technology. *Procedia Computer Science*, *124*, 536–543. https://doi.org/10.1016/j.procs.2017.12.187
21. Rochman, F. F., Ashton, W. S., & Wiharjo, M. G. M. (2017). E-waste, money and power: Mapping electronic waste flows in Yogyakarta, Indonesia. *Environmental Development*, *24*, 1–8. https://doi.org/10.1016/j.envdev.2017.02.002
22. Singareddy, R. R. R., Chandrasekaran, S., Annamalai, B., & Ranjan, P. (2018). Corporate governance data of 6 Asian economies (2010–2017). *Data in Brief*, *20*, 53–56. https://doi.org/10.1016/j.dib.2018.07.048
23. Singh, K., & Best, P. (2019). Anti-Money Laundering: Using data visualization to identify suspicious activity. *International Journal of Accounting Information Systems*, S146708951730043X. https://doi.org/10.1016/j.accinf.2019.06.001
24. Solomon, E. (1999). What should regulators do about consolidation and electronic money? *Journal of Banking & Finance*, *23*(2–4), 645–653. https://doi.org/10.1016/S0378-4266(98)00100-9
25. Tao, H., Bhuiyan, M. Z. A., Rahman, M. A., Wang, G., Wang, T., Ahmed, Md. M., & Li, J. (2019). Economic perspective analysis of protecting big data security and privacy. *Future Generation Computer Systems*, *98*, 660–671. https://doi.org/10.1016/j.future.2019.03.042
26. Wang, Y., Yu, Z., & Jin, M. (2019). E-commerce supply chains under capital constraints. *Electronic Commerce Research and Applications*, *35*, 100851. https://doi.org/10.1016/j.elerap.2019.100851
27. Wonglimpiyarat, J. (2016). S-curve trajectories of electronic money innovations. *The Journal of High Technology Management Research*, *27*(1), 1–9. https://doi.org/10.1016/j.hitech.2016.04.001
28. Yeboah-Asiamah, E., Narteh, B., & Mahmoud, M. A. (2018). Preventing Customer Churn in the Mobile Telecommunication Industry: Is Mobile Money Usage the Missing Link? *Journal of African Business*, *19*(2), 174–194. https://doi.org/10.1080/15228916.2018.1440462
29. Zanin, M., Papo, D., Romance, M., Criado, R., & Moral, S. (2016). The topology of card transaction money flows. *Physica A: Statistical Mechanics and Its Applications*, *462*, 134–140. https://doi.org/10.1016/j.physa.2016.06.091
30. Zhang, Y., Zhang, G., Liu, L., Renzis, T. D., & Schmiedel, H. (2019). Retail Payments and the Real Economy. *Journal of Financial Stability*, 100690. https://doi.org/10.1016/j.jfs.2019.100690