香港社會科學學報

HONG KONG JOURNAL OF SOCIAL SCIENCES

第 66 期 (2025 年秋冬) **Vol. 66 Autumn/Winter 2025**

Available online at www.hkjoss.com

Research article https://doi.org/10.55463/hkjss.issn.1021-3619.66.8

Digital Identity Innovation for Correctional Governance: Implementation of the Single Identity Number (SIN) for Inmates in the Indonesian Correctional System

数字身份创新在惩教治理中的应用：印度尼西亚惩教系统中在押人员单一身份号码（SIN）的实施

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Abstract:
The development of e-Government is driving the transformation of correctional governance in Indonesia towards a more transparent, accountable, and integrated system. This article examines the implementation of the Single Identity Number (SIN) as a digital identity innovation within Indonesia's correctional system. The application of SIN aims to address persistent issues such as duplicate inmate data, difficulties in tracking violation histories, and inefficiencies in integrating services across law enforcement and correctional agencies. This study adopts a qualitative descriptive approach with a multi-case study design, data were collected from several overcrowded correctional institutions through in-

Keywords: Correctional Governance; Digital Identity; E-Government, Public Administration Innovation; Single Identity Number (SIN).

关键词： 矫正治理；数字身份；电子政务；公共行政创新；单一身份号码 (SIN)

depth interviews with correctional officers, information system designers, and officials from the Directorate General of Corrections. The study's novelty lies in positioning digital identity innovation—previously underexplored in correctional administration—within the framework of e-Government and public sector digital transformation in developing countries. The findings reveal that SIN has significanty improve the accuracy of inmate data, expedite the delivery of integration rights, and strengthen interagency collaboration in law enforcement and social reintegration. However, key challenges include digital infrastructure readiness, data privacy protection, and resistance to adaptation at the operational level. The study contributes to the theoretical and practical to the development of a digital correctional governance model based on a unified identity in developing countries. Recommendations focus on strengthening regulations, enhancing human resource capacity, and promoting system integration among institutions to realize an effective and sustainable e-Government ecosystem in the correctional system.

摘要：
电子政务的发展正推动印尼惩教治理向更加透明、负责和一体化的体系转型。本文探讨了单一身份号码（Single Identity Number,SIN）作为印尼惩教系统中一项数字身份创新举措的实施情况。SIN 的应用旨在解决长期存在的问题，例如囚犯数据重复、违规记录难以追踪以及执法和惩教机构间服务整合效率低下等。本研究采用定性研究方法。本研究采用描述性方法，运用多案例研究设计，通过对多所过度拥挤的监狱的狱警、信息系统设计人员和监狱总局官员进行深度访谈，收集数据。研究的创新之处在于，将数字身份创新（此前在监狱管理领域鲜有探索）置于发展中国家电子政务和公共部门数字化转型的框架下进行考察。研究结果表明，社会身份识别系统（SIN）显著提高了囚犯数据的准确性，加快了囚犯融入社会权利的落实，并加强了执法和社会重返方面的跨部门合作。然而，关键挑战包括数字基础设施的就绪程度、数据隐私保护以及运营层面的适应阻力。本研究为发展中国家基于统一身份的数字化矫正治理模式的构建提供了理论和实践基础。建议重点在于加强监管、提升人力资源能力以及促进机构间的系统整合，从而在矫正系统中构建高效且可持续的电子政务生态系统。

Article History:

Received: **September 3, 2025**

Revised: **November 11, 2025**

Accepted: **November 25, 2025**

Published: **December 20, 2025**

1. Introduction

Digital transformation in public administration has become a strategic agenda in many countries, aiming to enhance government transparency, efficiency, and accountability[6]. Within this context, the integration of digital identity systems into public administration has emerged as a crucial component of modern governance, particularly in the era of e-Government. As digital transformation accelerates across various sectors, the criminal justice system—especially correctional administration—faces increasing demands to become more transparent and accountable. As a part of the criminal justice system, correctional institutions require significant reform through the adoption of information and communication technologies (ICTs)[16].

In developing countries such as Indonesia, where systemic inefficiencies, fragmented data, and outdated manual processes still characterize the correctional sector, the need for innovative solutions is becoming increasingly urgent[12]. One such innovation is the implementation of a Single Identity Number (SIN) for inmates—a form of digital identity that consolidates individual records into a unified, secure, and verifiable database [31]. Indonesia, as a developing country with a complex correctional system, faces fundamental challenges in inmate data management, inter-agency coordination, and the provision of accurate and targeted services. An ongoing initiative is the adoption of SIN as a digital identity innovation in the correctional system [5].

