



The Effectiveness of Digital Immigration Inspection at Batam Center Using the All Indonesia Application

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Abstract

Purpose: This study analyzes the legal framework, effectiveness, obstacles, and improvement strategies for immigration inspection at Batam Center Immigration Checkpoint through international arrival reporting using the All Indonesia Application.

Research Methodology: This study employs empirical legal research (socio-legal research) using statutory, conceptual, and empirical approaches. Data were collected through semi-structured interviews with immigration officials and officers, direct observation, and document reviews. Data were analyzed using descriptive, interpretative, and evaluative qualitative methods.

Results: The legal framework is based on Law No. 25 of 2009 on Public Services, Presidential Regulation No. 95 of 2018 on Electronic-Based Government Systems, Law No. 6 of 2011 on Immigration, and Article 10 of Minister of Law and Human Rights Regulation No. 9 of 2024 concerning electronic arrival cards. However, technical implementation remains limited due to regulatory gaps, including the absence of specific operational regulations, sanction mechanisms, contingency procedures, and data synchronization with the Immigration Inspection Application. The implementation faces challenges such as voluntary completion, server latency, duplicate verification, autogate data verification issues, and low digital literacy among 20–30% of travelers, creating efficiency paradoxes and security blind spots in detecting human trafficking and non-procedural migrant workers.

Conclusions: Improving effectiveness requires administrative engineering through legal substance reform, institutional strengthening, and legal culture development based on Friedman's Legal System Theory.

Limitations: This study focuses only on Batam Center Immigration Checkpoint with limited qualitative informants.

Contributions: This study contributes to immigration and administrative law studies and provides policy recommendations for adaptive digital immigration services.

Keywords: *All Indonesia Application, Batam Center Immigration Checkpoint, Immigration Inspection Effectiveness, Legal and Bureaucratic Engineering*

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1. Introduction

Rapid globalization in the 21st century has significantly increased cross-border human mobility, creating the need for an effective and adaptive immigration control system. Constitutionally, the principle of the rule of law as stipulated in Article 1 paragraph (3) of the 1945 Constitution of the Republic of Indonesia requires all governmental actions, including immigration administration, to be conducted based on applicable legal provisions. Meanwhile, Law No. 6 of 2011 concerning Immigration affirms that immigration functions as a state instrument to safeguard sovereignty over the movement of people entering and leaving Indonesian territory. Immigration Checkpoints (*Tempat Pemeriksaan Imigrasi/TPI*) serve as strategic points for implementing border control functions. Along with the digital transformation of public services mandated by Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government Systems (*Sistem Pemerintahan Berbasis Elektronik/SPBE*), immigration inspection processes at various TPIs have also undergone transformation through the digitalization of international arrival reporting ([Melis, Ursino, Scarpazza, Zangrossi, & Sartori, 2024](#); [Parameswara, 2023](#)).

One concrete manifestation of this transformation is the All Indonesia Application, which is used as a platform for international arrival reporting at Batam Center Immigration Checkpoint, the busiest international sea border checkpoint in Indonesia, connecting Batam with Harbour Front and Tanah Merah in Singapore as well as Stulang Laut in Malaysia ([Fassya, 2026](#)). The application was designed to replace the paper-based arrival card system by reducing inspection duration from 2–3 minutes to 30–45 seconds per passenger through QR code scanning. It also integrates passenger movement data in real time into the Immigration Information Management System (*Sistem Informasi Manajemen Keimigrasian/SIMKIM*) and Border Control Management (BCM) to support risk profiling functions ([Mutlu, Frowd, & Muller, 2025](#)).

However, empirical conditions at Batam Center Immigration Checkpoint still demonstrate several challenges, including passenger queues, redundant officer tasks, and low user compliance. Approximately 20–30% of passengers are unable to complete arrival reports independently due to limited digital literacy and network constraints. Consequently, primary inspection officers are required to shift their roles from border law enforcement officers to technical assistants for data entry. This role transformation potentially weakens the early detection function for transnational crimes, such as human trafficking and the departure of non-procedural Indonesian migrant workers (*Pekerja Migran Indonesia Non-Prosedural/PMI-NP*) ([Nasution, Nurkhotijah, & Anatami, 2025](#); [Shofa, Sohirin, & Aji, 2025](#); [NA, Yuliansyah, & Oktavia, 2025](#)). The gap between the normative expectations of digitalization (*das sollen*) and its practical implementation (*das sein*) represents the central problem examined in this study.

