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Legal Analysis of the Seizure and Forfeiture of Cryptocurrency Assets in Criminal Offenses

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A B S T R A C T

The increasing adoption of cryptocurrency as a form of digital asset has introduced significant challenges to Indonesia's criminal justice system, particularly regarding the seizure and forfeiture of assets associated with criminal activities, including money laundering. The intangible, decentralized, pseudonymous, and transnational nature of cryptocurrencies complicates the ability of law enforcement authorities to identify, trace, secure, and recover assets linked to unlawful activities. This study examines the necessity of establishing a comprehensive legal framework governing the seizure and forfeiture of cryptocurrency assets in criminal proceedings and explores possible directions for future regulatory development in Indonesia. Employing a normative juridical method, the research integrates statutory, conceptual, historical, comparative, and case-based approaches. The findings reveal that Indonesia's existing legal framework has yet to establish sufficiently specific and comprehensive procedures for the seizure and forfeiture of cryptocurrency assets. Although the Criminal Code and Criminal Procedure Code provide general legal grounds for confiscating assets associated with criminal offenses, their application to cryptocurrencies presents substantial legal and technical challenges. These challenges include determining the legal classification of digital assets, obtaining control over private keys, tracing blockchain transactions, and managing assets transferred through foreign digital wallets. Future regulations should explicitly address the legal recognition of cryptocurrency assets, procedures for their seizure and forfeiture, secure digital asset management, blockchain-based tracing mechanisms, and international cooperation in cross-border asset recovery.

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INTRODUCTION

Since the emergence of Bitcoin in 2009, cryptocurrency has developed into an alternative digital transaction system that utilizes blockchain technology to facilitate secure and decentralized exchanges (Nakamoto, 2008). Its technological features offer several advantages, particularly in terms of transactional efficiency and reduced dependence on centralized governmental control. Nevertheless, the expansion of cryptocurrency has also generated considerable legal and regulatory concerns, especially regarding the potential misuse of digital assets for illicit financial activities. One of the most pressing challenges involves the prevention and prosecution of money laundering offenses, as cryptocurrency transactions may introduce additional complexities into financial monitoring and criminal law enforcement (Nuryanto et al., 2021).

Although cryptocurrency is not legally recognized as a means of payment in Indonesia, it has been permitted to function as a tradable investment commodity within the country's financial and commodity markets. Law Number 7 of 2011 concerning Currency establishes the Indonesian rupiah as the only legally recognized currency for domestic payment transactions, while cryptocurrency has been classified as a digital asset subject to the supervision of the Commodity Futures Trading Regulatory Agency (Bappebti) (Bank Indonesia, 2018). However, the increasing involvement of cryptocurrency in criminal activities, particularly money laundering, has raised concerns regarding the effectiveness of existing regulatory mechanisms. Indonesia therefore distinguishes between the permitted use of cryptocurrency as an investment instrument and its prohibited use as a means of payment. This legal distinction is reflected in Article 33 paragraph (1), in conjunction with Article 21 paragraph (1) and Article 1 points 1 and 2 of Law Number 7 of 2011 concerning Currency, as well as Article 2 of Bank Indonesia Regulation Number 17/3/PBI/2015 concerning the Mandatory Use of Rupiah within Indonesian Territory. These provisions establish the legal obligation to use rupiah in transactions intended for payment purpose (Al-Khatib & Diab, 2023).

Bank Indonesia reaffirmed its position on the legal status of cryptocurrency through Press Release Number 20/5/DKom, issued on January 12, 2018, which clarified that digital currencies, including Bitcoin, are not recognized as legitimate instruments of payment in Indonesia. Consequently, their use for payment transactions is prohibited under the applicable monetary regulations (Bank Indonesia, 2023). Nevertheless, cryptocurrencies may be classified as digital commodities and traded as investment assets under the supervision of the Commodity Futures Trading Regulatory Agency (Bappebti) (Government of Indonesia, 2023). Despite their legitimate investment functions, cryptocurrencies have increasingly attracted attention as instruments potentially used to conceal proceeds generated through criminal activities, particularly money laundering. In 2021, the Indonesian Attorney General's Office investigated allegations involving three suspects in the PT Asabri corruption case, namely Jimmy Sutopo, Heru Hidayat, and Benny Tjokrosaputro, who were suspected of concealing illicit proceeds through Bitcoin and other cryptocurrency transactions (Attorney General's Office, 2021)

(Tim Redaksi, 2023). Investigators further reported that the suspects had converted Bitcoin holdings into Indonesian rupiah following their designation as suspects. A comparable concern emerged in the 2022 Binomo investment fraud case involving Indra Kesuma, in which the Directorate of Special Economic Crimes of the Indonesian National Police's Criminal Investigation Agency identified cryptocurrency assets valued at approximately IDR 58 billion that were suspected of being associated with money laundering activities (Polri, 2022). Cryptocurrency transactions were also mentioned in the investigation involving Rafael Alun, who was named a suspect in an alleged money laundering case that included indications of Bitcoin purchases (KPK, 2022). The case was further associated with allegations of gratification amounting to IDR 1.34 billion during his employment at the Ministry of Finance (Ministry of Finance, 2022). These cases illustrate the different mechanisms through which digital assets may be incorporated into money laundering activities. Conceptually, money laundering generally involves three interconnected stages: placement, layering, and integration. Placement refers to the introduction of proceeds obtained from criminal activities into the financial system. Layering involves transferring or restructuring those assets through successive transactions to obscure their unlawful origins. Integration represents the subsequent use or reinvestment of these assets after they have been presented as legitimate funds, including their utilization in lawful business activities or the financing of further criminal operations (Undang-Undang Nomor 20 Tahun 2025 tentang Kitab Undang-Undang Hukum Acara Pidana; Republik Indonesia, Undang-Undang Nomor 8 Tahun 2010 tentang Pencegahan dan Pemberantasan Tindak Pidana Pencucian Uang; Kejaksaan Agung Republik Indonesia, 2025).

Cryptocurrency holdings associated with criminal activities may constitute proceeds of crime or assets directly connected to unlawful conduct, thereby providing grounds for their seizure as evidence during criminal investigations. When a legally binding court judgment orders their forfeiture, such assets may subsequently become property confiscated by the state. In Indonesia, the general legal framework governing asset seizure is established under Article 1 point 16 and Article 39 paragraph (1) of Law Number 8 of 1981 concerning the Criminal Procedure Code, relevant provisions of the Criminal Code, and Article 71 paragraph (1) of Law Number 8 of 2010 concerning the Prevention and Eradication of Money Laundering (Law No. 8/1981, 2010). However, these provisions have not been accompanied by sufficiently detailed regulations specifically addressing the seizure and forfeiture of cryptocurrency assets involved in money laundering offenses. This regulatory limitation requires further examination, particularly considering the potential exploitation of cryptocurrencies for concealing criminal proceeds. Law enforcement authorities also encounter substantial difficulties in accessing information, tracing digital transactions, and establishing effective control over cryptocurrency holdings. The intangible characteristics of these assets, combined with their considerable price volatility, introduce additional legal and

operational challenges that distinguish cryptocurrency seizure from conventional asset confiscation procedures (Pratama, 2023).

The originality of this study lies in its specific examination of the legal challenges surrounding the seizure and forfeiture of cryptocurrency assets in money laundering cases, thereby addressing a regulatory issue that has received relatively limited attention in previous legal scholarship. A study conducted by Gita Arja Pratama at the University of Lampung in 2023 primarily investigated asset seizure and the execution of confiscation measures as instruments for recovering state financial losses, particularly those arising from corruption offenses. In contrast, the present research concentrates on the adequacy of the legal framework governing the seizure and forfeiture of cryptocurrency assets associated with money laundering. Its principal contribution is the identification of regulatory deficiencies resulting from the distinctive characteristics of cryptocurrencies, including their intangible nature, decentralized technological infrastructure, and ownership mechanisms based on cryptographic access credentials. These characteristics differ substantially from those of conventional property and consequently require specific legal considerations in criminal enforcement procedures. Accordingly, this study extends beyond the general discussion of asset seizure and forfeiture by critically examining the regulatory requirements, legal limitations, and procedural mechanisms necessary to establish effective and legally accountable measures for handling cryptocurrency assets within Indonesia's criminal justice system (Hafid, 2021).