Digital identity is generally defined as a set of identity attributes captured and stored electronically, uniquely describing an individual within a particular context [44]. In the realm of public administration, digital identity has become a foundation for effective public service delivery, interoperability among government institutions, and database user management [19]. Indonesia's correctional system has long been marked by administrative fragmentation, duplication of inmate data, and limited data synchronization between the Directorate General of Corrections (Ditjen PAS) and other government entities such as the Ministry of Home Affairs and the National Police [1]. These inefficiencies not only hinder effective case management and rehabilitation planning but also create opportunities for abuse, such as identity manipulation or duplicate registrations to evade legal processes [23].

The absence of a verifiable single identity for inmates creates operational barriers in inmate mapping, parole eligibility assessments, inter-agency communication, and statistical reporting [13]. The implementation of SIN is expected to simplify inmate identification processes on a national scale, prevent data duplication, strengthen inter-agency integration, and enhance the quality of data-driven policymaking [18]. In the conventional correctional system, inmate identities are often non-standardized, overlapping, or disconnected from the national population registry, complicating efforts in recidivism tracking, integrative rights provision, and risk assessment [8].

Digital identity has thus become a key element in inclusive and adaptive public administration reform in the digital era. This concept refers not merely to a digital representation of individuals but also to the legal and technological frameworks that connect individuals to their rights and obligations within a system [43]. In the criminal justice system, digital identity forms the foundation for cross-agency data integration—from law enforcement, prosecution, and courts, to correctional institutions [26]. The application of SIN in Indonesia's correctional system responds to several fundamental issues, such as the lack of a universal identity number across legal processes, weak interoperability between institutional systems, and high administrative costs caused by repetitive manual verification [2].

By integrating SIN with the National Identification Number (NIK) issued by the Directorate General of Population and Civil Registration, each inmate can be tracked using a unique number valid nationwide [36]. Additionally, correctional reform necessitates the strengthening of good governance principles in inmate management. Transparency, efficiency, accountability, and participation are core values of modern public governance that can only be achieved through technological innovation and advanced information management [14].

From a policy standpoint, the introduction of SIN touches upon fundamental principles of administrative law, such as legality, due process, and proportionality. Ensuring that digital identity does not infringe on inmates' rights—particularly their right to privacy and fair treatment—requires a strong regulatory framework and adequate oversight mechanisms[14]. Furthermore, data ownership, consent, and access rights must be carefully managed to prevent misuse or excessive control [32]. Challenges in implementing SIN cannot be overlooked. Technological infrastructure readiness across regions, digital divides among institutions and areas, and privacy and data protection concerns are key issues that must be anticipated [47]. Without adequate data protection systems, digital identity implementation may pose human rights risks, particularly for vulnerable groups such as inmates [27]. Therefore, this innovation must be accompanied by robust data protection policies and inclusive stakeholder engagement in its design and governance.

International studies show that nationally integrated digital identity systems can significantly improve public service efficiency and reduce administrative costs [19]. However, the success of digital identity implementation greatly depends on institutional context, regulatory frameworks, and the cultural readiness of adopting bureaucracies [7]. In the Indonesian context, resistance to digital change within bureaucracy, limited human resource training, and weak inter-agency coordination are major obstacles [14].

Theoretically, this study is guided by the frameworks of digital identity governance and public sector innovation. Digital identity governance refers to the institutional and technological arrangements that regulate the creation, management, and use of digital identities in public service delivery [10]. Meanwhile, public sector innovation is understood as the introduction and implementation of new ideas, processes, or technologies that enhance public value [33]. By combining these two frameworks, this study aims to analyze how SIN functions not only as a technical tool but also as a governance mechanism that reshapes institutional roles, accountability structures, and state-citizen interactions in the context of corrections.

This article aims to critically examine the development and implementation of the Single Identity Number (SIN) initiative as a digital identity innovation within Indonesia's correctional system, and to assess its implications for transparency, accountability, and efficiency in correctional governance. The main focus is directed toward: (1) How does the implementation of the Single Identity Number (SIN) system enhance the effectiveness and integrity of correctional governance in Indonesia? (2) What institutional, technical, and socio-legal challenges arise in the implementation of SIN within Indonesia's correctional settings? (3) What policy and governance strategies can ensure the sustainable and ethical adoption of digital identity innovations like SIN in the Indonesian correctional system?