These challenges are further intensified by specific technical and functional constraints. Visa, Temporary Stay Permit (*Kartu Izin Tinggal Terbatas/KITAS*), and Permanent Stay Permit (*Kartu Izin Tinggal Tetap/KITAP*) data verification through automated inspection gates (autogates) often encounters difficulties due to passengers' misunderstanding when completing visa-related information. In addition, data synchronization between the All Indonesia Application and the Immigration Inspection Application (*Aplikasi Pemeriksaan Keimigrasian/APK*) has not yet operated optimally. The application also lacks several supporting features, including individual or group data editing functions and same-day return trip (day trip) features, causing passengers who incorrectly enter information to repeat the entire submission process ([Akbar, Abdurahman, Nursanto, & Hartati, 2025](#); [Masua, & Mollet, 2025](#)).

These issues are empirically consistent with findings that limited integrated database systems and insufficient interconnectivity among immigration systems remain major obstacles in Indonesia immigration modernization efforts. As a result, digital reporting applications at border checkpoints are often not fully connected in real time with SIMKIM and BCM ([Kurniawan, Aspan, & Rafianti, 2026](#); [Rumakat, 2025](#)). This phenomenon is not merely a technological issue but also reflects a fundamental

legal concern regarding the extent to which law functions as an instrument of administrative engineering in digital bureaucratic transformation, as emphasized in studies applying Mochtar Kusumaatmadja Theory of Development Law to digital public service implementation ([Al-Ghiffari, 2026](#)).

Based on the above discussion, this article aims to analyze the legal framework governing immigration inspection through the All Indonesia Application, evaluate its implementation effectiveness, identify existing obstacles, and formulate strategies to improve its effectiveness at Batam Center Immigration Checkpoint. This article represents an update and refinement of a previous thesis research project with the same research object, developed into a scientific article suitable for publication in a Sinta 3 accredited law journal. The research focus has been narrowed through more specific variables while maintaining the core objectives of the original study.

2. Literature Review and Hypothesis/es Development

2.1 Previous Studies

Research on the digitalization of immigration services and the effectiveness of inspections at Immigration Checkpoints (*Tempat Pemeriksaan Imigrasi/TPI*) has developed extensively. However, most studies remain focused on normative or general administrative aspects. [Fassya \(2026\)](#) examined the implementation of the All Indonesia Platform as an integrated declaration system for international passengers through a literature-based study since its launch on 1 September 2025 at four major entry points. However, the study did not empirically examine its effectiveness at a specific maritime border checkpoint. [Taradong et al. \(2025\)](#) evaluated immigration inspection practices at air-based TPI through a literature review and found that gaps between regulations and infrastructure readiness remain recurring challenges. [Meanwhile, Shofa et al. \(2025\)](#) emphasized the importance of systematic immigration intelligence products to ensure that supervision does not become merely reactive, which is relevant to this study's finding regarding the potential shift of officers' roles from intelligence functions to technical assistance.

[Kurniawan et al. \(2026\)](#) examined legal compliance in the digitalization of public services within police institutions and found that compliance was considered adequate but not optimal, particularly regarding procedural consistency, transparency, and technological infrastructure readiness. This pattern is consistent with the findings of this study in the immigration sector. [Rumakat \(2025\)](#) analyzed the effectiveness of public services through the implementation of electronic administrative systems in local government and concluded that effectiveness is highly dependent on the readiness of technical implementing regulations rather than merely the introduction of digital applications. [Al-Ghiffari \(2026\)](#) applied Mochtar Kusumaatmadja Theory of Development Law to digital public service transformation and emphasized that law must actively function as a driver of bureaucratic transformation rather than merely follow technological developments. This theoretical proposition serves as an analytical foundation in this study.

