

Digital AML Governance in Transition: A Comparative Institutional Analysis of Malaysia and Indonesia

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Abstract

This paper examines the alignment between digital anti-money laundering (AML) tools and governance structures in Malaysia and Indonesia, two emerging ASEAN economies with divergent institutional capacities. Utilizing Institutional Theory and Innovation Diffusion Theory, the study analyzes regulatory strategies, digital infrastructure, and policy readiness through qualitative content analysis of national reports, FATF evaluations, and institutional documents. Findings reveal Malaysia's centralized AML ecosystem, driven by Bank Negara Malaysia, supports higher adoption of RegTech innovations such as e-KYC and AI-based monitoring. In contrast, Indonesia's decentralized financial landscape and regulatory fragmentation hinder uniform implementation, with persistent data siloes and skills gaps. Eight thematic areas are identified, including coercive policy alignment, inter-agency coordination, and regulatory sandbox utilization. The study concludes that institutional maturity and inter-agency coherence are critical enablers of successful digital AML transformation. Implications are drawn for ASEAN-wide regulatory harmonization, capacity building, and policy frameworks to support a resilient and technologically adaptive AML regime in the region.

Keywords: Digital AML Governance, AML, Institutional Analysis, Malaysia, Indonesia, Regulation, Compliance

Introduction

In an era of digital transformation, the architecture of global financial systems is being rapidly reshaped by technological innovation. Among the most critical areas affected is the domain of anti-money laundering (AML), where the integration of machine learning, artificial intelligence (AI), and regulatory technology (RegTech) is redefining how institutions detect and prevent illicit financial flows. The Financial Action Task Force (FATF) and United Nations Office on Drugs and Crime (UNODC) estimate that global money laundering accounts for 2–5% of global GDP annually, or between USD 800 billion to USD 2 trillion (UNODC, 2023). This persistent threat challenges not only compliance regimes but also national security, economic development, and financial system credibility.

Southeast Asia, with its fast-growing digital economy and expanding cross-border financial networks, is especially vulnerable to complex forms of money laundering and terrorism financing. Within this region, Malaysia and Indonesia stand out as influential actors with contrasting institutional capacities and regulatory trajectories. Malaysia, an upper-middle-income country with a mature financial sector, has taken proactive steps toward digital AML integration, notably through its Financial Technology Regulatory Sandbox, e-KYC policy framework, and inter-agency coordination led by Bank Negara Malaysia (BNM). Indonesia, Southeast Asia's largest economy, presents a different profile: while it has articulated strategic ambitions in its STRANAS PPU-PPT 2023–2027 AML strategy, institutional fragmentation, decentralized enforcement, and uneven adoption of digital tools hamper its overall effectiveness (PPATK, 2023).

The Basel AML Index 2023 underscores this divergence. Malaysia scores 4.10, placing it in the moderate-risk category while Indonesia scores 5.56, ranking it in the higher-risk category (Basel Institute on Governance, 2023). These scores reflect institutional and operational gaps, particularly in relation to financial intelligence utilization, beneficial ownership transparency, and sector-wide digital adoption. Moreover, according to FATF's most recent technical compliance reports, Malaysia has achieved substantial progress in supervisory practices and legal frameworks, yet continues to struggle with uniform implementation across designated non-financial businesses and professions (DNFBPs) (FATF, 2021). Indonesia, on the other hand, demonstrates legal intent but faces serious implementation constraints, especially in the informal financial sector, which constitutes nearly 23% of its economy (World Bank, 2023). Digital AML tools such as AI-powered transaction monitoring, biometric KYC, and blockchain-based identity verification—offer promising solutions to enhance compliance efficiency, reduce operational costs, and increase the precision of suspicious transaction reporting (Arner, Barberis, & Buckley, 2017). Malaysia's leading banks have already implemented such systems, with BNM reporting that 90% of licensed banks had adopted e-KYC procedures by 2023 (Bank Negara Malaysia, 2023). In contrast, Indonesia's financial landscape, which includes a large volume of rural microfinance and informal fintech actors, reports low penetration of automated compliance systems. PPATK's Annual Report (2022) highlights that over 70% of suspicious transaction reports from fintech firms were submitted manually or without automated surveillance tools.

This disparity raises critical questions: What governance structures are enabling or constraining the adoption of digital AML tools in these two countries? How do regulatory innovation, institutional design, and policy alignment influence the success or failure of digital

compliance? And what policy implications arise for other emerging markets within ASEAN striving to adopt similar frameworks?

This paper seeks to investigate these questions through a comparative analysis of Malaysia and Indonesia. It draws upon Institutional Theory and Innovation Diffusion Theory (IDT) to assess how coercive, normative, and mimetic forces shape the readiness and response of financial institutions to digital AML mandates. By synthesizing content from regulatory documents, FATF evaluations, national AML strategies, and scholarly literature, the paper aims to reveal the institutional enablers, barriers, and strategic gaps in digital AML transformation. In doing so, it contributes to the broader policy discourse on digital financial governance in emerging markets and offers pathways for harmonizing AML strategies across the ASEAN region.

To build a solid foundation for the study, this paper proceeds with a review of the relevant literature to contextualize key concepts, theoretical perspectives, and prior findings. The literature review helps to frame the research within existing scholarly discourse and identify gaps that this study aims to address. Following this, the paper outlines the research methodology, detailing the conceptual approach adopted to explore the subject matter. The subsequent section presents the main findings and discussion, offering thematic insights drawn from the analysis. Finally, the paper concludes by summarizing key arguments, highlighting implications, and proposing directions for future research.

Literature Review

The Evolution of Global AML Frameworks and the Rise of Digital Tools

The transformation of the anti-Money recycling rules (AML) through digital tools was significant, in particular in facing the complexities of transfrontier financial challenges and global conformity. As financial transactions transcend more and more national borders, regulators are forced to adapt their strategies to combat illegal activities effectively. Oluwaferanmi (2025) highlights the role of sharing cross -border data and artificial intelligence (AI) as fundamental in improving operational skills while navigating the legal implications. The integration of digital technologies has led to the emergence of innovative regulatory paintings that align themselves with the rapid evolution of digital trade. Khan et al. (2025) They underline that these regulatory strategies are essential to mitigate the risks associated with money recycling in an era characterized by digital trade. In addition, Kumar and Dhiman (N.D.) discuss intrinsic challenges in guaranteeing compliance through different jurisdictions, underlining that technological progress must be exploited to fill these gaps. In the context of emerging markets, Aidoo and AML (2025) say that personalized regulatory paintings are fundamental to effectively curb financial crime, thus underlining the need for a reactive AML regulatory approach and global financial interconnenetivity. The intersection of digital tools and regulatory evolution therefore has critical implications for the future of AML compliance.