The urgency of this study lies in Indonesia's need to align its correctional system with the national architecture of Electronic-Based Government Systems (SPBE), which promotes data interoperability among government agencies [38]. The adoption of SIN may serve as an entry point for integrating the correctional system with the national SPBE ecosystem. This aligns with the targets of the Sustainable Development Goals (SDGs), particularly Target to develop effective, accountable, and transparent institutions at all levels [42].

Moreover, implementing digital identity in correctional settings opens new possibilities for developing data-based recidivism prediction systems (predictive analytics), strengthening rehabilitation interventions based on inmate profiles, and designing more equitable and targeted reintegration policies [32,22]. With consistent, verified, and real-time data, decision-making in corrections can become more objective, transparent, and responsive to inmate population dynamics [4].

Thus, SIN innovation is not merely about technological change—it reflects a paradigm shift in managing inmates as legal subjects with rights and identities that must be respected. This is a step toward making Indonesia's correctional system more humane, just, and evidence-based. Within this framework, the study is crucial for supporting the transition toward inclusive and sustainable digital correctional governance.

2. Method

This study adopts a qualitative case study approach, which is particularly suitable for exploring complex governance innovations in their real-life institutional context. A case study enables in-depth examination of how the Single Identity Number (SIN) initiative is conceptualized, implemented, and experienced across various actors within the Indonesian correctional system [45]. It also allows for the triangulation of data sources—interviews, documents, and field observations—providing a rich and contextualized understanding of the phenomenon. Given that the SIN initiative is still in a pilot or early implementation stage, this study applies an exploratory case study design, focusing on selected penitentiary institutions and government units directly involved in the digital identity innovation. The case is bounded by the institutional scope of the Directorate General of Corrections (Ditjen PAS), the Ministry of Home Affairs (Dukcapil), and selected correctional facilities that have begun integrating SIN into their administrative processes.

The study is grounded in the interpretivist paradigm, which posits that social phenomena are best understood through the meanings attributed by the actors involved[39]. Since the research seeks to explore how SIN is interpreted and enacted by correctional officials, IT developers, civil registration officers, and policymakers, a qualitative lens is essential for capturing their subjective perspectives, institutional constraints, and normative expectations. Furthermore, the innovation of digital identity is not only a technical change but also an administrative, legal, and ethical shift in public sector practice [30]. Thus, a qualitative approach facilitates the unpacking of multi-layered dynamics—how ideas of accountability, efficiency, and human rights are negotiated in the design and application of SIN within the correctional ecosystem.

Field research was conducted in three types of institutions: (1) Correctional Institutions (Class I), (2) Including one Special Narcotics Correctional Institution (3) one State Detention Center, (4) Directorate General of Corrections (Ditjen PAS).

Specifically, the Directorate of Information and Cooperation, responsible for digital system development. (1) Population and Civil Registration Offices (Dukcapil): Both at the national and provincial levels, responsible for managing Indonesia's national identity system (NIK). (2) Participants were selected using purposive sampling (Patton, 2015), targeting those directly involved in SIN policy-making, development, and implementation. In total, 18 informants were interviewed, comprising: 7 correctional officers (administrators, IT staff, case workers), 5 officials from Ditjen PAS, 4 Dukcapil officials, 2 policy analysts from the Ministry of Law and Human Rights. Data collection was conducted over a 3-month period and utilized the following techniques: (1) The primary method was semi-structured interviews, allowing for guided yet flexible conversations that could adapt to emerging themes. An interview guide was developed based on themes such as: perceptions of SIN, data integration processes, inter-agency coordination, legal implications, technical challenges, and organizational readiness. Each interview lasted between 45–90 minutes and was audio-recorded with participant consent. (2) To contextualize and verify interview data, official documents were analyzed, including: Government regulations (e.g., Perpres No. 39/2019 on Satu Data Indonesia), Memoranda of Understanding between Ditjen PAS and Dukcapil, Technical manuals and system flowcharts of SIN integration, Internal reports and policy briefs from pilot institutions. (3) Short-term non-participant observation was conducted in selected correctional facilities, particularly in administrative offices where SIN registration and validation processes took place. This allowed researchers to witness first-hand how digital identity tools are used, what technologies are employed, and how staff and inmates interact with the new system.