At the international level, studies on digital border governance provide relevant comparative perspectives. [Mutlu et al. \(2025\)](#) examined the phenomenon of the “appification of borders” and found that migration data digitalization often develops faster than the readiness of legal frameworks and supporting infrastructure, which aligns with the regulatory gap identified in this study. [Jain et al. \(2023\)](#) developed a risk-based border management model emphasizing the importance of real-time data integration for risk profiling. [Meanwhile, Amoroso \(2024\)](#) examined the compatibility of artificial intelligence systems in immigration decision-making processes and highlighted the importance of balancing technological efficiency with human rights protection. [Zhang et al. \(2025\)](#) found that public attitudes toward biometric information dissemination are strongly influenced by trust in government data governance, which is relevant to the legal culture challenges identified in this study.

These studies generally examine immigration digitalization from separate perspectives, including institutional, technological, or general policy approaches. However, limited research has specifically analyzed the effectiveness of immigration inspection through the All Indonesia Application for international arrival reporting using an integrated empirical legal approach, particularly at Batam Center Immigration Checkpoint as Indonesia busiest maritime ferry border checkpoint. This research gap represents the novelty and scientific contribution of this article.

2.2 Mochtar Kusumaatmadja's Theory of Development Law (Grand Theory)

This study employs Mochtar Kusumaatmadja Theory of Development Law as the grand theory. This theory represents a reconceptualization of Roscoe Pound concept of law as a tool of social engineering, adapted to Indonesia sociological realities and the need for bureaucratic reform ([Al-Ghiffari, 2026](#)). According to Mochtar, law should not be narrowly understood as merely a collection of written norms, but rather as an integrated system consisting of principles, institutions, and processes that operate to achieve planned and goal-oriented transformation.

In the context of electronic-based government governance transformation, this theory emphasizes that law must play a central role in directing, facilitating, and supervising the transition from conventional bureaucratic systems to digital public services. Therefore, technological innovations such as the All Indonesia Application should not operate independently without a legal framework that provides operational certainty, regulatory guidance, and institutional control.

2.3 Lawrence M. Friedman's Legal System Theory (Middle Theory)

As the middle theory, this study applies Lawrence M. Friedman Legal System Theory, which divides the legal system into three interconnected elements namely Legal Structure, referring to institutions, authorities, and supporting technical infrastructure, Legal Substance, referring to norms, technical regulations, and written policies, and Legal Culture, referring to values, legal awareness, and compliance behavior among users and government officials ([Flora et al., 2023](#); [Halim et al., 2023](#)).

This theory is used as an analytical framework to comprehensively examine the effectiveness and challenges of digital immigration inspection. It enables the study to identify whether implementation problems originate from inadequate technical regulations, limited institutional capacity and infrastructure, or insufficient compliance and digital literacy among service users. Through this framework, the effectiveness of the All Indonesia Application can be assessed not only from technological aspects but also from legal, institutional, and socio-cultural dimensions that influence its implementation ([Freilich & Greene-Colozzi, 2026](#)).

2.4 E-Government/Digital Governance Theory (Applied Theory)

As the applied theory, this study employs the E-Government/Digital Governance Theory proposed by Richard Heeks and David Osborne, which emphasizes the utilization of information and communication technology to improve the quality of public services, administrative efficiency, transparency, and government accountability ([Rumakat, 2025](#)). This theory is used to assess two main performance indicators of the All Indonesia Application at Batam Center Immigration Checkpoint, namely immigration crossing time efficiency (dwelling time) and the reliability of immigration risk screening functions (risk profiling and border security). Furthermore, this theory evaluates the extent to which digital technology generates tangible public value rather than merely serving as a form of modernization without substantive benefits (technological gimmick) ([Ramlan, Parameshwara, & Riza, 2026](#); [Yulianita, Subardin, & Zulfikri, 2024](#)).

2.5 Conceptual Propositions

As this study employs a qualitative descriptive-analytical approach, the theoretical framework above is formulated into two conceptual propositions. The first proposition (P1) states that the effectiveness of digital immigration inspection at Immigration Checkpoints is determined by the simultaneous alignment of Friedman three dimensions of the legal system, namely legal substance, legal structure,

and legal culture. Therefore, improvement in only one dimension without corresponding changes in other dimensions will not produce optimal effectiveness. The second proposition (P2) states that as long as digital application obligations are not supported by enforceable sanction provisions and legally certain Contingency Plan Standard Operating Procedures, digital immigration inspection will only produce a “technological gimmick” that creates a double burden for officers rather than achieving genuine bureaucratic efficiency.