Previous research conducted by Irwan Hafid at Universitas Islam Indonesia in 2021 examined the necessity of establishing a legal framework for non-conviction-based asset forfeiture within the Indonesian legal system. Although that study contributed to the broader discourse on asset recovery mechanisms, its analytical scope differed from the present research in terms of the legal objects and regulatory issues being investigated. While Hafid primarily emphasized the importance of implementing asset forfeiture procedures that do not necessarily depend on criminal convictions, this study specifically addresses the legal mechanisms governing the seizure and forfeiture of cryptocurrency assets associated with money laundering offenses. The present research seeks to identify and examine regulatory deficiencies concerning the legal procedures through which cryptocurrency holdings may be traced, secured, seized, and ultimately forfeited during criminal law enforcement proceedings. Accordingly, its contribution extends beyond the general principles of non-conviction-based asset forfeiture by incorporating an analysis of the distinctive technological and legal characteristics of cryptocurrencies. Particular attention is directed toward the implications of their decentralized structure, intangible nature, and digital ownership mechanisms for the effectiveness and legal validity of asset seizure and forfeiture procedures in money laundering cases.

Another relevant study was undertaken by Fathin Abdulla at Universitas Muhammadiyah Sumatera Utara in 2021, focusing on the forfeiture of assets obtained through corruption offenses by means of non-criminal legal

mechanisms. The distinction between that research and the present study concerns both the categories of assets examined and the criminal law framework underlying their confiscation. Whereas Abdulla investigated asset forfeiture as an alternative mechanism for recovering proceeds derived from corruption, this research specifically explores the legal regulation of cryptocurrency seizure and forfeiture in the context of money laundering offenses (Abdullah et al., 2003). The analysis is particularly concerned with regulatory deficiencies arising from the distinctive nature of cryptocurrency assets, which differ considerably from conventional property in terms of their identification, ownership, accessibility, and transferability. Such characteristics create complex challenges for law enforcement authorities throughout the processes of asset tracing, securing digital access, seizure, custodial management, and eventual forfeiture to the state. Consequently, this study aims to provide a more specialized legal assessment of the regulatory measures required to address these challenges. Its findings are expected to contribute to the development of a clearer and more effective legal framework capable of strengthening legal certainty and supporting the enforcement of anti-money laundering legislation in Indonesia.

LITERATURE REVIEW

Based on these considerations, this study aims to critically examine the existing normative legal framework governing the seizure and forfeiture of cryptocurrency assets, identify its regulatory limitations, and formulate recommendations for legal reform that accommodate ongoing developments in digital financial technology. The significance of this research arises from the absence of sufficiently specific and comprehensive provisions regulating cryptocurrency seizure and forfeiture in criminal proceedings. Although Indonesian criminal legislation has established general legal principles concerning the confiscation of assets associated with criminal offenses, the application of these provisions to cryptocurrencies presents distinct legal and procedural challenges. These challenges stem primarily from the intangible, decentralized, and technologically complex characteristics of digital assets, which distinguish them from conventional forms of property. Consequently, this research evaluates the extent to which existing statutory provisions provide an adequate legal foundation for cryptocurrency seizure and forfeiture while identifying the regulatory improvements necessary to ensure legal certainty, procedural accountability, and effective asset recovery within Indonesia's criminal justice system.

METHODOLOGY

This study adopts a normative legal research method, commonly referred to as normative juridical research, which emphasizes the systematic examination of legal principles, statutory provisions, judicial decisions, and doctrines developed within legal scholarship. This methodological approach focuses on analyzing the normative foundations of legal issues through the interpretation and evaluation of relevant legal instruments. According to

Soerjono Soekanto and Sri Mamudji, normative legal research primarily relies on library-based materials and secondary data as the principal sources of investigation. Accordingly, the research process involves a comprehensive review of applicable legislation, legal documents, and scholarly literature to establish a theoretical and juridical understanding of the legal problems under examination (Soekanto & Mamudji, 2006).

The research focuses on examining the construction, interpretation, and applicability of legal norms rather than collecting empirical information through field investigations. To achieve its objectives, the study employs several complementary legal approaches. The statutory approach is applied to examine legislative provisions governing the seizure and forfeiture of assets, particularly those associated with criminal offenses involving cryptocurrencies and other digital assets. The conceptual approach involves analyzing relevant legal theories and principles developed in academic literature, including asset recovery theory, legal system theory, legal reform theory, and progressive legal thought. Furthermore, where applicable, the comparative approach is utilized to evaluate Indonesia's regulatory framework for asset forfeiture in relation to international legal practices and corresponding legislative arrangements adopted in other jurisdictions.

This research is conducted within the framework of normative juridical analysis, which places legal norms, legislative instruments, judicial decisions, and scholarly interpretations at the center of the investigation. As explained by Soerjono Soekanto and Sri Mamudji, normative legal research is fundamentally based on examining documentary sources and secondary legal materials to understand the principles and regulations relevant to a particular legal issue. Consequently, the study emphasizes doctrinal examination and systematic legal interpretation rather than empirical observation or field-based data collection. The analytical framework incorporates three principal approaches: statutory, conceptual, and comparative analysis. The statutory approach investigates legislative provisions concerning the seizure and forfeiture of assets associated with criminal activities, particularly those involving cryptocurrencies. The conceptual approach explores relevant theoretical perspectives, including asset recovery, legal system theory, legal reform, and progressive law. Meanwhile, the comparative approach evaluates the Indonesian legal framework alongside international practices and regulatory models implemented in other countries to identify potential directions for legal development.

The legal materials examined in this study comprise primary and secondary legal sources collected through documentary analysis and library-based research. Peter Mahmud Marzuki defines primary legal materials as authoritative sources that possess formal legal authority, including statutory instruments, judicial decisions, and official government documents. Similarly, Soerjono Soekanto and Sri Mamudji explain that primary legal materials consist of binding legal provisions that serve as the principal normative foundation for juridical research. In accordance with these perspectives, the primary legal materials utilized in this study include the Indonesian Criminal Code (KUHP), particularly provisions concerning property forfeiture as an additional criminal

sanction; the Criminal Procedure Code (KUHAP), especially Article 1 point 16 and Articles 38–46 regulating seizure procedures; and Law Number 8 of 2010 concerning the Prevention and Eradication of Money Laundering, including its application of the follow-the-money principle. Additional legal instruments include Law Number 19 of 2016, which provides provisions relevant to criminal activities involving information technology, and Law Number 1 of 2023 concerning the Criminal Code, particularly its provisions relating to criminal sanctions and asset forfeiture. The analysis also considers regulations issued by the Commodity Futures Trading Regulatory Agency (Bappebti) concerning cryptocurrency assets as tradable commodities, together with the Draft Law on Asset Forfeiture as a legislative reference for evaluating prospective legal reforms.

Secondary legal materials refer to scholarly and documentary sources that provide explanations, interpretations, and critical assessments of primary legal provisions. Within normative legal research, these materials contribute to the development of a comprehensive understanding of applicable legal norms and their theoretical foundations (Badan Pembinaan Hukum Nasional, 2022). Soerjono Soekanto explains that secondary legal sources encompass draft legislation, previous research findings, academic publications, and the opinions of legal scholars. Peter Mahmud Marzuki further emphasizes that secondary materials assist legal researchers in systematically examining, interpreting, and evaluating primary legal instruments within their broader doctrinal and conceptual contexts. Based on these perspectives, the secondary legal materials employed in this research consist of scholarly journal articles, legal literature, academic books, and comparative legal studies relevant to the regulation, seizure, management, and forfeiture of cryptocurrency assets in criminal proceedings (Marzuki, 2008).

RESULTS AND DISCUSSION

The Urgency of Regulating the Seizure and Forfeiture of Cryptocurrency Assets in Criminal Offenses

The findings of this research indicate that the need to establish specific regulations governing the seizure and forfeiture of cryptocurrency assets does not originate from a complete absence of legal provisions concerning property associated with criminal activities in Indonesia. The existing legal system already provides general authority for asset seizure, the handling of evidentiary materials, and the recovery of criminal proceeds through the Indonesian Criminal Procedure Code (KUHAP) and Law Number 8 of 2010 concerning the Prevention and Eradication of Money Laundering. However, the principal regulatory challenge lies in the limited capacity of these general provisions to accommodate the distinctive technological characteristics of cryptocurrency assets. This distinction is particularly important because the existence of statutory authority to seize property does not necessarily guarantee procedural clarity regarding its implementation. Cryptocurrencies differ from conventional assets because they exist in intangible form, rely on cryptographic security, operate through decentralized networks, and can be transferred across national

jurisdictions using private keys or other digital authentication mechanisms. Consequently, the research identifies a significant discrepancy between the general legal authorization of asset seizure and the availability of operational procedures capable of ensuring its effective implementation. This regulatory deficiency encompasses several critical matters, including asset identification, transaction tracing, access to cryptocurrency wallets, private-key control, asset freezing, secure custody, value preservation, forfeiture procedures, conversion mechanisms, and the eventual restitution or disposal of confiscated assets.