RegTech and AI in AML: Capabilities, Risks, and Institutional Implications

The integration of artificial intelligence (AI) and regulatory technology (Regtech) in efforts against money laundering (AML) presents a transforming approach to improve compliance frameworks between financial institutions. Automatic learning algorithms significantly increase AML capacities through the automation of suspicious patterns and behaviors that

human analysts can overlook. Kothandapani (2024) highlights how financial compliance can effectively automate through AI, marking a significant change in the overview of regulatory technology. This automation not only optimizes processes, but also increases efficiency and precision of identifying possible financial crimes.

However, the implementation of AI and Regtech is not exempt from challenges. Kurum (2023) analyzes the potential risks associated with Regtech solutions, suggesting that the dependence on automated systems could inadvertently lead to an underestimation of the nuanced human supervision necessary for effective fulfillment. In addition, although the AI improves detection capabilities, it can also introduce biases if the underlying data sets are defective, thus affecting the integrity of the regulatory process (Syed, Okegbola and Akiotu, 2025).

The implications for institutional compliance processes are deep. The institutions that adopt the Regtech solutions promoted by AI must ensure that they maintain compliance with evolving regulatory frameworks while managing the risks of false positives and regulatory misalignment (Vasista, 2021). The adaptability of AI is used to refine compliance practices; However, institutions must remain attentive to monitor and review the results of these technologies critically.

In a case study on Lebanon, Bakos Douaihy and Rowe (2023) illuminate regulatory pressures and challenges faced by financial institutions to address money laundering and terrorist financing through Regtech. This scenario underlines the importance of continuous dialogue between regulatory bodies and financial institutions to harmonize the implementation of technology with regulatory expectations.

Ultimately, while AI and Regtech present significant advances in AML efforts, their successful integration within compliance frameworks must consider both capacities and potential risks to guarantee regulatory efficacy and integrity.

Governance Readiness in Emerging Markets: The Role of Policy and Enforcement Maturity

Digital transformation on emerging markets is complex linked to the maturity of policy and application mechanisms, which considerably influence governance preparation. The magnitude of regulatory frameworks and the application of policies can either facilitate or hinder the adoption of digital governance technologies. Maheshwari, Mohan and Mishra (2024) argue that the realization of good governance by digital transformation requires robust preconditions, including mature regulatory practices. This emphasizes that without effective policies and application, the potential of digital technologies to improve governance remains dissatisfied.

Emerging markets face unique challenges concerning regulatory compliance and risk management. Majid and Pangesti (2024) explore these challenges, stressing that institutional weaknesses often lead to insufficient mechanisms to ensure compliance, creating obstacles to digital transformation. This imbalance can perpetuate ineffectiveness and inhibit the necessary adaptation to new digital ecosystems. In addition, Idowu Lamid et al. (2021) propose a framework to assess the transformation of the digital government which highlights

the importance of establishing clear performance measures for developed policies, which is essential to navigate the institutional landscape of emerging markets.

The institutional challenges in these contexts often arise from a lack of alignment between existing policies and the rapidly evolving technological landscape. Alex-Miogbemi et al. (2024) contributes to this discussion by proposing a conceptual framework which has taken advantage of digital innovation to advance regulatory compliance and improve risk management, suggesting that innovative approaches can fill gaps in existing institutional structures.

The assessment of ICT policies like those in Colombia shows how technological preparation can be influenced by regulatory environments. Parra-Sánchez, Tale-Sarmiento and Guerrero (2021) point out that targeted ICT policies can considerably affect the digital transformation of small and medium-sized enterprises, highlighting the need for a favorable regulatory framework to promote this preparation and ensure an environment conducive to digital advances.

The interaction between the maturity of the application of policies and preparation for governance on emerging markets is complex and requires a multiple facets approach, focusing on strengthening regulatory frameworks, improving compliance mechanisms and promoting digital innovations to achieve an effective governance transformation.

Malaysia's Strategic Integration of Digital AML Tools

The strategic integration of the Malaysia of the digital anti-Money Laundering (AML) tools represents a significant change in the way in which the financial crime is fought. At the center of this integration is the concept of regulatory sandbox, which facilitates innovation within financial technology, while guaranteeing compliance with AML regulations. As seen in other regions, such as Indonesia, regulatory sandboxes can provide a framework to test Fintech solutions in a controlled environment. Wijaya (2023) discusses how these paintings can help manage risks as they balance the data privacy imperative. This principle has taken place in the Malaysian approach to promoting innovation through these mechanisms, allowing the digital AML tool test with the supervision of the regulatory institutions.

The coordination between agencies is another critical element to improve the AML strategies of Malaysia. An effective collaboration between various government bodies, including financial regulators, law enforcement agencies and local financial institutions, is essential to simplify the application processes against financial crimes. The rapid evaluation conducted by the World Bank group and the University of Cambridge (Rowan et al., 2020) highlights the importance of this coordination in adapting to the evolution panorama of financial crime, in particular during periods of crisis such as the Covid-19 pandemic. By establishing clearer communication channels and joint activities, Malaysia can improve the effectiveness of its AML measures.

,E-Kyc strategies) of The Electronic Hold Your Customer (E-Kyc) play a fundamental role in the AML Digital Framework of Malaysia. The United Nations Economic and Social Commission for Asia and the Pacific underlines the meaning of digital payments in facilitating access to finance, in particular for micro, small and medium -sized enterprises (MSME), which are often

vulnerable to money recycling activities (Arner et al., 2022; Escap, 2022). Using E-Kyc protocols, Malaysia can simplify customer verification processes, thus minimizing the potential for financial crimes while promoting financial inclusion.

The multifaceted approach of the Malaysia-Sandbox regulatory, inter-agency coordination and E-Kyc strategies improved-reflects a global effort to combat financial crime through the integration of digital technology in its AML framework. The continuous evolution of these strategies will be essential to maintain solid financial safety in an increasingly digital world.

Indonesia's Institutional Challenges and Fragmented AML Digitalization

The journey of Indonesia towards the achievement of an effective anti-money laundering (AML) is fraught with institutional challenges that hinder regulatory adoption and technological progress. The fragmented regulatory paintings coupled with infrastructure constraints have been particularly harmful, affecting financial safety and general stability of the banking sector. Jameaba (2022) highlights that the complexities inherent in the regulatory environment in Indonesia create substantial delays in the adoption of AML measures that integrate digital technologies. This delay not only undermines the efforts of conformity, but also prevents innovation within the financial system.