3. Research Methodology

This study employs an empirical legal research method (socio-legal research) with a descriptive-analytical approach, examining how law operates in the practice of immigration inspection through the All Indonesia Application at Batam Center Immigration Checkpoint. Three approaches are applied simultaneously. The statutory approach is used to examine Law No. 25 of 2009 concerning Public Services, Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government Systems (SPBE), Law No. 6 of 2011 concerning Immigration as amended by Law No. 63 of 2024, and Government Regulation No. 31 of 2013 as amended by Government Regulation No. 40 of 2023. The conceptual approach is applied to examine the concepts of legal effectiveness, legal systems, and e-government in public services. Meanwhile, the empirical approach (field approach) is conducted through the collection of factual data directly from the research site.

The research was conducted at the Class I Special Immigration Office of TPI Batam and Batam Center Immigration Checkpoint. Primary data were obtained through semi-structured interviews with immigration officials and officers, including the Head of Travel Document and Immigration Stay Permit Division, Head of Inspection Section, TPI Coordinator, Shift Supervisor, Immigration Inspection Officers, All Indonesia Application Administrators/Operators, and Immigration Intelligence Officers, as well as application users consisting of Indonesian citizens and foreign nationals. The data collection was complemented by direct observation of the immigration inspection process in the field. Secondary data were obtained from primary legal materials, including the Immigration Law and its implementing regulations, and secondary legal materials consisting of books, scientific journals, and previous research findings. Tertiary data were obtained from legal dictionaries and legal encyclopedias.

Data analysis was conducted qualitatively through three stages, namely data reduction, data presentation, and inductive conclusion drawing. The analysis employed three methods: descriptive analysis to describe the implementation of immigration inspection, interpretative analysis to examine findings based on the Theory of Development Law, Legal System Theory, and E-Government/Digital Governance Theory, and evaluative analysis to assess the effectiveness of the All Indonesia Application based on indicators of efficiency, accuracy, user compliance, and security function reliability ([Afandi, 2022](#)).

4. Results and Discussions

4.1 Legal Framework for Immigration Inspection through the All Indonesia Application

The implementation of digital International Arrival Report submission at Batam Center Immigration Checkpoint is legally supported by a multi-layered regulatory framework. At the macro level, Law No. 25 of 2009 concerning Public Services requires state service providers to deliver fast, efficient, and accountable services while providing integrated public service information systems as stipulated in Articles 13 and 23. Meanwhile, Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government Systems (SPBE) establishes the principles of effectiveness, integration, interoperability, and security as mandatory standards for digital government governance. At the sectoral level, Articles 9 and 16 of Law No. 6 of 2011 concerning Immigration emphasize the obligation of every person to undergo immigration inspection, which is further regulated through Government

Regulation No. 31 of 2013 as amended by Government Regulation No. 40 of 2023 ([Respationo, 2024](#)).

This legal foundation is further strengthened by Minister of Law and Human Rights Regulation No. 9 of 2024 concerning Procedures for Immigration Inspection of Persons Entering or Leaving Indonesian Territory. This regulation has external legal binding authority as a ministerial regulation, distinguishing it from circular letters or internal standard operating procedures. Article 10 paragraph (1) of this regulation stipulates that “Every Foreigner entering Indonesian Territory must complete an electronic arrival card.” Paragraph (2) provides an option for manual completion if electronic submission cannot be conducted. Paragraph (3) specifies ten minimum data elements that must be included, namely name, date of birth, passport number, nationality, email address, purpose of arrival, address in Indonesia, length of stay in Indonesia, transportation number, and country of departure. Paragraph (4) delegates the regulation of procedures, specifications, and arrival card design to the Director General of Immigration ([Saito & Budianto, 2025](#)).