Under the Indonesian Criminal Procedure Code (KUHAP), property connected to a criminal offense may be subjected to seizure as part of criminal proceedings. This procedural measure principally aims to preserve objects possessing evidentiary relevance during investigation, prosecution, and judicial examination, thereby preventing their disappearance, unauthorized transfer, concealment, destruction, or misuse in ways that could obstruct the administration of justice. The Money Laundering Law further reinforces the significance of asset tracking and recovery by recognizing the economic benefits generated through criminal conduct as an essential target of law enforcement. Within this legal framework, cryptocurrency assets may conceptually be treated as property associated with criminal activities, provided that their relationship to the alleged offense can be established through legally admissible evidence. Accordingly, the absence of cryptocurrency-specific provisions in legislation originally designed for conventional property does not automatically exclude digital assets from the scope of lawful seizure. The more substantive legal issue concerns whether the existing general authorization can be implemented through procedures that are both legally accountable and technologically effective. This requires examining how seizure mechanisms should operate when ownership, accessibility, and control over cryptocurrency assets depend on digital credentials and blockchain-based systems rather than physical possession (Hamzah et al., 2010).

The fundamental differences between physical property and cryptocurrency become particularly relevant when determining the legal object of seizure. Unlike tangible assets that can be physically collected and placed under official custody, cryptocurrency exists as digitally recorded value maintained within a blockchain network. Its practical accessibility and control are generally determined by possession of the necessary authentication instruments, including private keys, recovery seed phrases, digital wallet credentials, hardware wallets, software-based applications, cryptocurrency exchange accounts, or comparable technological mechanisms. Consequently, identifying and securing a cryptocurrency asset requires legal and technical considerations that extend beyond the conventional understanding of physical property seizure.

The confiscation of electronic equipment, such as computers, smartphones, or hardware wallets, does not necessarily establish effective control over the cryptocurrency assets associated with those devices. Conversely, authorized access to the relevant private key may enable control over cryptocurrency holdings without requiring the physical seizure of any

particular object. This distinction demonstrates that conventional asset seizure procedures cannot automatically be applied to cryptocurrencies without considering their technological characteristics. Effective enforcement therefore requires an approach that recognizes the difference between obtaining physical possession of a device and securing actual control over the digital assets accessible through that device.

The regulatory challenges associated with cryptocurrency seizure can be further examined through the Theory of Legal Certainty. Legal certainty extends beyond the mere existence of broadly formulated statutory provisions that permit state intervention in assets connected to criminal activities. Within criminal procedural law, legal certainty also requires clearly established conditions under which public authorities may interfere with property rights, predictable enforcement procedures, defined limitations on governmental powers, and identifiable legal consequences arising from such intervention. Friedrich von Hayek emphasized the predictability of legal rules as an essential component of the rule of law, whereas Gustav Radbruch situated legal certainty within the interconnected objectives of justice, utility, and legal predictability. Jan M. Otto similarly highlighted the practical requirements of legal certainty, particularly the accessibility and clarity of legal provisions and their consistent application by competent institutions (Ali, 2002). Collectively, these theoretical perspectives demonstrate that legal certainty must be understood as encompassing both normative legitimacy and the operational effectiveness of legal implementation (Hayek, 1944).

The operational dimension of legal certainty becomes particularly relevant when examining the procedures required to seize cryptocurrency assets. A statutory provision authorizing the seizure of property associated with criminal offenses may establish formal legal authority, but such authorization remains insufficient when the law does not specify how that authority should be exercised in relation to digital assets. Several procedural questions consequently require explicit regulation, including whether investigators are legally permitted to obtain private keys, how access to cryptocurrency wallets should be recorded, and under what circumstances authorized officials may transfer seized assets into wallets controlled by government institutions. Additional concerns involve establishing appropriate security measures for digital custody, documenting the quantity and classification of seized cryptocurrency, and determining the management procedures applicable throughout pending judicial proceedings. Without clear provisions addressing these matters, the legal framework may recognize the power to seize cryptocurrency while failing to provide adequate guidance for its practical implementation. The central issue therefore concerns not merely the legal possibility of seizure but also the specific actions that constitute a valid seizure and the procedural requirements necessary to ensure its legality and technical effectiveness.

The relationship between legal authorization and practical implementation can also be interpreted through Lon L. Fuller's theory of legality. Fuller conceptualized the internal morality of law through several

fundamental requirements, including generality, promulgation, clarity, consistency, prospectivity, and congruence between officially established rules and their implementation. Within the context of cryptocurrency seizure, the principle of clarity requires that investigators, prosecutors, judges, defendants, victims, and affected third parties be able to understand the legal consequences associated with each enforcement measure. Meanwhile, the principle of congruence emphasizes the necessity of ensuring that the actual conduct of law enforcement authorities corresponds with the procedures formally prescribed by legislation. Applying these principles reveals that regulations limited to recognizing governmental authority to seize cryptocurrency would remain inadequate without detailed provisions governing access credentials, asset transfers, secure custody, procedural documentation, and subsequent asset disposition. A comprehensive regulatory framework must therefore establish consistency between the normative requirements of criminal procedural law and the operational practices employed in handling cryptocurrency assets (Fuller, 1964).

Sudikno Mertokusumo's interpretation of legal certainty further emphasizes the importance of predetermined legal provisions in ensuring predictable and accountable law enforcement (Mertokusumo, 2005). Criminal justice procedures, particularly those involving interference with individual property rights, should not depend excessively on discretionary institutional interpretations developed on a case-by-case basis. The greater the potential impact of governmental intervention on protected rights, the stronger the necessity for precise and consistently applicable procedural safeguards. This requirement becomes especially significant in cryptocurrency-related investigations because errors in digital asset management may produce irreversible consequences. Unauthorized disclosure of private keys, improper asset transfers, compromised digital wallets, or inadequate security arrangements may permanently deprive legitimate parties of access to their cryptocurrency holdings. Unlike conventional physical property, cryptocurrency assets cannot necessarily be recovered by retrieving the electronic devices associated with them once effective control over the relevant digital credentials has been lost. Accordingly, the technological characteristics of cryptocurrency strengthen the need for legal certainty throughout seizure, custody, and asset recovery proceedings.

From the perspective of Legal Certainty Theory, the challenges confronting Indonesia's cryptocurrency seizure framework can be classified into three interconnected dimensions. The first involves normative certainty, which concerns the existence and adequacy of statutory provisions authorizing governmental intervention in assets associated with criminal offenses (Kelsen, 1967). The second concerns procedural certainty, referring to the clarity and predictability of the legal procedures that enforcement authorities must observe when exercising their statutory powers. The third dimension relates to technical-operational certainty, which addresses the practical mechanisms required to translate legal authorization into effective control over cryptocurrency assets. Although existing Indonesian legislation provides a

fundamental legal basis for governmental intervention, its procedural and technical provisions have not been formulated with sufficient specificity to accommodate the distinctive characteristics of digital assets. These limitations demonstrate the necessity of developing a regulatory framework specifically designed to govern cryptocurrency seizure and forfeiture while ensuring consistency between legal authorization, procedural safeguards, and technological implementation.

The necessity of establishing more comprehensive cryptocurrency regulations becomes increasingly evident when examined through Asset Recovery Theory. Asset recovery should not be understood solely as the final confiscation of property following a criminal conviction, but rather as an integrated and continuous process encompassing asset identification, transaction tracing, freezing, seizure, custodial management, forfeiture, and, where appropriate, restitution or the return of recovered property. This theoretical framework is founded upon the principle that criminal activities should not generate financial advantages for their perpetrators. The effectiveness of criminal law enforcement would remain incomplete if offenders were subjected to criminal sanctions while retaining the economic benefits obtained through unlawful conduct (Stessens & Levi, 2000). This principle is particularly relevant to money laundering offenses because such activities are specifically intended to conceal or disguise the origins, ownership, location, movement, and control of assets derived from criminal activities. Consequently, effective asset recovery mechanisms represent an essential component of the broader effort to prevent offenders from benefiting economically from their crimes.

The distinctive characteristics of cryptocurrency create additional complexities for asset recovery because digital assets can be transferred almost instantaneously without requiring any physical movement of property. Blockchain-based transactions may involve parties located in different jurisdictions, while the underlying distributed ledger continues to record transfers independently of their geographical locations. Cryptocurrency holdings may also be divided among numerous wallet addresses or transferred through successive transactions, creating increasingly complex patterns that complicate asset identification and tracking. These technological capabilities demonstrate the limitations of asset recovery mechanisms that rely primarily on conventional methods of locating and physically securing property. Effective recovery of cryptocurrency assets therefore requires an investigative and regulatory framework capable of identifying digital ownership relationships, examining blockchain transaction records, and tracing the movement of economic value across interconnected digital networks.