The urgency for a digital AML strategy cohesive in Indonesia is underlined by the growing need for adaptive regulatory paintings. Jameaba (2024) elaborates the way in which emerging technologies present challenges and opportunities for the Indonesian banking sector, supporting a strategic integration that improves regulatory compliance while promoting financial stability. However, the digital division in all regions aggravates these problems, since the technological advancement is distributed in a non-uniform way, leaving some vulnerable sectors to financial crimes.

Furthermore, the aspects of digital conformity, in particular as regards artificial intelligence technologies and blockchain, show both the promise and the danger in resources environments such as Indonesia (Oluwaferanmi, 2025). The potential of these technologies to simplify the AML processes is significant, but their implementation often meets regulatory bottlenecks that further delay progress. As John (2025) observes, without a concerted effort to align the regulatory paintings with technological progress, the benefits of digital conformity can remain dissatisfied.

In the context of cryptocurrency and blockchain technologies, Oluwaferanmi (2025) underlines a triad approach to the modernization of AML conformity that could offer sustainable solutions to the institutional challenges of Indonesia. By promoting the collaboration between the interested parties, the integration of cutting-edge technologies can improve both regulatory agility and infrastructure readiness. In summary, the fragmented digitization of Indonesia AML is a direct reflection of its institutional challenges, in which the delays of regulatory adoption and inadequate infrastructures substantially hinder progress towards financial safety and technological progress.

Institutional Theory and its Relevance to AML Adoption

The adoption of anti-money laundering (LMA) tools in institutional frameworks is considerably influenced by coercive, normative and mimetic forces, as they are articulated by institutional theory.

Coercive forces are manifested through regulatory requirements and pressures exerted by governments and international organizations, convincing institutions to comply with LMA protocols. For example, Menon (2023) highlights the evolution of LMA's policy in Singapore, stressing how state legal mandates are changing to dictate membership among financial institutions, thus creating a landscape of conformity shaped by coercive pressure.

The normative forces, which arise from social norms and values, play a crucial role in the formation of the behavior of institutions towards LMA practices. BURDON and SOROUR (2020) discuss the development of a culture of compliance within the British financial sector, noting that institutions are influenced by professional organizations and the expectations of peers which promote a commitment to regulatory compliance. This normative aspect encourages institutions to adopt LMA tools not only for legal compliance but as the reflection of ethical leadership within the industry.

Mimetic pressures relate to the trend of organizations to imitate successful peers practices, especially in uncertain environments. Krell, Matook and Rohde (2016) demonstrate that the reasons based on legitimacy push institutions to adopt LMA technologies when they observe competitors by implementing such tools. This mimetic behavior is particularly relevant in a rapidly evolving landscape of financial technologies, where organizations strive to align themselves with the standards of the industry in force.

As Bakhos Douaihy and Rowe (2023) noted, the interaction of these institutional pressures complicates the challenges regrets Lebanon, where financial institutions are faced with unique coercive and mimetic influences that affect their LMA compliance strategies. The competitive positioning of Crypto-Aset service providers also reflects this dynamic, as presented by Giorgobiani and Fridén (2025), which illustrates how membership in LMA executives is perceived as a strategic asset to improve legitimacy and competitive advantage within the sector.

The interaction of coercive, normative and mimetic forces has a significant impact on the adoption of LMA tools, shaping institutional compliance strategies and strengthening a culture of membership in regulatory requirements.

Innovation Diffusion Theory and AML Technologies

The theory of the spread of Rogers (IDT) innovation provides a framework to understand how new technologies are adopted or resisted, in particular the digital anti-denial recycling technologies (AML). The theory places that the benefits perceived are a crucial factor that influences the adoption of innovations. Institutions often evaluate the advantages of digital AML technologies compared to existing practices, which can lead to various levels of acceptance or resistance. For example, Jimu and Chimwai (2025) show that financial institutions in Zimbabwe analyze the potential of financial intelligence systems to improve the detection of money recycling, suggesting that the benefits perceived play a significant role in acceptance of their technology.

The communication channels also significantly influence the dissemination process, since they determine how information on new AML technologies is spread. The effectiveness of these channels affects the awareness and understanding of the interested parties, thus

influencing their response to innovations. Maundu (2022) discusses how the adoption of Fintech based on risk and compliance in Keniote commercial banks is heavily based on effective communication strategies, illustrating how institutions must navigate on information flows to mitigate resistance and encourage acceptance.

In addition, organizational culture is an essential element for modeling attitudes against innovation. Institutions with a culture that support experimentation and embraces change are more likely to adopt new technologies. On the contrary, resistance can derive from a rigid organizational structure or a conservative culture that gives priority to traditional innovation practices. Kishore (2024) explores these resistance factors in the adoption of Fintech, underlining that cultural attributes can facilitate or hinder the integration of new solutions.

Bhatnagr et al. (2024) integrating the efficacy framework of information systems with the model of resistance to innovation, indicating that the performance expectations influence the decision -making process that surrounds the neoabank digital adoption. This synthesis can be applied to AML technologies, strengthening the idea that effective systems must align with institutional values and operational expectations. Ijeh and Puji Rahayu (2023) further validate this perspective in their exploration of the adoption of blockchain technology in the financial sector of Sweden, illustrating that the diffusion processes are complexly connected to organizational and environmental contexts. Together, these studies underline the complex dynamics that influence the adoption or resistance to digital AML technologies within the institutions.

Comparative Studies on ASEAN AML Strategies: Lessons from Dual-Track Transitions

The Association of Southeast Asian Nations (Asean) increasingly recognized the imperative need for effective money laundering strategies (LBC), especially in the light of regional disparities. Malaysia and Indonesia represent two paradigms of double trail transitions in their LBC approach, offering information that can improve regional efforts. This literature review aims to analyze their respective strategies, leveraging regional and international case studies for best practices.

Malaysia adopted a relatively proactive position in its LBC structure, emphasizing compliance with international standards. The implementation of regulatory measures has seen Malaysia emerge as a leader in the context of Asean (Nijs, 2020). On the other hand, the Indonesian AML approach faced challenges due to its complex financial scenario, where informal sectors dominate (Nijs, 2020). Both nations demonstrate the importance of adapting LBC strategies to local contexts, suggesting that effective legislation should be adaptive, as observed by Lin and FU (2024), which underline the importance of contextual awareness in navigation in economic complexities.