This provision provides an answer to the research question concerning the legal framework of immigration inspection through the All Indonesia Application. The application now has an explicit legal basis at the ministerial regulation level, although the delegation under Article 10 paragraph (4) has not yet been followed by further technical regulations. Although the macro, sectoral, and Article 10 of Minister of Law and Human Rights Regulation No. 9 of 2024 frameworks have been established, the research findings indicate that significant regulatory gaps remain at the technical and implementation levels, as summarized in Table 1.

Table 1. Regulatory gap in the legal framework of the all indonesia application

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Regulatory Level	Legal Instrument	Condition
Macro	Law No. 25 of 2009 concerning Public Services, Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government Systems (SPBE), Law No. 6 of 2011 concerning Immigration as amended by Law No. 63 of 2024	Available and adequate as a general legal foundation
Sectoral-Technical	Minister of Law and Human Rights Regulation No. 9 of 2024 (Article 10)	Available and requires electronic arrival card submission (paragraphs 1–3), but paragraph (4) delegates the procedures, specifications, and technical design to the Director General of Immigration, which has not yet been followed by further regulations
Technical-Operational	Regulation of the Director General of Immigration implementing the delegation under Article 10 paragraph (4), specifically for maritime border Immigration Checkpoints	Not yet issued. Technical arrangements regarding visa/KITAS/KITAP data verification through autogates, synchronization between the All Indonesia Application and the Immigration Inspection Application (APK), data editing features, and day trip features remain unregulated
Sanction Provisions and Contingency Plan	Administrative sanction provisions and emergency Standard Operating Procedures for system failures	Not yet regulated (normative vacuum). Application submission remains voluntary, and system disruption handling is conducted without standardized legal guidelines

Table 1 demonstrates that although the legal foundation for the All Indonesia Application has been established through general and sectoral regulations, the implementation level still faces regulatory gaps. This condition reflects a discrepancy between legal substance and institutional practice, indicating that digital immigration transformation requires further regulatory engineering to ensure that technological innovation operates within a clear, enforceable, and adaptive legal framework.

With the enactment of Article 10 of Minister of Law and Human Rights Regulation No. 9 of 2024, the obligation to complete electronic arrival cards has obtained an externally binding legal basis. However, the most critical normative weakness remains the absence of administrative sanction provisions for passengers who fail to comply with this obligation. In public law doctrine, a legal obligation (*rechtsplicht*) that is not accompanied by sanction provisions (*sanctienorm*) will be reduced to merely an administrative recommendation without coercive force (*lex imperfecta*). This condition has also been identified in studies concerning normative gaps in Indonesian administrative law following the implementation of digitalization policies (Putra, Wibowo, & Minollah, 2024; Nurkhotijah, Saputra, Fadrijani, & Ginting, 2025).

From the perspective of Mochtar Kusumaatmadja Theory of Development Law, this regulatory gap indicates that technological engineering through the implementation of the All Indonesia Application has progressed ahead of the legal framework that should support it. Consequently, law has not yet functioned optimally as a means of bureaucratic engineering (a tool of administrative engineering) that directs and regulates technological transformation, but instead merely follows technological policy developments (Al-Ghiffari, 2026).

4.2 Profile of the Class I Special Immigration Office of TPI Batam and Characteristics of Batam Center Immigration Checkpoint

The Class I Special Immigration Office of TPI Batam is a technical implementation unit under the Directorate General of Immigration responsible for providing immigration services, enforcing immigration law and state security functions, facilitating development activities, and conducting immigration intelligence within its working area. The office oversees several Immigration Checkpoints (*Tempat Pemeriksaan Imigrasi/TPI*), including Batam Center Immigration Checkpoint, Harbour Bay Immigration Checkpoint (Citra Tritunas), Sekupang Immigration Checkpoint, and Hang Nadim Airport Immigration Checkpoint.

Among these checkpoints, Batam Center Immigration Checkpoint holds a central position as the busiest maritime ferry border checkpoint in Indonesia. It directly connects Batam with HarbourFront and Tanah Merah in Singapore, as well as Stulang Laut and Pasir Gudang in Malaysia. The daily passenger movement on regular working days averages approximately 5,000–8,000 people, increasing to 12,000–18,000 passengers during weekends and holiday seasons. The peak hours are generally concentrated between 08.00–11.00 Western Indonesian Time (*Waktu Indonesia Bagian Barat/WIB*) and 16.00–20.00 WIB.