These considerations highlight the relevance of the Follow-the-Money Approach, which, when applied to cryptocurrency-related offenses, can be further developed into what this study identifies as the Follow-the-Blockchain Approach. Both approaches share the fundamental objective of tracing the origins, movement, and ultimate control of assets derived from criminal activities (Pusat Pelaporan Analisis Transaksi Keuangan, 2024). In

cryptocurrency investigations, this process involves identifying the initial sources of unlawful proceeds, examining the digital addresses through which assets have been transferred, reconstructing transaction sequences, and determining the parties exercising control over the relevant holdings. The distinguishing feature of blockchain-based tracing lies in the availability of transaction records maintained within distributed digital networks, which may provide persistent or relatively permanent information that can be examined using specialized analytical methods. Consequently, blockchain technology should not be regarded exclusively as an instrument facilitating the concealment or transfer of criminal proceeds. Its transaction records may also constitute valuable investigative information and potential evidence for identifying and reconstructing the movement of assets associated with unlawful conduct (Financial Action Task Force, 2023).

Nevertheless, the application of the Follow-the-Blockchain Approach does not imply that every cryptocurrency transaction automatically reveals the identity of the individuals or legal entities involved. Although blockchain records may contain wallet addresses, transaction values, timestamps, and identifiable relationships between transfers, such information does not necessarily establish the actual identity of the persons controlling the corresponding digital assets. Determining ownership and identifying responsible parties frequently require investigators to integrate blockchain-based findings with additional evidentiary sources, including cryptocurrency exchange records, electronic devices, communication histories, financial documents, and other forms of digital evidence. Consequently, effective blockchain investigation depends on the combined availability of technological expertise and legally authorized investigative procedures. Analytical findings derived from blockchain networks may possess considerable technical relevance, but their evidentiary significance within criminal proceedings depends on whether the information has been obtained, documented, and presented in accordance with applicable legal requirements.

The relationship between cryptocurrency tracing and the admissibility of digital evidence can be further examined through Digital Forensics Theory and established principles of criminal evidence. Digital forensic investigation extends beyond the identification or extraction of electronic information by emphasizing the preservation of data integrity, verification of evidentiary origins, systematic documentation of investigative procedures, and the reliability of information presented before judicial authorities (Brenner, 2012). In cases involving cryptocurrency assets, forensic examination may encompass the identification of digital wallet addresses, reconstruction of blockchain transaction histories, analysis of transfer patterns, examination of electronic devices used to access cryptocurrency holdings, and determination of the relationship between identified digital assets and suspected criminal activities. These procedures are essential for establishing an evidentiary connection between cryptocurrency transactions and the offenses under investigation. However, the legal reliability of digitally obtained information depends substantially on the integrity of its collection, preservation, authentication, and

documentation throughout the investigative process. Accordingly, forensic procedures must be conducted in a manner that safeguards evidentiary authenticity and enables the resulting findings to be evaluated within criminal proceedings (U.S. Department of Justice, 2009).

The effectiveness of digital forensic investigations is closely associated with the institutional capacity required to implement asset recovery measures. Although state authorities may possess extensive legal powers to investigate criminal offenses and seize property connected to unlawful activities, these powers cannot be exercised effectively without sufficient technical competence to identify, access, and secure cryptocurrency holdings. Investigators and prosecutors must therefore possess the specialized knowledge necessary to understand blockchain transactions, manage digital evidence, and establish reliable control over seized assets. This demonstrates that the challenges associated with cryptocurrency seizure cannot be adequately resolved through legislative reform alone. An effective regulatory system must also be supported by institutional preparedness, standardized operational procedures, appropriate technological infrastructure, and personnel equipped with relevant digital forensic capabilities. The integration of these elements is essential to ensure that statutory authority can be translated into lawful, secure, and technically effective asset recovery practices.

The transnational characteristics of cryptocurrency introduce additional legal challenges that further strengthen the urgency of regulatory development. Cryptocurrency assets may be maintained through digital exchange platforms operating outside Indonesian territory, even when the individuals suspected of criminal conduct reside within Indonesia, and the underlying offenses involve several different jurisdictions. Such circumstances complicate the exercise of national legal authority because blockchain networks do not necessarily correspond to identifiable territorial boundaries in the conventional legal sense. Although domestic investigators may successfully identify cryptocurrency wallet addresses through blockchain analysis, obtaining effective control over the corresponding assets may require cooperation from foreign exchanges, custodial service providers, or individuals located in other countries. Consequently, the application of domestic seizure authority may be insufficient without complementary international legal mechanisms. These mechanisms include mutual legal assistance arrangements, cross-border cooperation between competent authorities, international information exchange, and procedures for recognizing or implementing enforcement measures originating from foreign jurisdictions.

From the perspective of Asset Recovery Theory, international cooperation constitutes a fundamental requirement for effective recovery when criminal proceeds are transferred across national borders. Its role should therefore not be regarded merely as an additional administrative mechanism but as an integral component of the legal and institutional arrangements necessary to recover transnational assets. The ability of domestic authorities to identify or trace cryptocurrency holdings does not automatically guarantee their recovery, particularly when the relevant assets are controlled by

cryptocurrency exchanges or custodial institutions operating under foreign jurisdictions. Without appropriate international cooperation, investigative findings may establish the movement and apparent location of criminal proceeds while remaining insufficient to secure possession or control of those assets. This distinction demonstrates the need to differentiate between asset tracking and asset recovery. Tracing primarily involves identifying the origins, transactions, and locations associated with suspected criminal proceeds, whereas recovery requires legally authorized measures and institutional capabilities to secure, obtain, and ultimately dispose of those assets in accordance with applicable law (United Nations, 2003).

Another critical consideration in regulating cryptocurrency seizure concerns the preservation of asset value throughout criminal proceedings. Unlike many conventional forms of property, cryptocurrencies are subject to substantial market fluctuations that may significantly affect their economic value within relatively short periods. Once cryptocurrency assets have been lawfully seized, the responsible state authorities assume obligations relating to their security, preservation, management, and accountability. Considerable increases or decreases in market value during judicial proceedings may subsequently raise complex legal questions concerning the allocation of financial risks, appropriate valuation methods, and the circumstances under which seized cryptocurrency may be converted into conventional or fiat currency. Additional considerations involve identifying the competent authority responsible for authorizing such conversions and determining the appropriate timing of asset management decisions. These challenges cannot be adequately addressed through conventional procedures developed primarily for physical evidentiary objects, as cryptocurrency constitutes a digitally controlled asset whose market value may fluctuate continuously. Accordingly, cryptocurrency-specific regulations are necessary to establish transparent and accountable mechanisms for valuation, custody, conversion, and preservation of assets during criminal proceedings.

Addressing these regulatory challenges requires a clear conceptual distinction between seizure and forfeiture within criminal law. Seizure constitutes a procedural measure through which competent authorities temporarily secure assets or evidentiary objects during the investigation and adjudication of criminal offenses. Forfeiture, by contrast, concerns the ultimate legal determination of property ownership or disposition pursuant to the applicable legal framework. Failure to distinguish these mechanisms may undermine the protection of property rights by treating temporary governmental control as equivalent to the permanent deprivation or transfer of ownership. Consequently, future regulations should separately establish the legal requirements governing asset freezing, temporary custody, management, forfeiture, restitution, and conversion. This distinction can be further examined through Property Rights Theory, which conceptualizes ownership as encompassing legally protected interests relating to the possession, control, use, enjoyment, transfer, and disposition of property. In cryptocurrency transactions, however, technical control over digital assets does not necessarily

correspond to lawful ownership. An individual possessing a private key may exercise practical control over cryptocurrency without having a legitimate legal entitlement to the underlying assets. Conversely, the lawful owner may temporarily lack direct access to cryptocurrency maintained by another individual or through a custodial exchange platform. These circumstances demonstrate the necessity of distinguishing technical control, beneficial ownership, legal ownership, and lawful possession. Such distinctions are essential to ensuring that cryptocurrency seizure and forfeiture procedures effectively recover criminal proceeds while simultaneously safeguarding the legitimate property rights of individuals and innocent third parties (Dworkin, 1977).

The urgency of establishing specific regulations for cryptocurrency seizure and forfeiture can also be evaluated through the Theory of Criminal Law Policy. Marc Ancel conceptualized criminal policy as the rational organization of societal responses to criminal behavior, while Sudarto emphasized its function as a systematic effort to achieve social protection through criminal law and related enforcement measures. These theoretical perspectives demonstrate that criminal law must remain responsive to emerging forms of criminality while preserving the fundamental principles of legality, justice, and legal accountability (Arief, 2017). The development of cryptocurrency technology has transformed the mechanisms through which criminal proceeds may be transferred, concealed, stored, and converted into other forms of economic value. Consequently, effective criminal policy must extend beyond defining prohibited conduct and establishing criminal sanctions. It must also incorporate appropriate procedural and institutional arrangements capable of identifying, securing, and recovering the economic benefits generated through criminal activities. Regulatory adaptation is therefore necessary to ensure that technological developments do not diminish the capacity of criminal law to prevent unlawful enrichment and enforce legal accountability (Ancel, 2011).