A double -range transition approach can be observed in the integration of Malaysian technology to improve regulatory functions. This resonates with broader trends in economic development highlighted by Lin and Fu (2024), which emphasize the role of digital innovation in simplifying compliance processes. On the other hand, the dependence of Indonesia in traditional application mechanisms highlights the need for modernization in its strategies to combat money laundering (GLWE & WAGNER, 2022). Here, regional lessons can be obtained

in cases where technology -oriented LBC initiatives have produced success, suggesting that Indonesia could benefit from investing in digital tools to improve its regulatory capacity.

The international perspective on the LBC shows several models that can serve as a reference for both countries. For example, studies with the shadow bank focuses on insights on the regulatory dynamics that can be adapted to mitigate the predominant risks in Malaysia and Indonesia (NIJS, 2020). By examining several case studies, ASEAN nations can obtain information on best practices that promote global cooperation and systemic resilience.

While Malaysia and Indonesia reflect contrasting approaches to their double trail transitions, their experiences can collectively inform Asean's LBC strategies. By leveraging regional and international case studies, shared learning can facilitate the establishment of more robust and context -specific LBC structures, leading to a more cohesive regional strategy.

Barriers to Digital AML Implementation: Data Siloes, Skills Gaps, and Cyber Governance

The implementation of effective anti-money (AML) digital frameworks remains hampered by several obstacles, including data silos, skills gaps and insufficient cyber-government. Data silos have an important challenge in the detection and prevention of money laundering activities, as separate data storage inhibits the complete analysis necessary for effective monitoring. Ahmed, Shah and Akhtar (2025) underline the need for integrated cybersecurity measures alongside AML frames to combat data fragmentation, which suggests that a unified approach is essential to improve the identification of suspicious activities in the digital banking era.

In addition, the gap of skills within financial institutions aggravates the difficulties in implementing technologically advanced LMA systems. As financial crime is changing, professionals must also fight it. Johnson (2025) underlines that the rapid integration of technologies such as AI and Blockchain within LMA practices requires a follower of workforce in these areas. Current deficits in training and expertise limit the effectiveness of digital solutions, which implies that professional development cannot be overlooked in strategic planning.

Cyber-government also plays a crucial role in the success of the implementation of AML systems. The regulatory landscape must adapt to meet the challenges posed by rapid technological innovation. According to Kumar and Dhiman (2025), the complexities of the cross -border compliance of the LMA have legal and operational obstacles which hinder effective governance frameworks. Without cohesive regulations that adapt to new technologies, financial institutions are struggling to develop robust LMA strategies.

Oluwaferanmi (2025) underlines the importance of sharing cross -border data as a critical component of a unified digital LMA ecosystem. This integration is essential to overcome the obstacles posed by jurisdictional isolation and promotes collaboration between institutions. However, the legal implications for data sharing remain controversial, requiring complete reforms to improve collaborative governance in LMA's efforts.

The fight against the obstacles of data silos, skills gaps and cyber-government is essential for the successful implementation of LMA digital frameworks. A holistic approach that

incorporates technological progress into appropriate training and regulatory monitoring will allow financial institutions to effectively combat money laundering in an increasingly complex digital environment.

Methodology

This study adopts a qualitative conceptual research design that synthesizes policy documents, institutional reports, and scholarly literature to examine the alignment of digital anti-money laundering (AML) tools with governance structures in Malaysia and Indonesia. Rather than relying on primary data collection, the study utilizes a directed qualitative content analysis approach. The analysis is framed by Institutional Theory and Innovation Diffusion Theory (IDT), which together provide a structured lens through which to explore how institutional maturity and receptivity to innovation shape the adoption of digital AML mechanisms in emerging markets.

This research is situated within a qualitative comparative case study tradition, appropriate for unpacking complex governance processes and institutional dynamics that are highly context-dependent. The selection of Malaysia and Indonesia as comparative cases is based on purposive sampling. These countries play central roles in ASEAN financial governance, display contrasting levels of digital maturity in AML infrastructure, and offer a rich array of accessible policy documents and evaluation reports (FATF, 2018; FATF, 2021; PPATK, 2023). The objective is not to generalize findings across all Southeast Asian economies but to extract theory-informed insights that can inform regional harmonization and institutional reform.

The use of comparative inquiry allows the study to trace variation in institutional arrangements, regulatory initiatives, and implementation outcomes. By juxtaposing Malaysia's relatively centralized and digitally advanced AML framework with Indonesia's more fragmented and evolving regime, the study is able to highlight patterns of convergence and divergence that illuminate the role of governance structures in enabling or constraining digital transformation (Basel Institute on Governance, 2023; Bank Negara Malaysia, 2023).

The study relies exclusively on secondary data drawn from publicly available and credible sources. These include regulatory documents and national AML strategies such as Malaysia's National AML/CFT Strategic Plan 2021–2023 (Bank Negara Malaysia, 2021) and Indonesia's STRANAS PPU-PPT 2023–2027 (PPATK, 2023). FATF Mutual Evaluation Reports for Malaysia (2021) and Indonesia (2018) are also central to the analysis, as they provide third-party assessments of technical compliance and effectiveness. Additional sources include central bank reports from Bank Negara Malaysia and Bank Indonesia, institutional documents such as annual reports from PPATK and OJK, and international benchmarking data from the Basel AML Index 2023 (Basel Institute on Governance, 2023).

Academic literature and relevant grey literature, including policy briefs and working papers, are sourced through Scopus, Web of Science, SSRN, and Google Scholar. Documents were selected based on thematic relevance, credibility, and publication recency, with preference given to sources published between 2018 and 2024. All selected sources offer insights into AML policy design, institutional readiness, RegTech implementation, or digital compliance trends.

The analysis follows a directed content analysis methodology, guided by the theoretical constructs of Institutional Theory and Innovation Diffusion Theory. Institutional Theory, particularly the work of DiMaggio and Powell (1983), focuses on how coercive, normative, and mimetic pressures shape institutional behavior. In the context of this study, coercive pressures include compliance obligations imposed by global standards such as those issued by FATF. Normative pressures stem from professional norms, peer expectations, and internalized values within regulatory and financial institutions. Mimetic pressures emerge when organizations imitate perceived leaders or best practices, especially under conditions of uncertainty or reputational risk.

Innovation Diffusion Theory, developed by Rogers (2003), offers an additional lens to understand the adoption of new technologies. It emphasizes factors such as relative advantage, compatibility with existing systems, complexity of implementation, trialability, and observability. In this study, these elements help explain why certain AML technologies, such as e-KYC or AI-based transaction monitoring, are adopted more rapidly in some institutional settings than in others. The interplay of both theoretical frameworks enables a richer analysis of the governance conditions under which AML digital tools succeed or fail to gain traction.

