



Efficiency of Population Administration Services Based on Digital Identity: An Integrative Analysis From the Perspective of Islamic Values in Riau Province

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ABSTRACT

The digital transformation of public services has become an urgent necessity, including in civil administration. This study analyzes the efficiency of administrative services through the implementation of the Digital Population Identity (Identitas Kependudukan Digital or IKD) in Riau Province, incorporating Islamic values as a distinctive evaluative and ethical framework in digital governance. Using a descriptive qualitative method with in-depth interviews, observation, and documentation, the findings reveal that IKD has improved service efficiency, reducing processing time from an average of 30 minutes to under 10 minutes per citizen. However, several challenges remain, including limited digital literacy, suboptimal inter-agency coordination, and low public awareness of data privacy. Islamic ethical principles such as amanah (trustworthiness), ihsan (excellence in conduct), and maslahah (public interest or common good) are applied as a normative and evaluative lens aligned with universal values such as integrity, professionalism, and public welfare. Unlike previous evaluations that focused primarily on technical or procedural aspects, this research uniquely integrates faith-based ethics into empirical assessment, offering broader relevance for digital ID initiatives in Muslim-majority contexts and developing nations. This study suggests enhancing digital literacy with value-based content, strengthening infrastructure, and institutionalizing Islamic ethical principles in digital public service policies to ensure trust, accountability, and sustainability.

ABSTRAK

Transformasi digital dalam pelayanan publik telah menjadi kebutuhan yang mendesak, termasuk dalam administrasi kependudukan. Penelitian ini menganalisis efisiensi layanan administrasi melalui penerapan Identitas Kependudukan Digital (IKD) di Provinsi Riau, dengan mengintegrasikan nilai-nilai Islam sebagai kerangka evaluatif dan etis yang khas dalam tata kelola digital. Menggunakan metode kualitatif deskriptif melalui wawancara mendalam, observasi, dan dokumentasi, temuan menunjukkan bahwa IKD telah meningkatkan efisiensi pelayanan, dengan

Kata Kunci:

Identitas Kependudukan Digital,
Efisiensi Pelayanan,
Nilai Islam.

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memangkas waktu pemrosesan dari rata-rata 30 menit menjadi kurang dari 10 menit per warga, dan secara signifikan meningkatkan akurasi data. Namun, masih terdapat sejumlah tantangan, termasuk literasi digital yang terbatas, koordinasi antarinstansi yang belum optimal, dan rendahnya kesadaran masyarakat terhadap privasi data. Prinsip etika Islam seperti *amanah* (dapat dipercaya), *ihsan* (keunggulan dalam perilaku), dan *maslahah* (kepentingan umum atau kebaikan bersama) diterapkan sebagai lensa normatif dan evaluatif yang selaras dengan nilai-nilai universal seperti integritas, profesionalisme, dan kesejahteraan publik. Berbeda dari evaluasi sebelumnya yang terutama berfokus pada aspek teknis atau prosedural, penelitian ini secara unik mengintegrasikan etika berbasis keimanan ke dalam penilaian empiris, sehingga menawarkan relevansi yang lebih luas bagi inisiatif identitas digital di wilayah mayoritas Muslim dan negara-negara berkembang. Penelitian ini menyarankan peningkatan literasi digital berbasis nilai, penguatan infrastruktur, dan institusionalisasi prinsip-prinsip etika Islam dalam kebijakan layanan publik digital guna memastikan kepercayaan, akuntabilitas, dan keberlanjutan.

A. INTRODUCTION

The development of information and communication technology has served as a catalyst in the reform of governance, particularly in the provision of digital-based public services. One tangible form of this transformation is the implementation of Digital Population Identity (Identitas Kependudukan Digital/IKD) by the Ministry of Home Affairs of the Republic of Indonesia. IKD is a digitization initiative of population data that is integrated with the Population Administration Information System (SIAK), aimed at enhancing the efficiency, security, and accessibility of population administration services.