Within this theoretical framework, the regulation of cryptocurrency seizure and forfeiture contributes to several fundamental objectives of criminal law policy. First, effective asset recovery mechanisms may strengthen general deterrence by reducing the potential financial benefits associated with criminal activities. Second, the confiscation of unlawfully obtained cryptocurrency can support specific prevention by restricting offenders' continued access to assets generated through their offenses. Third, such measures may contribute to incapacitation by preventing criminal proceeds from being utilized to finance subsequent unlawful activities. Beyond these preventive functions, the establishment of effective cryptocurrency forfeiture mechanisms can reinforce public confidence in the criminal justice system by demonstrating that technological sophistication does not provide immunity from legal accountability. The conversion of criminal proceeds into digital assets should not enable perpetrators to retain economic advantages derived from unlawful conduct (Atmasasmita, 2010). Accordingly, cryptocurrency-specific enforcement regulations represent an important component of criminal policy

aimed at ensuring accountability, strengthening deterrence, and preventing the continued exploitation of illicit financial resources.

Based on the preceding analysis, the first research question can be addressed by emphasizing that the principal urgency of regulating cryptocurrency seizure and forfeiture lies in overcoming the disparity between existing legal authority and its effective implementation within criminal proceedings. Although Indonesia's current legislative framework provides a fundamental normative basis for seizing assets associated with criminal offenses, its provisions have not comprehensively accommodated the technological, procedural, institutional, and transnational complexities inherent in cryptocurrency assets. The central regulatory challenge therefore does not necessarily require the complete replacement of existing criminal law provisions. Instead, it demands the development of more specific and operationally applicable regulations capable of adapting established legal principles to the distinctive characteristics of blockchain-based assets. Such regulatory development should establish clear procedures for asset identification, seizure, digital custody, management, forfeiture, and cross-border recovery while maintaining appropriate safeguards against unauthorized interference with property rights. Ultimately, a comprehensive cryptocurrency-specific framework is necessary to strengthen legal certainty, improve the effectiveness of asset recovery, preserve the integrity and admissibility of digital evidence, protect legitimate ownership interests, and ensure that criminal enforcement measures remain consistent with due process and the fundamental principles of justice.

The Future Formulation of Regulations Governing the Seizure and Forfeiture of Cryptocurrency Assets in Indonesia

The findings concerning the urgency of cryptocurrency regulation provide an essential foundation for formulating an appropriate legal framework in Indonesia. Future regulatory development should extend beyond merely incorporating the term cryptocurrency into existing statutory provisions on asset seizure. Such a limited amendment would be insufficient to address the underlying legal deficiencies, which involve not only conceptual recognition but also procedural requirements and technological implementation. A comprehensive framework must therefore establish integrated provisions governing the entire asset recovery process. These provisions should encompass the identification and tracking of cryptocurrency holdings, asset freezing and seizure, secure custody, management, forfeiture, conversion, restitution, and the eventual return of assets in accordance with applicable legal requirements. Accordingly, regulatory reform should provide a coherent legal mechanism capable of accommodating the distinctive characteristics of digital assets throughout criminal proceedings.

The development of a comprehensive regulatory framework can be examined through the Theory of Legal Reform. Roscoe Pound's conception of law as an instrument of social engineering emphasizes the capacity of legal institutions to respond to transformations occurring within society. In the Indonesian context, Mochtar Kusumaatmadja advanced a related perspective by conceptualizing law as an instrument of national development that

maintains a close relationship with social transformation (Kusumaatmadja, 2006). These theoretical approaches are particularly relevant to cryptocurrency because its emergence represents more than technological innovation; it also signifies a fundamental transformation in the representation, transfer, storage, and control of economic value. When technological advancement and changing social practices develop more rapidly than the legal system's capacity to respond, regulatory reform becomes necessary to maintain the relevance, adaptability, and effectiveness of existing legal institutions (Pound, 1922).

Nevertheless, meaningful legal reform cannot be achieved solely through the introduction of additional statutory provisions. An effective reform process must consider the interaction between legal norms and the social, technological, and institutional conditions under which those norms are implemented. In cryptocurrency-related cases, this requires substantive legal provisions that accurately reflect the technological characteristics of digital assets, competent institutions capable of implementing the relevant regulations, and a legal culture that encourages compliance with established procedures. This perspective is consistent with Lawrence M. Friedman's Theory of the Legal System, which identifies legal substance, legal structure, and legal culture as mutually interconnected elements determining the effectiveness of a legal system (Friedman & Friedman, 1975). Accordingly, the formulation of cryptocurrency regulations must integrate these three dimensions to ensure that legislative development is supported by appropriate institutional arrangements and effective enforcement practices.

From the perspective of legal substance, Indonesian legislation requires more precise definitions concerning the legal classification of cryptocurrency assets and the objects that may lawfully be subjected to seizure during criminal proceedings. Regulatory provisions should clearly distinguish the cryptocurrency itself from the physical devices, digital applications, and authentication instruments through which the asset can be accessed or controlled. Such regulations must also address the legal significance of wallet addresses, private keys, recovery seed phrases, custodial accounts, cryptocurrency exchange accounts, and other mechanisms determining effective control over digital holdings. Establishing these distinctions is essential because the confiscation of an electronic device does not necessarily result in the seizure of the cryptocurrency associated with that device. Without sufficiently detailed legal definitions, investigators may encounter uncertainty regarding whether their actions constitute the seizure of a digital asset or merely the confiscation of an instrument used to access it.

The substantive framework should further establish explicit procedures for securing cryptocurrency assets following lawful seizure. Where legally authorized and technically feasible, seized cryptocurrency may be transferred to a designated digital wallet managed by a competent government institution or an officially authorized custodian. However, such transfers must comply with clearly defined documentation requirements and rigorous chain-of-custody procedures to maintain accountability and preserve evidentiary integrity. The regulatory framework should specify the officials authorized to

initiate and execute cryptocurrency transfers, the institutional authority responsible for granting approval, and the procedures required to document each transaction. Additional provisions must address the secure storage of private keys, access restrictions, verification mechanisms, and safeguards designed to prevent unauthorized transactions, asset misappropriation, or interference with seized cryptocurrency holdings.

The Russian Federation provides a relevant comparative illustration of how criminal procedural legislation may accommodate the distinctive characteristics of digital currency. Article 115 paragraph (7.1) of the Criminal Procedure Code of the Russian Federation specifically addresses digital currency and recognizes circumstances in which such assets are stored through physical media or accessed using information contained within electronic devices. The provision also establishes procedures allowing digital currency to be transferred to an identified digital address when such action is technically feasible. Furthermore, it requires relevant information concerning the type and quantity of digital currency, together with associated wallet addresses, to be recorded in official seizure documentation (Russian Federation, 2026). The significance of this regulatory model lies not merely in acknowledging digital currency as an object of criminal procedural measures but also in establishing a connection between legal seizure authority and the technological mechanisms necessary to secure effective control over the corresponding assets.

The Russian regulatory approach illustrates an important principle that may inform the future development of Indonesian law: provisions governing digital asset seizure must clearly identify both the legally recognized object of seizure and the technological procedures required to establish effective control over that object. A statutory framework that recognizes cryptocurrency as seizable property but fails to regulate the mechanisms necessary to secure digital access may remain ineffective in practice. Conversely, technological procedures that allow authorities to control cryptocurrency without adequate legal authorization and procedural safeguards may create significant risks of arbitrary interference with property rights. Accordingly, effective regulation must establish a balanced relationship between statutory legality and technological feasibility. This integration is necessary to ensure that cryptocurrency seizure procedures achieve their enforcement objectives while remaining consistent with due process and the protection of legitimate ownership interests.

The Russian regulatory model can also be evaluated through the Theory of Legal Certainty, particularly regarding the importance of clear identification and documentation requirements. Precise records concerning the classification, quantity, and digital addresses of seized cryptocurrency, together with the procedures employed to secure the assets, contribute to greater predictability for law enforcement authorities and affected parties. Comprehensive documentation also strengthens institutional accountability by providing verifiable information regarding the specific assets seized, their recorded amounts, the mechanisms used to obtain control, and the authorities responsible for their subsequent custody. These safeguards are especially

significant in cryptocurrency investigations because blockchain transactions may be irreversible or difficult to reverse once completed. Consequently, detailed procedural requirements represent an essential means of ensuring legal certainty, preventing unauthorized asset transfers, and maintaining accountability throughout the seizure process.