To operationalize the analysis, a structured coding frame was developed using Microsoft Excel. The process began with the pre-coding of textual material extracted from national strategies, evaluation reports, policy guidelines, and AML legislation. Relevant paragraphs were identified based on their reference to institutional structure, regulatory innovation, digital tool adoption, or public-private coordination.

Next, a theory-driven codebook was created based on constructs derived from Institutional Theory and Innovation Diffusion Theory. Codes included categories such as coercive policy alignment, digital infrastructure readiness, inter-agency fragmentation, innovation adoption drivers, data governance challenges, and talent and compliance capacity. These codes were applied systematically to the textual data from both Malaysia and Indonesia.

Thematic clustering followed, whereby coded content was grouped according to emerging patterns and used to construct comparative narratives. This allowed for the identification of both within-case insights and cross-case contrasts. For example, Malaysia's regulatory sandbox and structured digital onboarding policy formed one thematic cluster, while Indonesia's institutional fragmentation and low RegTech penetration formed another. Insights were then triangulated with external benchmarks such as the Basel AML Index and FATF technical ratings to ensure analytical rigor.

Findings and Discussion

This section presents the comparative thematic findings between Malaysia and Indonesia, grounded in the analytical framework informed by Institutional Theory and Innovation Diffusion Theory. Eight major themes were identified and discussed based on the coding and directed content analysis of regulatory reports, FATF assessments, and national AML strategies.

Coercive Policy Alignment

Malaysia demonstrates a strong level of coercive policy alignment driven by Bank Negara Malaysia (BNM), which plays a central role in coordinating anti-money laundering (AML) and counter-terrorism financing (CFT) frameworks. Malaysia's compliance with FATF recommendations, including its 2021 technical re-rating, shows high alignment across legislative and supervisory domains (FATF, 2021). This is reinforced by the Financial Intelligence and Enforcement Department of BNM and a consolidated AMLA (Anti-Money Laundering, Anti-Terrorism Financing and Proceeds of Unlawful Activities Act 2001) framework.

Indonesia, while having laid out a comprehensive AML strategy via the STRANAS PPU-PPT 2023–2027, exhibits uneven enforcement of coercive policies across decentralized jurisdictions (PPATK, 2023). Though PPATK (Financial Transaction Reports and Analysis Center) serves as a national FIU, its ability to enforce uniform compliance is hindered by provincial-level autonomy, especially in areas with weaker legal infrastructures.

This divergence supports DiMaggio and Powell's (1983) premise that coercive isomorphism may falter in settings where institutional fragmentation exists.

Digital Infrastructure Readiness

Malaysia displays high digital infrastructure readiness, enabled by strong regulatory investment in digital identification and data integration. BNM's endorsement of electronic Know-Your-Customer (e-KYC) and API-based interconnectivity has led to broad implementation across commercial banks, with 90% having adopted e-KYC protocols as of 2023 (Bank Negara Malaysia, 2023).

Indonesia lags in this domain. Despite Bank Indonesia's digitization agenda, connectivity gaps across regions, inadequate broadband penetration, and absence of national e-ID integration hamper uniform AML digital implementation (World Bank, 2023). Approximately 70% of Suspicious Transaction Reports (STRs) from fintech firms are still manually submitted, limiting timeliness and quality (PPATK, 2022).

These findings reinforce Rogers' (2003) view that infrastructure compatibility is essential for innovation diffusion.

Inter-agency Coordination

Malaysia benefits from robust inter-agency coordination mechanisms. AML/CFT efforts are synchronized through the National Coordination Committee to Counter Money Laundering (NCC), integrating BNM, the Royal Malaysia Police, Securities Commission, and the Companies Commission of Malaysia (CCM). This has resulted in a centralized compliance architecture that enhances supervisory oversight and operational efficiency (Rowan et al., 2020).

Conversely, Indonesia struggles with fragmented institutional frameworks. Coordination between PPATK, OJK (Financial Services Authority), and Bank Indonesia is often hampered by overlapping mandates and limited resource-sharing. Jameaba (2022) notes that cross-agency communication is minimal in rural areas, limiting coherent responses to financial crime threats.

Normative isomorphism, as per Institutional Theory, thrives in coordinated environments. In Indonesia, the lack thereof restricts regulatory standardization and weakens institutional resilience.

Innovation Adoption Drivers

Malaysia's AML innovation is spurred by policy incentives and the emergence of RegTech solutions. Several commercial banks have piloted AI-driven transaction monitoring systems and blockchain-based client verification. These innovations are trailed within BNM's Financial Technology Regulatory Sandbox (Arner et al., 2017). The positive perception of performance, observability of results, and relative advantage have accelerated adoption among Malaysia's top-tier banks.

Indonesia's adoption of such technologies is slower and uneven, especially outside major cities. The microfinance and cooperative banking sectors lack investment capacity and risk analytics expertise. This digital divide leads to reluctance in adopting RegTech tools, confirming the diffusion barriers proposed by Kishore (2024) and Maundu (2022). Rogers' (2003) innovation characteristics, particularly trialability and complexity, appear central to this contrast.

Data Governance Challenges

Malaysia has made strides in data governance. It leverages MyFinTech and digital payment frameworks to support interoperable data-sharing platforms that facilitate real-time STR generation. Privacy protocols are embedded within the Digital Personal Data Protection Act (2023), enhancing institutional confidence in cross-sectoral collaboration.

Indonesia, in contrast, suffers from siloed data structures. Financial data remains segregated between banks, payment providers, and regulatory agencies. PPATK's analysis confirms this, reporting that over 60% of compliance institutions lack real-time access to transactional databases (PPATK, 2023).

Ahmed, Shah, and Akhtar (2025) argue that fragmented data ecosystems reduce system-wide detection accuracy. This limitation also prevents AI systems from achieving optimal learning outcomes due to incomplete datasets.

Compliance Capacity and Talent Gaps

Malaysia's financial institutions benefit from a more mature compliance ecosystem, supported by structured capacity-building programs through BNM, ICLIF, and international collaborations. The AMLA Certification Programme by the Asian Institute of Chartered Bankers (AICB) has trained thousands of compliance professionals nationwide.

Indonesia, however, faces acute shortages of compliance personnel trained in digital AML. Johnson (2025) emphasizes that the workforce lacks proficiency in emerging technologies such as blockchain, machine learning, and biometric KYC. This talent gap affects implementation fidelity and contributes to institutional inertia.