To respond to the high volume of cross-border movements and implement the Electronic-Based Government Systems (SPBE) policy, the Directorate General of Immigration introduced the All Indonesia Application as a digital self-declaration platform replacing the previous paper-based arrival and departure cards. The application integrates several features, including digital arrival declarations, transportation mode declarations, integrated health and customs declarations, and QR code issuance, which is scanned by officers at the primary inspection counter. The collected data are electronically transmitted to the Immigration Information Management System (SIMKIM) and Border Control Management (BCM) to support data matching processes against the Prevention and Deterrence List (*Daftar Cegah-Tangkal*) (Fassya, 2026; Yusuf, Putra, Hasibuan, & Giawa, 2025).

4.3 Effectiveness of Immigration Inspection: Analysis of Friedman's Three Elements of Legal System Theory

From the perspective of b element, the effectiveness of immigration inspection is strongly influenced by the degree of legal certainty regarding the obligation to complete the application. Although Article

10 of Minister of Law and Human Rights Regulation No. 9 of 2024 requires electronic completion of arrival cards, the research findings indicate that the absence of administrative sanction provisions and implementing regulations issued by the Director General of Immigration regarding technical procedures causes this obligation to still be perceived as “voluntary” by many passengers. Consequently, Immigration Inspection Officers do not have a sufficiently strong legal basis to refuse the issuance of entry permits solely because passengers have not independently completed their data. This condition is consistent with findings that legal compliance in the digitalization of public services tends to remain at an “adequate” level but has not reached optimal effectiveness without firm normative enforcement mechanisms ([Kurniawan et al., 2026](#)).

From the perspective of the Legal Structure element, the main challenges involve an imbalance between the number of officers and passenger volumes, limited network bandwidth in border coastal areas, and insufficient real-time interconnectivity between the All Indonesia Application, the Immigration Information Management System (SIMKIM), and Border Control Management (BCM). These limitations create work redundancy in the form of repeated verification and double burdens, where officers must continue conducting physical passport inspections and manually re-entering data even after passengers have presented QR codes. This pattern is also identified in studies on the effectiveness of electronic administrative systems in local governments, which emphasize that successful digital transformation depends heavily on the readiness of implementing regulations and supporting infrastructure rather than merely launching digital applications ([Rumakat, 2025](#)).

From the perspective of the Legal Culture element, the research findings reveal that approximately 20–30% of international passengers are unable to complete digital arrival reports independently. This group is predominantly composed of elderly passengers, travelers with limited educational backgrounds, and foreign nationals experiencing language barriers. The lack of extensive socialization at departure points in countries of origin, combined with the perception that application completion is only an optional administrative requirement, contributes to a pattern of delayed compliance (procrastination culture). As a result, passengers tend to complete the application only after arriving at the Batam Center Immigration Checkpoint arrival hall.

4.4 Efficiency Paradox and Security Vulnerability Gaps in Digital Governance

An evaluation based on E-Government/Digital Governance Theory indicates the occurrence of an efficiency paradox, as summarized in Table 2.

Table 2. Efficiency paradox of immigration inspection dwelling time at batam center immigration checkpoint

Inspection Scenario	Duration per Passenger	Impact on Effectiveness
Manual system (before digitalization)	2–3 minutes	Baseline condition before the implementation of the All Indonesia Application
Ideal digital system (passengers complete the application before arrival)	30–45 seconds	Efficiency is achieved in accordance with the normative objectives of digitalization (<i>das sollen</i>)
Digital implementation failure (20–30% of passengers have not completed the application and require manual assistance)	3–5 minutes	Bottleneck shift occurs, where queues are transferred to the arrival hall and total dwelling time becomes longer (<i>das sein</i>)

Source: Processed from primary interview data with Batam Center Immigration Checkpoint officers and application operators, 2026

The data presented in Table 2 indicate that the success of reducing dwelling time only applies to passengers who have completed the application before arrival (pre-arrival compliance). For passengers who have not completed the application, digitalization instead creates additional administrative burdens that extend the overall queue duration. From a security perspective, the lack of

optimal seamless real-time integration between the All Indonesia Application and Border Control Management (BCM) affects the accuracy of automated checking functions against the Prevention and Deterrence List (*Daftar Cegah-Tangkal*). Consequently, when officers' attention is diverted toward assisting passengers with technical application completion, immigration intelligence vigilance in detecting indications of human trafficking and non-procedural Indonesian migrant workers (PMI-NP) may significantly decrease. This condition represents a security blind spot that requires strengthening systematic immigration intelligence functions rather than relying solely on reactive responses to serious violations ([Shofa et al., 2025](#)).