The United Kingdom offers another relevant comparative framework through the Economic Crime and Corporate Transparency Act 2023, read in conjunction with the Proceeds of Crime Act 2002. These legislative instruments establish distinct legal mechanisms applicable to cryptoassets, including seizure procedures, Crypto Wallet Freezing Orders, forfeiture measures, and the conversion of digital assets into cash (United Kingdom, 2023). An important characteristic of this regulatory approach is its recognition that different forms of legal intervention serve different purposes within criminal proceedings. By distinguishing the legal functions of seizure, freezing, forfeiture, and conversion, the United Kingdom provides a regulatory model that accommodates the specific operational requirements involved in managing and recovering cryptocurrency assets.

The distinction between asset seizure and freezing constitutes a particularly important feature of this regulatory framework. Seizure generally involves obtaining or securing control over property or instruments connected to an asset, whereas a cryptocurrency wallet freezing mechanism restricts the transfer, withdrawal, or disposal of digital holdings maintained within a designated wallet. Forfeiture subsequently determines the ultimate legal disposition of the property, while conversion establishes procedures for transforming lawfully secured cryptocurrency into monetary funds. Each mechanism therefore performs a specific function within the broader asset recovery process. This differentiation provides a valuable conceptual reference for Indonesian regulatory development because it prevents various forms of governmental intervention from being treated as legally equivalent measures despite their different objectives and consequences.

From the standpoint of Asset Recovery Theory, the United Kingdom's regulatory framework demonstrates that effective recovery of criminal proceeds requires a coordinated sequence of legal measures rather than reliance on seizure as an isolated enforcement action. The recovery process begins with identifying assets and tracing their movement, followed by preventive measures intended to restrict unauthorized transfers or the dissipation of property. These procedures ultimately lead to forfeiture or another form of legally authorized asset disposition. Such an approach is consistent with the Follow-the-Money principle and its application to blockchain-based transactions, where digital records may facilitate the identification and tracking of illicit financial flows. Consequently, a legal framework that regulates only the initial seizure of cryptocurrency remains incomplete if it does not establish clear procedures for managing and preserving the assets before a court determines their final legal status.

The United Kingdom's approach also highlights the importance of preserving the economic value of cryptocurrency assets throughout criminal

proceedings. Cryptocurrency should not be regarded exclusively as an object possessing evidentiary significance, as it may simultaneously represent property with substantial financial value that fluctuates in response to market conditions. A future Indonesian regulatory framework should therefore establish clear requirements governing the circumstances under which seized cryptocurrency may be converted into fiat currency. These provisions must identify the competent authorities responsible for authorizing or executing conversions, determine appropriate valuation methods, regulate associated transaction costs, and establish safeguards for the proceeds generated through such transactions. Any conversion mechanism must also remain subject to judicial supervision or other legally prescribed oversight procedures. These protections are necessary because decisions concerning asset conversion may directly affect the financial interests and legal rights of owners, victims, defendants, and other parties possessing legitimate claims to the cryptocurrency.

Nevertheless, comparative legal analysis should not be interpreted as justification for directly transferring foreign regulatory models into the Indonesian legal system without appropriate contextual evaluation. The experiences of Russia and the United Kingdom provide valuable functional insights, but their institutional arrangements cannot automatically be replicated within Indonesia's distinct constitutional and legal framework. Indonesia possesses its own criminal justice structure, legal traditions, distribution of institutional authority, and procedural safeguards that must be considered when evaluating foreign regulatory practices. Consequently, the suitability of comparative mechanisms should be assessed according to their consistency with domestic principles of legality, due process, judicial supervision, property rights protection, and governmental accountability. The primary function of comparative law is therefore to identify possible solutions to shared regulatory challenges while allowing each jurisdiction to develop mechanisms appropriate to its own legal and institutional characteristics.

This perspective is consistent with the Progressive Legal Theory developed by Satjipto Rahardjo, which emphasizes that law should serve human interests and remain responsive to changing social conditions (Rahardjo, 2009). The rapid development of cryptocurrency illustrates how technological innovation may advance considerably faster than the legislative processes responsible for regulating its consequences. Under such circumstances, excessively rigid interpretations of conventional legal concepts may produce a discrepancy between the formal existence of legal provisions and their practical capacity to resolve emerging legal problems. Progressive legal reasoning therefore supports the adaptation and development of legal mechanisms capable of addressing the distinctive characteristics of digital assets. Within cryptocurrency-related criminal proceedings, this perspective provides a theoretical foundation for regulatory innovation that responds to technological transformation while maintaining the fundamental objectives of legal protection and justice.

However, the application of Progressive Legal Theory must not be interpreted as permitting the abandonment of statutory requirements or established principles of criminal law. The principle of legality remains a fundamental limitation on governmental authority, particularly where enforcement measures involve restrictions on individual rights or interference with private property. Progressive legal interpretation must therefore operate within constitutional boundaries and remain consistent with due process, legal certainty, and the protection of legitimate ownership interests. Its purpose is not to authorize enforcement authorities to create discretionary procedures whenever technological developments generate new legal challenges. Rather, progressive legal reasoning should encourage the development of legally accountable mechanisms that accommodate technological realities through appropriate regulatory reform. This distinction is particularly important in cryptocurrency investigations because unrestricted governmental access to private keys, digital wallets, or related authentication information may create substantial risks of arbitrary intervention and unlawful deprivation of property.

The Theory of Criminal Law Policy further reinforces the necessity of establishing a comprehensive regulatory framework for cryptocurrency seizure and forfeiture. Criminal policy should not focus exclusively on imposing punishment after criminal offenses have occurred but must also incorporate measures designed to reduce the opportunities and financial incentives associated with unlawful conduct. When proceeds of crime can be converted into cryptocurrency and subsequently transferred beyond the effective reach of domestic enforcement authorities, the economic consequences of criminal activities become increasingly difficult to address. Consequently, clearly formulated procedures for tracing, securing, seizing, and forfeiting cryptocurrency holdings constitute an essential component of criminal law policy. Such mechanisms support both preventive objectives, by reducing opportunities to retain illicit financial benefits, and repressive objectives, by enabling authorities to deprive offenders of assets obtained through criminal conduct.

The future formulation of Indonesian cryptocurrency regulations should therefore establish a systematic and interconnected sequence of legal mechanisms. First, legislation must provide a clear definition and legal classification of cryptocurrency assets for criminal procedural purposes. Second, it should determine the legal conditions under which cryptocurrency holdings may become objects of seizure. Third, specific provisions must govern the seizure of electronic devices, digital wallets, access credentials, and other instruments necessary to secure cryptocurrency assets. Fourth, the law should establish authorized procedures for obtaining effective control over digital holdings, including the management of private keys and authentication information. Fifth, appropriate freezing mechanisms must be introduced for cryptocurrency maintained through exchange platforms or custodial service providers. Sixth, detailed custody arrangements and chain-of-custody requirements should ensure the security, traceability, and accountability of seized assets. Seventh, legislation must clearly distinguish seizure from

forfeiture and determine the respective legal consequences of these procedures. Eighth, mechanisms for cryptocurrency conversion or liquidation should be established where necessary to preserve asset value. Ninth, the regulatory framework must provide procedures for returning property to individuals or entities possessing legitimate legal entitlements. Tenth, judicial supervision and institutional oversight should be incorporated throughout the entire process to ensure lawful enforcement and effective protection of property rights.

The Theory of the Legal System further demonstrates that the successful implementation of cryptocurrency regulations requires sufficient institutional capacity to support the application of substantive legal provisions. Legislative reform alone cannot guarantee effective enforcement without an appropriate institutional structure comprising investigators, prosecutors, judges, digital forensic specialists, asset management personnel, and other competent authorities. Specialized units or designated officials may therefore be necessary to conduct blockchain investigations and manage seized cryptocurrency assets securely. Furthermore, standardized operating procedures should be developed to ensure consistency in wallet identification, blockchain transaction tracing, seizure documentation, private-key protection, authorization of digital asset transfers, custodial arrangements, asset valuation, and institutional reporting. These measures are essential to ensuring that legal provisions are supported by the technical expertise and administrative mechanisms necessary for their practical implementation.

Legal culture represents another essential dimension in developing an effective regulatory system for cryptocurrency seizure and forfeiture. Law enforcement personnel must recognize that cryptocurrency is not merely a technological instrument but also an asset possessing legal significance, evidentiary relevance, and economic value. Similarly, individuals whose property interests may be affected by enforcement measures must have sufficient access to information concerning their procedural rights and available legal remedies. A regulatory framework incorporating advanced technological mechanisms may nevertheless generate legal uncertainty if its provisions remain difficult for legal practitioners, enforcement authorities, or the general public to understand and implement. Consequently, regulatory reform should be accompanied by comprehensive legal education, institutional training, and professional capacity development to strengthen understanding, procedural compliance, and accountability in cryptocurrency-related criminal proceedings.