The Digital Population Identity (IKD) represents a technological innovation that improves efficiency, security, and accessibility in the population administration system. It also enables both central and regional governments to facilitate easier access to information for the general public (Zain et al., 2025). The central government supervises the administration of local governments to ensure effective and efficient governance (Gaffar et al., 2022). Public participation is essential in improving digital literacy and contributing to outreach and education efforts (Rahmawati et al., 2024). Through digital transformation, various demographic data can be integrated to meet the needs of multiple sectors and public services (Salopah et al., 2024). The implementation of IKD is highly relevant in response to the growing demand for public service efficiency and cross-sector service integration. This application allows citizens to access data such as electronic ID cards (KTP-el), Family Cards (KK), and other demographic information through digital devices.

However, the implementation of IKD faces several challenges, including limited digital infrastructure, public resistance to technological change, and low levels of digital literacy. As the implementing agency for population administration services, the Civil Registration Office (Dinas Dukcapil) at the district/city level has accelerated the activation of IKD through both regular services at Dukcapil offices and mobile services that reach out directly to the community. The acceleration of IKD activation is one of the Ministry of Home Affairs' efforts to realize the directives of President Joko Widodo. The President has instructed all relevant ministries and institutions to accelerate digital transformation and the integration of National Digital Services through Digital ID (IKD), digital payments, and data exchange for interoperable and user-oriented public services. President Joko Widodo expects that IKD can be used as a key access credential for government services through the Electronic-Based Government System (SPBE) by June 2024.

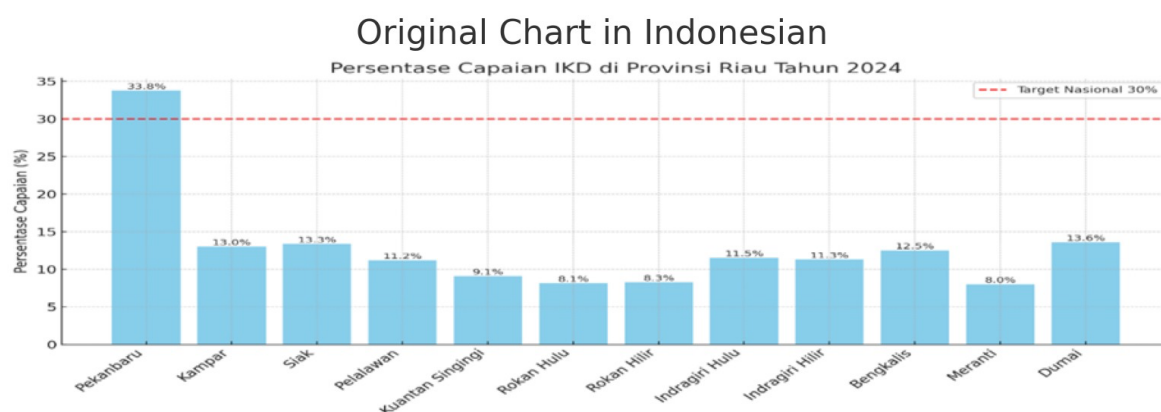
In essence, the digital population identity is organized in an integrated manner with the

Population Administration Information System (SIAK), which is a data framework utilizing data and correspondence to manage organizational demographic data administration in a unified structure. This is explicitly stated in Article 16 paragraph (2) of the Minister of Home Affairs Regulation Number 72 of 2022, which asserts: “The implementation of digital population identity as referred to in paragraph (1) is integrated with the centralized SIAK system.” Within the SIAK framework, digital identity is expected to provide satisfaction in terms of public autonomy and transparency, while ensuring security and protecting citizens from biased treatment. Achieving this goal requires the active roles of both central and local governments, as well as strong public engagement.