4.5 Effectiveness Obstacles: Juridical, Technical-Structural, and Cultural Dimensions

Juridical and substantive obstacles are reflected in two fundamental issues. First, the absence of a specific Regulation of the Director General of Immigration and standardized Standard Operating Procedures (SOPs) for maritime border Immigration Checkpoints, which have different operational characteristics compared to air-based Immigration Checkpoints. Second, the absence of enforceable sanction provisions and normative obligations for passengers who are unwilling to submit their required data. Technical-structural obstacles include limited network bandwidth and server reliability in coastal border areas, interoperability challenges between systems and across ministries/institutions, including Border Control Management (BCM), customs, and quarantine systems, as well as limitations in the number and technical training of immigration personnel in handling system disruptions and troubleshooting processes.

Cultural and sociological obstacles arise from the lack of extensive pre-departure campaigns at departure points in countries of origin and limited digital literacy among cross-border travelers, particularly elderly passengers and foreign nationals experiencing language barriers. These three dimensions of obstacles are interconnected. Weaknesses in legal substance create uncertainty for implementing structures in the field, while structural unpreparedness further strengthens public perceptions that digital immigration procedures are merely flexible bureaucratic formalities rather than essential mechanisms for safeguarding state sovereignty and border security ([Zainudin, Raditya, Rizki, Setiawan, Fatkhuri, & Ridwan, 2026](#); [Jannah, Prasasti, & Fisabilazkia, 2026](#)).

4.6 Efforts to Improve Effectiveness through Legal and Bureaucratic Engineering (Administrative Engineering)

Based on Mochtar Kusumaatmadja Development Law Theory, overcoming these comprehensive obstacles requires a holistic restructuring approach that simultaneously addresses the three elements of Friedman legal system, as summarized in Table 3.

Table 3. Three pillars of legal and bureaucratic engineering for improving the effectiveness of the all Indonesia application

Pillars of Engineering	Concrete Measures	Friedman Legal System Dimension
Legal Reform (Reform of Legal Substance)	Formulation of a specific Regulation of the Director General of Immigration for maritime Immigration Checkpoints (TPI Laut), development of legally valid Contingency Plan Standard Operating Procedures (SOPs), and strengthening of regulations on mandatory pre-arrival submission requirements.	Legal Substance
Institutional Engineering (Strengthening Legal Structure and Institutions)	Improvement of information technology infrastructure and real-time automatic integration between BCM and SIMKIM systems, restructuring of service processes through fast-track lanes and assistance lanes/helpdesks, and continuous training and capacity development for digital border management personnel.	Legal Structure

Pillars of Engineering	Concrete Measures	Friedman Legal System Dimension
Cultural Engineering (Legal Culture and Literacy Development)	Implementation of pre-departure campaigns in collaboration with port authorities in Singapore and Malaysia, provision of visual educational materials, multilingual instructions, and self-service digital kiosks.	Legal Culture

Table 3 illustrates that improving the effectiveness of the All Indonesia application requires an integrated legal and bureaucratic engineering approach involving simultaneous reforms in legal substance, legal structure, and legal culture. These three dimensions demonstrate that technological transformation in immigration services cannot be achieved solely through system development but must also be supported by regulatory strengthening, institutional capacity improvement, and public awareness enhancement.

In the first pillar, the establishment of a specific Regulation of the Director General of Immigration for maritime Immigration Checkpoints (TPI *Laut*) would provide an external binding force for the obligation to complete the application, while simultaneously addressing the regulatory gaps (*vacuum norm*) concerning administrative sanctions and the legal status of digital data. The development of an officially authorized Contingency Plan SOP would provide legal protection for officers in the event of network failures or system downtime, ensuring that discretionary actions taken during such situations remain within the boundaries of the law. This approach aligns with the proposition that law should guide technological development proactively rather than merely follow digitalization policies that have already been implemented ([Al-Ghiffari, 2026](#); [Alamsyah, Wibisono, & Satriawan, 2023](#)).