Data from interviews, documents, and observations were transcribed and analyzed using thematic coding [9]. The analysis followed an iterative process of: Familiarization: Reading and re-reading transcripts to identify patterns., Initial coding: Generating codes based on significant features (e.g., "data duplication", "cross-agency barriers", "biometric mismatch"), Theme development: Grouping codes into broader themes such as "interoperability challenges", "governance tensions", and "perceived benefits", Refinement and interpretation: Reviewing themes in relation to theoretical frameworks and research questions. The analysis was supported by the use of NVivo 12 software, which facilitated systematic coding and retrieval of qualitative data.

To ensure credibility, the study employed data triangulation, drawing insights from multiple data sources and institutional perspectives. Member checking was used to validate findings by sharing emerging interpretations with selected participants for feedback. Audit trails were maintained throughout the research process, documenting methodological decisions, coding processes, and analytic memos. While qualitative research does not seek statistical generalizability, transferability was ensured by providing rich descriptions of the institutional contexts and practices involved, allowing readers to assess applicability to other settings [29].

3. Research Result

The implementation of a Single Identity Number (SIN) in Indonesia's correctional system marks a transformative effort in digital public administration. This section presents findings from field data and interviews with key stakeholders them in the context of digital governance and administrative reform. The The results of this research are structured into four thematic areas : (1) Data Integration and Administrative Efficiency, (2) Technological and Organizational Transformation, (3) Legal and Ethical Challenges, and (4) Institutional Dynamics and Change Management.

3.1. Data Integration and Administrativve Efficiency

One of the most significant outcomes of SIN implementation is the increased accuracy and reliability of inmate identity data. Prior to SIN, multiple identity records for a single inmate across different institutions were common, often leading to delays in service provision, duplication of cases, and manipulation of data.

As the Head of the Information Systems Division at the Directorate General of Corrections noted:

"Before SIN, it was possible for one person to have three or more identities in the system. Now, with SIN linked to the national NIK database, we can verify identities in real time. It saves time and prevents manipulation." (Interview, March 12, 2025).

Staff members in correctional institutions confirmed that integration with the Dukcapil civil registry system had improved the speed and accuracy of inmate verification.

"In the past, verifying an inmate's identity could take days. Now it takes minutes. Everything is connected to Dukcapil." (Registration Officer, Lapas Class I, March 18, 2025).

This aligns with global literature that shows digital identity systems reduce redundancy and improve cross-agency service delivery [19,44].

3.2. Technology and Organizational Transformation

The implementation of SIN introduced new digital workflows and required changes in institutional practices. Correctional officers and IT personnel were trained to operate biometric verification tools, connect to centralized databases, and troubleshoot digital identity issues [20].

"It was a learning curve for many of us. At first, the system crashed often, and we had no idea what to do. But with regular support and training, things are improving." (IT Officer, Women's Correctional Facility, March 21, 2025).

Some officers acknowledged that automation and digitization allowed them to reallocate time to rehabilitation efforts rather than administrative tasks:

"Now that identity checks are automatic, I can spend more time counseling inmates. It's a good change." (Correctional Officer, March 26, 2025).

These changes support theories of public sector innovation where digital tools reshape bureaucratic roles and improve service orientation[25,33].

3.3. Legal and Ethical Challenges

Despite the benefits, stakeholders expressed concerns over the legal framework and ethical implications of SIN. Data sharing between correctional institutions and civil registry offices raises issues of consent, privacy, and data ownership.

"The SIN system uses NIK and biometric data. But we don't have a specific law that governs how this data can be shared across institutions." (Legal Officer, Directorate General of Corrections, April 8, 2025).

A provincial Dukcapil official emphasized the importance of formal data-sharing agreements:

"We are open to supporting SIN, but there must be a clear legal basis. Access to population data is sensitive and must be regulated." (Dukcapil Official, April 10, 2025).

These concerns reflect broader international debates on digital identity, data justice, and human rights [40,32].

3.4. Institutional Dynamics and Change Management

The introduction of SIN revealed institutional frictions and variations in adaptability. While younger staff embraced the technology, older employees often viewed it as a threat to their traditional roles.

"I used to handle all the paperwork manually. Now the system does it for me. I feel like my role is being taken over." (Senior Registration Officer, April 3, 2025)

However, among IT personnel and newer staff, there was more optimism:

"This is the future. We can't serve people properly

without good data. SIN is a step in the right direction." (Junior IT Officer, March 30, 2025).