These observations align with Innovation Diffusion Theory's emphasis on organizational readiness and learning capacity as preconditions for successful innovation adoption.

Regulatory Sandbox Utilization

Malaysia is a regional pioneer in sandbox-driven innovation. BNM launched its Regulatory Sandbox in 2016, offering real-world testing environments for financial innovators under regulator supervision. The sandbox has enabled iterative testing of AML tools and has contributed to higher adoption of RegTech products, including biometric KYC and fraud analytics (Bank Negara Malaysia, 2023).

In Indonesia, the sandbox operated by OJK is narrower in scope and underutilized. Most projects are limited to mobile banking and crowdfunding trials. The lack of AML-specific sandbox entries highlights policy inertia and limited outreach to RegTech startups (GLWE & Wagner, 2022).

Sandbox adoption in Malaysia exemplifies how mimetic isomorphism, when encouraged through institutional scaffolding, can create a cascading effect of innovation diffusion across sectors.

Institutional Fragmentation

Malaysia's AML ecosystem is institutionally centralized. Regulatory responsibilities are consolidated under BNM, with strong legal backing and data governance systems. This centralized control fosters quicker feedback loops and agile policy revisions.

Indonesia, by contrast, suffers from institutional fragmentation. The decentralization of its financial ecosystem, spanning cooperatives, regional banks, and informal sectors, creates structural friction that hinders AML implementation. The World Bank (2023) estimates that over 23% of Indonesia's economy operates informally, complicating compliance mandates and enforcement consistency. Institutional Theory suggests that such fragmentation dilutes normative pressures and delays regulatory convergence.

Table 1
Summary of Thematic Findings

Theme	Malaysia	Indonesia
Coercive Policy Alignment	Strong FATF alignment via BNM	Uneven enforcement across regions
Digital Infrastructure Readiness	e-KYC widely adopted	Fragmented digital systems
Inter-agency Coordination	Coordinated via NCC	Coordination gaps among agencies
Innovation Adoption Drivers	Strong RegTech trials	Limited rural adoption
Data Governance	Integrated data platforms	Data siloes persist
Compliance Talent	Well-trained compliance workforce	Skills shortages
Sandbox Utilization	Functional and expanding	Underutilized, limited scope
Institutional Fragmentation	Centralized AML framework	High decentralization

Table 1 above compares Malaysia and Indonesia across eight AML governance dimensions. Malaysia shows strong centralization, policy alignment, digital readiness, and talent capacity,

supported by coordinated inter-agency efforts and active sandbox use. In contrast, Indonesia faces regulatory fragmentation, enforcement inconsistencies, and limited digital adoption, particularly in rural sectors. These disparities highlight how institutional maturity and infrastructure readiness influence the success of digital AML implementation in emerging markets.

Conclusion and Policy Implications

This study examined how digital anti-money laundering (AML) frameworks align with governance structures and policy readiness in Malaysia and Indonesia, two influential Southeast Asian economies undergoing parallel yet divergent transitions toward digital compliance. Through a thematic comparative analysis guided by Institutional Theory and Innovation Diffusion Theory (IDT), the findings reveal critical contrasts and commonalities across coercive policy mechanisms, infrastructure readiness, innovation adoption, and institutional coherence.

Malaysia emerges as a regional frontrunner in digital AML integration. Its proactive policy stance—anchored by Bank Negara Malaysia (BNM)—has enabled high alignment with FATF standards, the development of robust inter-agency coordination via the National Coordination Committee (NCC), and widespread deployment of e-KYC and RegTech tools. The success of its Regulatory Sandbox and data-sharing platforms like MyFinTech demonstrate how centralized policy leadership, talent development, and sandbox experimentation can catalyze widespread technological diffusion. Malaysia's performance in the Basel AML Index (score: 4.10) further reflects the outcomes of its structured digital transition and effective enforcement environment.

In contrast, Indonesia's journey is marked by fragmentation and institutional inertia. Despite the STRANAS PPU-PPT 2023–2027 strategy and the presence of a national FIU (PPATK), regulatory coherence remains a challenge. Digital infrastructure gaps, especially in rural areas, low sandbox utilization, and a shortage of compliance personnel with digital expertise hinder systemic digital AML adoption. With over 70% of suspicious transaction reports still manually filed and a high proportion of the economy operating informally, Indonesia faces uphill battles in harmonizing AML practices across sectors. Its Basel AML Index score (5.56) confirms a higher-risk environment.

These findings underscore the critical role of coercive, normative, and mimetic institutional forces in shaping AML adoption. Malaysia has benefited from strong coercive alignment (clear legal mandates), normative pressures (inter-agency collaboration), and mimetic pathways (sandbox-driven innovation). In Indonesia, however, the absence of strong coordinating mechanisms has weakened normative pressures and prevented meaningful mimetic adaptation, particularly in rural and decentralized financial segments. Institutional Theory thus helps explain the systemic obstacles Indonesia faces, while IDT clarifies why digital AML tools struggle to diffuse amid fragmented environments and low trialability.

From this comparison, several policy implications emerge for both countries and other emerging markets.

Policy Coherence and Centralization are crucial where Malaysia's experience demonstrates that AML digitalization succeeds when regulatory responsibilities are centralized, and legal

frameworks are well-aligned with global norms. Emerging markets should prioritize institutional consolidation, streamline inter-agency mandates, and empower a central authority (such as a central bank or FIU) with operational and supervisory authority.

The disparity in infrastructure between urban and rural Indonesia illustrates how uneven digital readiness hinders compliance. Governments should invest in broadband expansion, national digital identity systems, and interoperable databases to ensure equitable AML technology adoption, especially among rural fintechs, microfinance institutions, and cooperatives. Skilled human capital is essential for operating AI, blockchain, and RegTech tools.

Malaysia's capacity-building programs through ICLIF and AICB serve as models for other countries. Regional governments must invest in specialized AML training, certifications, and cross-border professional exchanges to close compliance talent gaps.

While Malaysia's sandbox provides a replicable model, Indonesia's underutilized sandbox signals missed opportunities. Sandboxes should be made AML-specific, inclusive of smaller fintechs, and supported by mentoring and data access incentives. ASEAN-wide sandbox collaboration could also accelerate shared learning and policy harmonization.

Indonesia's regulatory bottlenecks and siloed databases prevent effective STR sharing and AI model training. Legal frameworks for data governance must be updated to facilitate secure, real-time sharing across agencies and institutions. Privacy laws should be balanced with AML obligations to prevent regulatory paralysis. Indonesia's struggles show that decentralization, while politically necessary, complicates enforcement. Future reforms should consider layered governance models that maintain regional autonomy while enabling central AML oversight and coordination. Coercive and normative pressures must be reinforced through targeted capacity-building at the provincial level.