The proposed regulatory framework must also establish adequate safeguards for the protection of third-party property rights. Cryptocurrency assets may be maintained through exchange platforms or digital wallets controlled by individuals or institutions other than those responsible for the criminal activities from which the assets allegedly originated. Under such circumstances, innocent owners, beneficiaries, victims, and custodial service providers may possess legitimate legal interests in the cryptocurrency subject to enforcement measures. Accordingly, future legislation should provide accessible procedures through which affected parties can submit, substantiate, and challenge competing claims concerning ownership or other protected

interests. These safeguards are necessary to ensure that asset recovery measures do not automatically result in the deprivation of property belonging to individuals who are not responsible for the underlying criminal offenses. Effective recovery procedures must therefore be accompanied by appropriate evidentiary requirements, procedural protections, and mechanisms for the judicial examination of legitimate third-party claims.

Judicial supervision constitutes a fundamental safeguard when governmental authorities exercise effective control over cryptocurrency assets during criminal investigations and proceedings. The legal framework should clearly identify the enforcement measures requiring prior judicial authorization and distinguish them from urgent investigative actions that may be undertaken immediately but remain subject to subsequent judicial review. In addition, affected individuals must be provided with appropriate legal mechanisms for challenging seizure decisions, cryptocurrency freezing orders, or other measures interfering with their property interests. Establishing these procedural safeguards would strengthen the relationship between asset recovery objectives and the fundamental principles of due process. Effective cryptocurrency enforcement does not depend on granting unlimited discretionary authority to governmental institutions. Rather, its legitimacy and practical effectiveness require clearly defined enforcement powers accompanied by explicit limitations, judicial accountability, and adequate protection against arbitrary interference with legally protected rights.

The proposed regulatory framework should further incorporate comprehensive mechanisms for international cooperation in cryptocurrency-related investigations and asset recovery proceedings. Indonesian law enforcement authorities must possess appropriate legal channels for requesting information concerning foreign cryptocurrency exchange accounts, digital wallet ownership, transaction histories, and other records relevant to identifying and tracing criminal proceeds. Where cryptocurrency assets are maintained or controlled within foreign jurisdictions, international cooperation should facilitate the implementation of freezing, seizure, forfeiture, and asset restitution measures in accordance with applicable legal arrangements. Such cooperation remains essential despite the decentralized characteristics of blockchain technology because cryptocurrency transactions frequently involve centralized intermediaries, including exchange platforms and custodial service providers operating under different national jurisdictions. Consequently, international legal assistance and information-sharing arrangements represent indispensable components of an effective framework for cross-border cryptocurrency asset recovery.

The theoretical examination demonstrates that an effective regulatory framework for cryptocurrency seizure and forfeiture cannot be adequately developed through reliance on a single legal theory. Legal Certainty Theory emphasizes the necessity of establishing clear, predictable, accessible, and operationally applicable legal provisions. Asset Recovery Theory provides the conceptual foundation for treating seizure as part of an integrated process intended to deprive offenders of economic benefits obtained through unlawful

conduct. The Follow-the-Money and Follow-the-Blockchain approaches explain the investigative mechanisms required to identify and reconstruct the movement of digital assets associated with criminal activities. Criminal Law Policy Theory highlights the importance of adapting enforcement strategies to technological developments while preventing criminal proceeds from generating continuing financial advantages. Legal Reform Theory establishes the rationale for adjusting existing legal norms to evolving social and technological conditions. Progressive Legal Theory supports responsive regulatory development while maintaining respect for the fundamental principles of the rule of law. Finally, Legal System Theory emphasizes that substantive legal reform must be accompanied by competent institutions and a legal culture capable of supporting effective implementation.

These theoretical perspectives should therefore be understood as components of an integrated analytical framework rather than as separate or independently functioning concepts. Legal Certainty Theory establishes the normative conditions under which governmental intervention in cryptocurrency assets may be considered legitimate. Asset Recovery Theory identifies the principal objective of such intervention, namely preventing offenders from retaining proceeds obtained through criminal conduct. The Follow-the-Blockchain Approach provides the investigative basis for identifying and tracing digital asset transactions, while Criminal Law Policy Theory explains the necessity of restricting the economic benefits associated with unlawful activities. Legal Reform Theory clarifies why existing legal provisions must be adapted to technological transformation, whereas Progressive Legal Theory provides a conceptual justification for developing responsive legal solutions within established constitutional boundaries. Legal System Theory subsequently identifies the institutional capacity, organizational arrangements, and legal culture required to implement these mechanisms effectively. The integration of these theoretical perspectives provides a more comprehensive foundation for developing cryptocurrency seizure and forfeiture regulations than reliance on any single theoretical approach.

The comparative examination of the Russian Federation and the United Kingdom further indicates that the principal challenge in regulating cryptocurrency seizure and forfeiture concerns the transformation of general legal principles into specific and operationally applicable procedures. The Russian regulatory framework demonstrates the importance of expressly recognizing digital currency within criminal procedural legislation while establishing technological mechanisms for identifying and securing such assets. Meanwhile, the United Kingdom provides an example of a more differentiated approach that distinguishes seizure, freezing, forfeiture, and conversion according to their respective legal functions. These comparative experiences offer valuable insights into the development of cryptocurrency-specific enforcement mechanisms. Nevertheless, their application in Indonesia must be adjusted to the country's constitutional principles, criminal justice structure, institutional arrangements, and established legal safeguards.

Accordingly, the future development of Indonesian legislation should prioritize the establishment of an integrated regulatory framework governing cryptocurrency asset recovery. Such a framework should begin with legally authorized procedures for identifying and tracing digital assets, followed by appropriate freezing or seizure measures designed to prevent unauthorized transfers and preserve the availability of criminal proceeds. Subsequent stages should include secure custodial arrangements, transparent asset management, judicial determination of forfeiture, and legally authorized conversion or restitution procedures. Each stage must be supported by comprehensive documentation, reliable chain-of-custody mechanisms, clearly assigned institutional responsibilities, and appropriate judicial supervision. Furthermore, the regulatory framework should incorporate effective international cooperation mechanisms, recognizing that cryptocurrency transactions may extend across national jurisdictions regardless of the physical location of the individuals involved in the underlying criminal activities.

Based on the preceding analysis, the second research question can be addressed by emphasizing that the appropriate direction of Indonesian legal reform extends beyond merely introducing statutory provisions declaring cryptocurrency assets subject to seizure. The required reform involves establishing a comprehensive, technologically responsive, and rights-protective regulatory framework capable of governing the entire lifecycle of cryptocurrency assets within criminal proceedings. Such a framework must integrate substantive legal provisions, procedural requirements, technological standards, institutional responsibilities, international cooperation mechanisms, and accessible legal remedies. Its fundamental objective is to ensure that cryptocurrency assets associated with criminal conduct can be effectively identified, traced, secured, managed, and forfeited through legally accountable procedures. Where appropriate and legally authorized, the framework should also regulate asset conversion, restitution, and subsequent utilization in accordance with binding judicial determinations. This integrated approach would strengthen the effectiveness of criminal asset recovery while ensuring that technological enforcement measures remain subject to appropriate legal safeguards.

Within the proposed regulatory framework, enforcement effectiveness must be carefully balanced against the principles of legality and the protection of individual rights. A regulatory system that prioritizes extensive governmental authority without establishing adequate procedural safeguards may undermine legal certainty and create substantial risks of unlawful interference with property rights. Conversely, a framework that emphasizes formal procedural requirements without providing technically effective enforcement mechanisms may enable cryptocurrency assets associated with criminal activities to be transferred or concealed beyond the practical reach of state authorities. Consequently, regulatory development must reconcile these competing considerations through an integrated approach that promotes enforcement effectiveness while maintaining legal certainty, institutional accountability, proportionality, and technological adaptability. Such a balance is

essential to ensuring that cryptocurrency asset recovery mechanisms operate effectively without compromising the fundamental protections established within the criminal justice system.

Ultimately, the future regulation of cryptocurrency seizure and forfeiture must remain consistent with Indonesia's constitutional identity as a state governed by law. Technological developments should not be used to justify the weakening of established legal safeguards, yet the emergence of new digital instruments should not prevent the criminal justice system from responding effectively to evolving forms of unlawful conduct. The central challenge lies in formulating legal provisions that simultaneously protect public interests, facilitate the recovery of criminal proceeds, preserve the integrity of criminal investigations and judicial proceedings, and safeguard legitimate property rights. From this perspective, the establishment of cryptocurrency-specific seizure and forfeiture regulations represents more than a technical adjustment to existing criminal procedural legislation. It constitutes a broader process of legal development through which Indonesian criminal law responds to fundamental transformations in the representation, transfer, ownership, and control of economic value within the digital economy (Rahardjo, 2009).