This theme underscores the importance of change management strategies, including training, incentives, and communication to ensure successful digital transformation [21].

The findings suggest that SIN has significant potential to enhance transparency, accountability, and efficiency in Indonesia's correctional system [28]. However, its success depends on strengthening regulatory frameworks, improving technical infrastructure, and managing human factors effectively. In line with [35], SIN can be seen not merely as a technological tool, but as a governance mechanism that alters the relationships between state institutions and citizens even in carceral settings.

Policy recommendations emerging from this study include:

1. Enacting a comprehensive legal framework for digital identity use in corrections.
2. Strengthening interagency protocols for data sharing and protection.
3. Building digital literacy and institutional capacity among correctional staff.
4. Developing monitoring systems to track SIN implementation and address misuse.

The Indonesian experience with SIN offers valuable insights for other developing countries seeking to modernize their correctional systems through digital identity innovation.

4. Discussion

The implementation of the Single Identity Number (SIN) has transformed Indonesia's correctional governance by enhancing data integration, administrative efficiency, and institutional coordination. SIN enables interoperable data exchange between correctional facilities and national civil registries, reducing duplication and human error while improving verification speed. This integration strengthens transparency and accountability, aligning with e-Government principles of efficiency and interoperability [21].

Technologically, SIN introduces digital workflows and biometric verification, signaling a shift toward data-driven correctional management. Organizationally, it necessitates new competencies in IT governance and data analytics. However, limited digital literacy and institutional inertia remain barriers, underscoring the need for sustained capacity building [25,15]. Legally, SIN raises concerns regarding data privacy and inmate rights, as biometric information is sensitive under Indonesia's *Personal Data Protection Law (Law No. 27/2022)* 46. Ethical dilemmas emerge around consent, surveillance, and proportional data use, demanding stronger oversight and privacy-by-design principles [11].

Institutionally, SIN's success depends on collaborative governance, leadership commitment, and adaptive capacity. Cross-agency coordination and consistent policy alignment are essential to overcoming bureaucratic silos and sustaining reform [17].

Overall, SIN demonstrates both the promise and paradox of digital transformation: it modernizes correctional administration and enhances accountability, yet it also exposes ethical and institutional complexities. Sustainable innovation will require not only robust technology but also adaptive institutions, ethical governance, and a culture of continuous learning.

4.1. *Contibution to digital governance and public sector innovation.*

The findings of this study contribute to the theoretical discourse on digital governance and public sector innovation, particularly in the context of correctional administration.

First, the SIN initiative extends existing models of e-Government by demonstrating how digital identity systems can function not merely as technical infrastructures but as *institutional instruments* that reshape administrative logic, accountability, and inter-agency coordination. This supports and expands [17]. collaborative governance framework, emphasizing that successful digital reforms depend on trust, shared purpose, and adaptive learning across institutions.

Second, the study enriches theoretical understanding of data-driven governance by showing that digital identity systems create new forms of "algorithmic authority" within bureaucratic contexts. The SIN system transforms decision-making from intuition-based to evidence-based, reinforcing [3] argument that digital infrastructures redefine the informational foundations of governance.

Third, the research introduces the concept of "correctional digital citizenship," highlighting how incarcerated individuals become integrated into the national identity ecosystem through technology—raising new theoretical questions on digital inclusion, surveillance, and human rights in closed institutional environments.

4.2. *Implications for Policymaker and Corretional Administrators.*

Implications, the study offers key insights for policymakers and correctional administrators. The SIN system demonstrates that data integration enhances operational efficiency, minimizes duplication, and improves service delivery. However, achieving these benefits requires sustained investment in infrastructure, digital literacy training, and cross-agency governance mechanisms.

Policymakers must also prioritize ethical and legal safeguards, including data protection protocols, privacy audits, and consent management, to ensure compliance with Indonesia's *Personal Data Protection Law*. Finally, to sustain institutional transformation, leadership should embed digital innovation within performance systems, resource planning, and organizational culture—ensuring that technological modernization translates into lasting administrative reform and public trust.

5. Conclusion

The adoption of the Single Identity Number (SIN) within Indonesia's correctional system represents a pivotal step toward realizing digitally integrated, accountable, and data-driven public administration.

A summary of the key findings, policy recommendations, and future research directions is discussed below.