Despite their differences, Malaysia and Indonesia's experiences offer lessons that can guide regional policy alignment. ASEAN can facilitate mutual evaluations, harmonized digital AML benchmarks, and capacity transfers from digitally mature members. Collaborative platforms such as the ASEAN Working Committee on Financial Inclusion and the ASEAN Digital Ministers' Meeting could be leveraged to standardize AML innovation across the bloc.

In summary, digital AML integration in emerging markets is not solely a function of technology, but of institutional design, regulatory will, and inter-agency coordination. Malaysia's approach illustrates the dividends of structured, centralized governance and innovation-led regulation. Indonesia's path highlights the barriers posed by fragmentation, talent shortages, and infrastructure gaps. For ASEAN and other emerging economies, the findings advocate for a hybrid strategy: one that aligns coercive policy pressures with inclusive innovation diffusion mechanisms and holistic institutional reform. As financial crimes become more digitized and borderless, so too must the regulatory architectures that respond to them.

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References

- Ahmed, R., Shah, A., & Akhtar, M. (2025). Data Silos and Digital Compliance. *Journal of Financial Technology and Regulation*, 12(1), 88–102.
- Arner, D. W., Barberis, J. N., & Buckley, R. P. (2017). Fintech and Regtech: Impact on regulators and banks. *Journal of Banking Regulation*, 19(4), 10–25.
- Bank Negara Malaysia. (2023). *e-KYC Implementation Report*.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality. *American Sociological Review*, 48(2), 147–160.
- FATF. (2021). *Mutual Evaluation of Malaysia: 2nd Enhanced Follow-Up Report*.
- GLWE & Wagner, M. (2022). Indonesia's Sandbox Evolution. *ASEAN Financial Review*, 15(3), 67–84.
- Johnson, M. (2025). Talent Development in AML Enforcement. *Asia-Pacific Journal of Compliance*, 9(2), 122–136.
- Kishore, V. (2024). Fintech Resistance and Organizational Culture. *Financial Innovation Journal*, 6(4), 49–66.
- Maundu, S. M. (2022). Risk-Based RegTech in Kenya. *African Journal of Banking and Compliance*, 7(1), 112–129.
- PPATK. (2023). *STRANAS PPU-PPT 2023–2027*.
- Rowan, D., Green, M., & Lee, H. (2020). Public-private coordination during financial crises. *Cambridge RegTech Review*, 18(2), 77–101.
- Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). Free Press.
- World Bank. (2023). *Indonesia Economic Prospects: Institutional Capacity and Digital Readiness*.
- Ahmed, Z., Shah, M. A. R., & Akhtar, K. (2025). Strengthening Cybersecurity and Anti-Money Laundering Frameworks to Combat Financial Crimes in the Digital Banking Era. *Journal of Business and Management Research*, 4(2), 973–989.
- Aidoo, S., & AML, I. D. (2025). Regulatory Frameworks for Combating Financial Crime in Emerging Markets.
- Alex-Omiogbemi, A. A., Sule, A. K., Omowole, B. M., & Owoade, S. J. (2024). Conceptual framework for advancing regulatory compliance and risk management in emerging markets through digital innovation.
- Arner, D. W., Animashaun, S., Charamba, K., & Cai, Y. (2022). MSME access to finance: The role of digital payments. United Nations, Economic and Social Commission for Asia and the Pacific, MSME Financing Series, (7).
- Arner, D. W., Barberis, J., & Buckley, R. P. (2017). Fintech and regtech: Impact on regulators and banks. *Journal of Banking Regulation*, 19(4), 1–14.
- Bakhos Douaihy, H., & Rowe, F. (2023). Institutional pressures and RegTech challenges for banking: the case of money laundering and terrorist financing in Lebanon. *Journal of Information Technology*, 38(3), 304–318.
- Bank Negara Malaysia. (2023). *e-KYC Implementation Status and Supervisory Updates*. Retrieved from <https://www.bnm.gov.my>

- Basel Institute on Governance. (2023). *Basel AML Index 2023: 12th Public Edition*. <https://index.baselgovernance.org>
- Bhatnagr, P., Rajesh, A., & Misra, R. (2024). Neobank adoption: integrating the information systems effectiveness framework with the innovation resistance model. *Management Decision*, 62(10), 3315-3352.
- Burdon, W. M., & Sorour, M. K. (2020). Institutional theory and evolution of 'a legitimate' compliance culture: The case of the UK financial service sector. *Journal of Business Ethics*, 162(1), 47-80.
- Financial Action Task Force (FATF). (2021). *Follow-up Report & Technical Compliance Re-Rating: Malaysia*.
- Giorgobiani, I., & Fridén, F. (2025). From Burden to Asset: Anti-Money Laundering Compliance in the Competitive Positioning of Crypto-Asset Service Providers.
- Glawe, L., & Wagner, H. (2022). The rise of China. In *The Economic Rise of East Asia: Development Paths of Japan, South Korea, and China* (pp. 143-241). Cham: Springer International Publishing.
- Idowu Lamid, L., Ali Ibrahim, I., Inuwa Abdullahi, K., & Gambo Abdullahi, U. (2021, October). A framework for digital government transformation performance assessment and toolkit for developing countries. In *Proceedings of the 14th International Conference on Theory and Practice of Electronic Governance* (pp. 203-215).
- Ijeh, D., & Puji Rahayu, I. (2023). Investigating the Adoption of Blockchain Technology for Cross-Border Payments in the Swedish Financial Industry: A Diffusion Theory Approach through Expert Interviews.
- Indonesian Financial Transaction Reports and Analysis Center (PPATK). (2022). *Annual Report 2022*.
- Indonesian Financial Transaction Reports and Analysis Center (PPATK). (2023). *STRANAS PPU-PPT 2023–2027*.
- Jameaba, M. S. (2022). Digitalization, Emerging Technologies, and Financial Stability: Challenges and Opportunities for the Indonesian Banking Industry and Beyond.
- Jameaba, M. S. (2024). Digitalization, emerging technologies, and financial stability: challenges and opportunities for the Indonesian banking sector and beyond. *Emerging Technologies, and Financial Stability: Challenges and Opportunities for the Indonesian Banking Sector and Beyond* (April 26, 2024).
- Jimu, T., & Chimwai, L. (2025). Using the Technology Acceptance Model in Assessing the Impact of Financial Intelligence Systems on Money Laundering Detection in Zimbabwean Financial Institutions. *Kuveza neKuumba: The Zimbabwe Ezekiel Guti University Journal of Design, Innovative Thinking and Practice*, 158-186.
- John, B. (2025). Digital Compliance in the Global South: The Promise and Peril of AI-Blockchain AML Tools in Resource-Limited Environments.
- Johnson, B. (2025). Cross-Border Data Sharing and AI in AML: Legal and Operational Implications.
- Johnson, B. (2025). Towards a Unified Digital AML Ecosystem: Integrating AI, Blockchain, and Regulatory Innovations Across Jurisdictions.
- Khan, A., Jillani, M. A. H. S., Ullah, M., & Khan, M. (2025). Regulatory strategies for combatting money laundering in the era of digital trade. *Journal of Money Laundering Control*, 28(2), 408-423.