In the second pillar, separating the passenger processing flow into a fast-track lane for passengers who have completed the application independently and an assistance lane/helpdesk for passengers experiencing difficulties would eliminate redundancy and bottleneck shift phenomena, as identified in Table 2. This restructuring would also restore the primary inspection officers' focus on law enforcement functions and risk profiling. Strengthening system interoperability is consistent with the global trend toward risk-based border governance through data integration and analytics-driven decision-making ([Jain, de Ruiter, Häring, Fehling-Kaschek, & Stolz, 2023](#); [Mutlu, Frowd, & Muller, 2025](#)).

In the third pillar, implementing pre-departure campaigns through cross-border cooperation with port authorities in Singapore and Malaysia would encourage passengers to complete the application process before arriving in Batam. Meanwhile, the provision of multilingual visual educational materials and self-service digital kiosks in arrival areas would reduce the dependence of vulnerable groups on manual assistance from officers. This educational approach based on community engagement is consistent with direct legal awareness programs for coastal communities, which have demonstrated effectiveness in other Batam contexts ([Erniyanti, Chikita, & Fadlan, 2025](#)). Legal culture engineering is essential, considering that public trust in digital data governance significantly influences voluntary compliance with digital procedures ([Zhang, Zhang, & Deng, 2025](#)).

5. Conclusions

The legal framework governing immigration inspection through the All Indonesia Application is broadly supported by Law No. 25 of 2009, Presidential Regulation No. 95 of 2018, and Law No. 6 of 2011 in conjunction with Law No. 63 of 2024, and further strengthened by Article 10 of the Regulation of the Minister of Law and Human Rights No. 9 of 2024, which requires the electronic completion of arrival cards. However, the delegation of authority stipulated in Article 10 paragraph (4) has not yet been followed by further technical regulations. Consequently, operational implementation still faces a regulatory gap, reflected in the absence of a specific Regulation of the Director General of Immigration for maritime border Immigration Checkpoints (TPI *Perbatasan Laut*), the lack of

sanction provisions, the absence of legally certain Contingency Plan SOPs, and insufficient data synchronization with the Immigration Inspection Application (APK).

Immigration inspection through the All Indonesia Application at Batam Center Immigration Checkpoint has not yet operated effectively. The application completion process remains voluntary due to the absence of normative enforcement mechanisms, resulting in work redundancy and an efficiency paradox caused by server latency and limited interoperability between the SIMKIM and BCM systems. Furthermore, the low level of digital literacy among approximately 20–30% of cross-border travelers has shifted immigration officers' roles from law enforcement gatekeepers to technical assistants, potentially creating security blind spots in the early detection of human trafficking (*Tindak Pidana Perdagangan Orang/TPPO*) and non-procedural Indonesian migrant workers (*Pekerja Migran Indonesia/PMI*). These challenges encompass interconnected legal dimensions (the absence of specific Director General Regulations and normative sanctions), technical-structural dimensions (limitations in bandwidth, human resources, and system interoperability), and cultural dimensions (low digital literacy and the absence of pre-departure socialization). Therefore, simultaneous legal and bureaucratic engineering (administrative engineering) is required across these three dimensions to ensure the effective implementation of digital immigration governance.

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Author Contributions

YP conceptualized the study, developed the research design, collected field data through semi-structured interviews, observations, and document analysis, analyzed and interpreted the findings using the frameworks of Development Law Theory, Legal System Theory, and E-Government/Digital Governance Theory, drafted the manuscript, revised the article, and approved the final version for publication. SR contributed to the literature review, theoretical framework development, manuscript revision, and critical evaluation of the research findings. SN contributed to data validation, methodological refinement, manuscript editing, and final review of the article. All authors have read and approved the final version of the manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the research, authorship, and publication of this article. The research was conducted independently, and all findings and interpretations presented in this manuscript are solely the responsibility of the authors.

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