5.1. *Summary of Key Findings.*

This study highlights the transformative role of the Single Identity Number (SIN) as a digital innovation in improving governance within Indonesia's correctional system. The findings demonstrate that;

1) The integration of SIN with the national civil registry (Dukcapil) significantly enhances data accuracy;
2) Verification speed, and administrative efficiency, thereby reducing identity duplication and bureaucratic errors.
3) The adoption of biometric-based verification strengthens the integrity of inmate records, while digitized workflows allow correctional officers to shift their focus from administrative burdens to rehabilitative tasks.

However, the research also reveals critical challenges, particularly concerning the legal and ethical dimensions of data sharing, privacy, and interagency collaboration. Institutional resistance, uneven digital literacy, and inadequate legal frameworks remain obstacles to full-scale implementation. The SIN initiative thus represents both a technological advancement and an organizational reform process requiring strong governance, consistent training, and regulatory clarity.

5.2. Comparison with Previous Research

The results of this study align with international findings on digital identity and e-Government transformation. Similar to the work of [19,44], this research confirms that integrated digital identity systems contribute to administrative efficiency and transparency. Furthermore, the Indonesian experience mirrors insights [25,21], who emphasize that successful digital governance reforms depend not merely on technological readiness but on institutional capacity, leadership, and inter-organizational coordination.

Nevertheless, this study contributes a unique perspective by situating digital identity reform within a correctional administration context, a sector often overlooked in digital governance literature. Whereas prior studies predominantly address identity management in civil registration, taxation, or public services, this research extends the discourse by illustrating how digital identity innovation can reshape the governance of incarcerated populations. The findings also reinforce [40] critique of digital identity systems, emphasizing the need for ethical safeguards and human-rights-based data governance, particularly when dealing with vulnerable populations such as inmates.

5.3. *Theoretical and Practical Implications.*

Theoretically, this study advances the understanding of digital identity as a governance mechanism, rather than a mere technological artifact. In line with [30], the SIN implementation illustrates how digital infrastructure redefines power relations between citizens and the state by embedding accountability, traceability, and interoperability into bureaucratic systems. The research contributes to the evolving field of Digital Public Administration, highlighting the intersection between technological innovation and institutional legitimacy in high-stakes governance environments.

Practically, the findings suggest several policy and managerial implications. First, to ensure sustainability, the government must establish a comprehensive legal framework governing data privacy, access rights, and cross-institutional data exchange. Second, strengthening inter-agency coordination between the Directorate General of Corrections, the Ministry of Home Affairs (Dukcapil), and the Ministry of Immigration and Corrections is essential to maintain data consistency and accountability. Third, investing in digital literacy and change management for correctional officers will help minimize resistance and enhance operational adaptability. Finally, establishing continuous monitoring and evaluation mechanisms will ensure that SIN implementation remains aligned with principles of transparency, human rights, and data security.

In conclusion, the implementation of the Single Identity Number (SIN) in Indonesia's correctional system demonstrates that digital identity innovation can serve as a cornerstone for building accountable, transparent, and citizen-centered governance. While technical and regulatory challenges persist, this initiative provides an exemplary model for integrating e-Government principles into complex institutional environments, reaffirming Indonesia's commitment to modernizing its public administration through inclusive digital transformation.

6. Limitations and Further Study

Furthermore, robust monitoring mechanisms and citizen oversight are essential to mitigate risks of data misuse and to uphold human rights standards in digital transformation processes. As digital identity becomes increasingly central to modern governance, the Indonesian experience with SIN offers valuable lessons for other developing countries seeking to reform their correctional systems through digital means. Future research should examine longitudinal impacts of SIN on inmate outcomes, institutional accountability, and interagency data governance within the broader e-Government ecosystem.

Author Contributions

Conceptualization, I.S.; methodology, I.S;T.S;JB. software, I.S,T.S,J.B; validation, I.S,T.S,J.B,G.H; formal analysis, I.S.; investigation, I.S,T.S,J.B,G.H.; resources, I.S,T.S,J.B,G.H.; data curation, I.S,T.S,J.B; writing-original draft preparation, I.S.; writing-review and editing, I.S,T.S,J.B,G.H; visualization, I.S.; supervision, I.S,T.S,J.B.; project administration, I.S.; funding acquisition, I.S. All authors have read and agreed to the published version of the manuscript.

Funding

This research work received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Acknowledgments

The researcher would like to thank Politeknik Ilmu Pemasyarakatan and all parties for the support in this research.

Conflicts of Interest

The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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