The findings addressing the two research questions demonstrate a close relationship between the urgency of cryptocurrency regulation and the appropriate formulation of future legal provisions. The need for regulatory development arises primarily from the discrepancy between the general authority established under existing Indonesian legislation and the specific technological and procedural requirements involved in cryptocurrency seizure and forfeiture. Addressing this discrepancy requires a comprehensive framework integrating legal certainty, asset recovery principles, criminal law policy, legal reform, progressive legal development, institutional capacity, and international cooperation. Comparative insights from the Russian Federation and the United Kingdom further demonstrate that effective cryptocurrency asset recovery depends on clearly distinguishing the successive stages of governmental intervention and establishing technologically feasible mechanisms for securing, managing, and ultimately disposing of digital assets. For Indonesia, the principal regulatory objective should therefore be to establish a criminal asset recovery system capable of effectively addressing cryptocurrency-related offenses while ensuring that governmental intervention remains consistent with statutory legality, due process, judicial supervision, proportionality, and the protection of legitimate property rights.

CONCLUSIONS AND RECOMMENDATIONS

The findings of this study demonstrate that the urgency of establishing specific regulations governing cryptocurrency seizure and forfeiture does not arise from a complete absence of legal authority within the Indonesian criminal justice system. Rather, it stems from the discrepancy between the general provisions of existing legislation and the distinctive technological and legal characteristics of cryptocurrency assets. Although the Indonesian Criminal Procedure Code and Law Number 8 of 2010 provide a normative foundation for

asset seizure and recovery, these instruments have not comprehensively addressed cryptocurrency-specific procedures. Significant regulatory deficiencies remain concerning asset identification, blockchain transaction tracing, access to digital wallets and private keys, freezing mechanisms, secure custody, value preservation, digital evidence management, forfeiture procedures, asset conversion, and restitution. Consequently, the establishment of a more specialized legal framework is essential to ensure normative, procedural, and technical-operational certainty in cryptocurrency-related criminal proceedings. Such regulatory development must simultaneously uphold the principles of legality, due process, proportionality, judicial supervision, and the protection of legitimate property rights.

With regard to the second research question, Indonesia may develop a comprehensive and technologically responsive regulatory framework by critically adapting relevant legal mechanisms implemented in the Russian Federation and the United Kingdom. The Russian approach provides explicit provisions concerning the seizure of digital currency, including the confiscation of relevant storage media and the transfer of digital assets to designated addresses when technically feasible. Meanwhile, the United Kingdom, through the Economic Crime and Corporate Transparency Act 2023 and the Proceeds of Crime Act 2002, establishes differentiated mechanisms governing cryptoasset seizure, detention, wallet freezing, forfeiture, and conversion. These comparative frameworks offer valuable references for strengthening Indonesia's regulatory capacity to address cryptocurrency-related criminal activities. Accordingly, future legislative reform should prioritize an integrated cryptocurrency asset recovery system encompassing identification, tracing, freezing, seizure, secure custody, forfeiture, conversion, and lawful restitution. The implementation of these mechanisms must remain consistent with legal certainty, procedural fairness, proportionality, institutional accountability, and the protection of legally recognized property interests.

REFERENCES

Abdullah, F., Eddy, T., & Marlina. (2003). Perampasan Aset Hasil Tindak Pidana Korupsi Tanpa Pemidanaan (Non-Conviction Based Asset Forfeiture) Berdasarkan Hukum Indonesia dan United Nations Convention Against Corruption (UNCAC) 2003. *Jurnal Ilmiah Advokasi*, *9*(1).

Ali, A. (2002). *Menguak Tabir Hukum: Suatu Kajian Filosofis dan Sosiologis*. PT Toko Gunung Agung.

Ancel, M. (2011). *Social Defense: A Modern Approach to Criminal Problems*. Patterson Smith.

Arief, B. N. (2017). Kebijakan Kriminal (Jakarta: Kencana, 2011); John Kennedy, Kebijakan Hukum Pidana (Penal Policy) dalam Sistem Penegakan Hukum di Indonesia. In *Barda Nawawi Arief, Bunga Rampai Kebijakan Hukum Pidana: Perkembangan Penyusunan Konsep KUHP Baru*. Pustaka Pelajar.

Atmasasmita, R. (2010). *Strategi dan Kebijakan Pemberantasan Korupsi di Indonesia*. Gramedia.

Badan Pembinaan Hukum Nasional. (2022). *Kementerian Hukum dan Hak Asasi Manusia, Naskah Akademik Rancangan Undang-Undang tentang Perampasan Aset Tindak Pidana*.

Brenner, S. W. (2012). *Cybercrime and the Law: Challenges, Issues, and Outcomes*. Northeastern University Press.

Dworkin, R. (1977). *Taking Rights Seriously*. Harvard University Press.

Financial Action Task Force. (2023). *International Standards on Combating Money Laundering and the Financing of Terrorism and Proliferation*. FATF.

Friedman, L. M., & Friedman, L. M. (1975). *The Legal System: A Social Science Perspective (New York: Russell Sage Foundation, 1975*. W. W. Norton & Company.

Fuller, L. L. (1964). *The Morality of Law*. Yale University Press.

Hafid, I. (2021). Perampasan Aset Tanpa Pemidanaan dalam Perspektif Economic Analysis of Law. *Lex Renaissance*, *6*(3), 465–480.

Hamzah, A., Harahap, M. Y., & Penerapan KUHAP, P. P. (2010). *Asas-Asas Hukum Pidana*. Rineka Cipta.

Hayek, F. (1944). *The Road to Serfdom* (K. Wilk, Vert). Routledge.

Kelsen, H. (1967). *Pure Theory of Law*. University of California Press.

Kusumaatmadja, M. (2006). *Konsep-Konsep Hukum dalam Pembangunan (Bandung: Alumni, 2006); Mahfud MD, Politik Hukum di Indonesia*. Rajawali Pers.

Marzuki, P. M. (2008). *Pengantar Ilmu Hukum*. Kencana.

Mertokusumo, S. (2005). *Mengenal Hukum: Suatu Pengantar*. Liberty.

Nuryanto, U. W., Pramudianto, P., & Rohman, M. N. (2021). Revolusi Digital & Dinamika Perkembangan Cryptocurrency Ditinjau dari Perspektif Literatur Review. *National Conference on Applied Business, Education, & Technology*, *1*(1), 264–291. https://doi.org/10.46306/ncabet.v1i1.22;

Pound, R. (1922). *An Introduction to the Philosophy of Law (New Haven*. Yale University Press.

Pratama, G. A. (2023). *Analisis Pelaksanaan Penyitaan dan Eksekusi Aset Terpidana Korupsi dalam Rangka Pemulihan Keuangan Negara*.

Pusat Pelaporan Dan Analisis Transaksi Keuangan. (2024). *Penilaian Risiko Sektoral Tindak Pidana Pencucian Uang dan Tindak Pidana Pendanaan Terorisme pada Tindak Pidana Siber Tahun 2024*. PPATK.

Rahardjo, S. (2009). *Membedah Hukum Progresif*. Kompas.

Russian Federation. (2026). *Criminal Procedure Code of the Russian Federation, Article 115(7.1), as amended by Federal Law* (Numbers 38-FZ).

Soekanto, S., & Mamudji, S. (2006). *Penelitian Hukum Normatif: Suatu Tinjauan Singkat*. RajaGrafindo Persada.

Stessens, G., & Levi, M. (2000). Money Laundering: A New International Law Enforcement Model. *The ANNALS of the American Academy of Political and Social Science*, *582*(1), 181–194.

Tim Redaksi. (2023). Rafael Cuci Uang Miliaran Pakai Bitcoin, Ini Kata PPATK! *CNBC Indonesia*.

U.S. Department of Justice. (2009). *Searching and Seizing Computers and Obtaining Electronic Evidence in Criminal Investigations*. U.S. Department of Justice.

Undang-Undang Nomor 20 Tahun 2025 tentang Kitab Undang-Undang Hukum Acara Pidana; Republik Indonesia, Undang-Undang Nomor 8 Tahun 2010 tentang Pencegahan dan Pemberantasan Tindak Pidana Pencucian Uang; Kejaksaan Agung Republik Indonesia, P. N. 7 T. (2025). *Undang-Undang Nomor 20 Tahun 2025 tentang Kitab Undang-Undang Hukum Acara Pidana; Republik Indonesia, Undang-Undang Nomor 8 Tahun 2010 tentang Pencegahan dan Pemberantasan Tindak Pidana Pencucian Uang; Kejaksaan Agung Republik Indonesia, Pedoman Nomor 7 T*.

United Kingdom. (2023). *Economic Crime and Corporate Transparency Act 2023, Section 180 and Schedule 9; United Kingdom, Proceeds of Crime Act 2002, Part 5, as amended*.

United Nations. (2003). *United Nations Convention against Corruption*.