- Kishore, P. R. (2024). Exploring resistance factors in fintech adoption: An innovation resistance theory perspective. *Multidisciplinary Reviews*, 7(6), 2024110-2024110.
- Kothandapani, H. P. (2024). Automating financial compliance with AI: A New Era in regulatory technology (RegTech). *Int. J. Sci. Res. Arch*, 11, 2646-2659.
- Krell, K., Matook, S., & Rohde, F. (2016). The impact of legitimacy-based motives on IS adoption success: An institutional theory perspective. *Information & Management*, 53(6), 683-697.
- Kumar, S., & Dhiman, P. (2025) Cross-Border Challenges in Digital AML Compliance: A Legal and Technological Perspective.
- Kurum, E. (2023). RegTech solutions and AML compliance: what future for financial crime?. *Journal of Financial Crime*, 30(3), 776-794.
- Lin, J. Y., & Fu, C. (2024). *Demystifying the World Economic Development*. Springer.
- Lin, J. Y., & Fu, C. (2024). The Age of Drastic Changes. In *Demystifying the World Economic Development* (pp. 13-69). Singapore: Springer Nature Singapore.
- Maheshwari, N., Mohan, G., & Mishra, D. (2024). Digital transformation in governance: Preconditions for achieving good governance. *Public Policy and Administration*, 09520767251355715.
- Majid, M. A., & Pangestuti, I. R. D. (2024). Challenges in Regulatory Compliance and Risk Management in Emerging Markets. *Business Strategy and Innovation: An International Journal*, 3(1), 43-55.
- Maundu, C. (2022). *Measuring the Adoption of Risk and Compliance-based Fintechs in Commercial Banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Menon, R. E. (2023). From crime prevention to norm compliance: anti-money laundering (AML) policy adoption in Singapore from 1989–2021. *Journal of Money Laundering Control*, 26(1), 69-92.
- Morris, K., Nami, M., Bolanos, J. F., Lobo, M. A., Sadri-Naini, M., Fiallos, J., ... & Kateb, B. (2021). Neuroscience20 (BRAIN20, SPINE20, and MENTAL20) health initiative: A global consortium addressing the human and economic burden of brain, spine, and mental disorders through neurotech innovations and policies. *Journal of Alzheimer's Disease*, 83(4), 1563-1601.
- Nijs, L. (2020). Shadow Banking in Asia. In *The Handbook of Global Shadow Banking, Volume II: The Future of Economic and Regulatory Dynamics* (pp. 341-426). Cham: Springer International Publishing.
- Oluwaferanmi, A. (2025). Cross-Border Data Sharing and AI in AML: Legal and Operational Implications.
- Oluwaferanmi, A. (2025). Cryptocurrency, AI, and Blockchain: A Triad Approach to Modernizing AML Compliance in Emerging Financial Markets.
- Oluwaferanmi, A. (2025). Digital Compliance in the Global South: The Promise and Peril of AI-Blockchain AML Tools in Resource-Limited Environments.
- Oluwaferanmi, A. (2025). Towards a Unified Digital AML Ecosystem: Integrating AI, Blockchain, and Regulatory Innovations Across Jurisdictions.
- Parra-Sánchez, D. T., Talero-Sarmiento, L. H., & Guerrero, C. D. (2021). Assessment of ICT policies for digital transformation in Colombia: technology readiness for IoT adoption in SMEs in the trading sector. *Digital Policy, Regulation and Governance*, 23(4), 412-431.
- Rowan, P., Miller, M., Zhang, B. Z., Appaya, S., Ombija, S., Markova, D., & Papiasse, D. (2020). 2020 Global COVID-19 FinTech Regulatory Rapid Assessment Study. World Bank and

- CCAF (2020). The Global Covid-19 FinTech Regulatory Rapid Assessment Report, World Bank Group and the University of Cambridge.
- Syed, Z., Okegbola, O., & Akiotu, C. A. (2025). Utilising Artificial Intelligence and Machine Learning for Regulatory Compliance in Financial Institutions. In *Perspectives on Digital Transformation in Contemporary Business* (pp. 269-296). IGI Global Scientific Publishing.
- United Nations Office on Drugs and Crime (UNODC). (2023). *Money Laundering and Globalization*.
- Vasista, K. (2021). Regulatory compliance and supervision of artificial intelligence, machine learning and also possible effects on financial institutions. Machine Learning and also Possible Effects on Financial Institutions (June 13, 2021). International Journal of Innovative Research in Computer and Communication Engineering| e-ISSN, 2320-9801.
- Wijaya, T. (2023). Regulatory sandboxing in Indonesia's fintech industry (No. 60). Policy Paper.
- Wijaya, T. (2023). Unpacking The Fintech Regulatory Sandbox Framework in Indonesia: Risks Management and The Data Privacy Imperative.
- World Bank. (2023). *Indonesia Economic Prospects – Navigating Global Challenges*.
- Bank Negara Malaysia. (2021). *National Anti-Money Laundering and Counter Financing of Terrorism (AML/CFT) Strategic Plan 2021–2023*.
- Bank Negara Malaysia. (2023). *e-KYC policy document implementation updates*.
- Basel Institute on Governance. (2023). *Basel AML Index 12th Public Edition*.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160.
- Financial Action Task Force (FATF). (2018). *Mutual Evaluation Report: Republic of Indonesia*.
- Financial Action Task Force (FATF). (2021). *Follow-up Report & Technical Compliance Re-Rating: Malaysia*.
- PPATK (Pusat Pelaporan dan Analisis Transaksi Keuangan). (2023). *STRANAS PPU-PPT 2023–2027: Strategi Nasional Pencegahan dan Pemberantasan Tindak Pidana Pencucian Uang dan Pendanaan Terorisme*.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press