Based on the results of the 2023 National Coordination Meeting (Rakornas) on Population and Civil Registration, the IKD activation target for provinces and districts/cities throughout Indonesia was set at 25%. This target was raised to 30% in 2024, as stipulated in the 2024 Rakornas outcomes. Achieving the IKD activation target can be accomplished through mass and scheduled implementation across ministries/institutions, banks, schools (for students aged 17), universities, regional government offices (OPD), companies, factories, indigenous communities, exhibitions/bazaars, car-free day events, and other public activities.

In Riau Province, the IKD program has been introduced as a solution to overcome challenges faced in conventional population services, particularly in remote, coastal, and island regions. However, initial observations reveal that implementation faces significant challenges, such as limited internet connectivity and low public participation in digital activation. Data from the Department of Population and Civil Registration (DPMD-Dukcapil) of Riau Province in 2025 indicate that the IKD activation target has not been fully achieved. For a clearer illustration, see the figure below:

Figure 1. Target and Realization of Digital Population Identity (IKD) in Riau Province in 2024



Source: (DPMDDUKCAPIL) of Riau Province, 2025

Furthermore, the normative approach to digital policy such as the implementation of the Digital Population Identity (IKD) deserves to be examined through the lens of ethics and social justice, particularly in the context of Islamic values that are deeply rooted in Riau Province. In practice, digital efficiency does not necessarily guarantee the principles of social justice, inclusivity, and community empowerment. Elderly citizens and marginalized groups still face significant access gaps, while several implementation policies proceed without adequate public education or participatory approaches. This has led to a range of issues. Field observations reveal that certain efficiency-driven practices fail to address moral and social justice dimensions, such as:

1. Some rural residents are unable to access public services due to a lack of devices or internet connectivity contradicting the Islamic principle of justice.
2. Certain services are delivered rapidly but fail to educate citizens, resulting in passive and dependent communities.
3. Service officers who prioritize time and data targets tend to overlook aspects of hospitality, clarity, and spiritual guidance that should ideally be provided to the public.

From an Islamic perspective, public service is not merely an administrative activity focused on outputs; it also emphasizes the importance of delivering services with proper ethics and moral conduct (*adab* and *akhlaq*). Public service in Islam is a form of devotion that encompasses spiritual, social, and moral dimensions. Efficiency is not solely measured by speed or administrative accuracy, but also by the internalization of ethical values such as *amanah* (trust), *al-'adl* (justice), *maslahah* (social benefit), and *shidq* (honesty and transparency). Public service is viewed as a moral and social responsibility that must be carried out with professionalism and integrity, reflecting the character taught by the Prophet Muhammad (peace be upon him).

This aligns with the perspective of Al-Faruqi (1982), who asserted that in Islam, service to the community is part of worship (*ibadah*) and therefore must be grounded in noble spiritual values. Likewise, Al-Ghazali, in *Al-Mustasfa*, explained that *maslahah* is the core foundation of public policy formulation, including in the context of technology-based services. Therefore, in implementing the IKD, an Islamic values-based approach is crucial to ensure that digital transformation is not only technically efficient but also aligned with the principle of *rahmatan lil 'alamin* a form of service that brings benefit, justice, and blessings to all members of society.

This study addresses the gap between the concept of technology-driven efficiency and the social reality, particularly the influence of Islamic values in Riau Province. A digitalization process that neglects moral and justice aspects will only result in superficial efficiency, which is ultimately unsustainable and socially unacceptable. Hence, this research is relevant as it offers an integrative perspective bridging digital public service innovation with Islamic values as a moral and ethical foundation for bureaucracy.

While several studies have examined the technical and administrative aspects of IKD implementation, there remains a scarcity of research that critically explores how this digital transformation impacts the social, ethical, and justice dimensions of public service particularly within the local context of Riau Province. Few studies have highlighted how digital literacy, infrastructure readiness, and local values including Islamic principles contribute to the success or failure of IKD implementation.

Accordingly, this study aims to critically and analytically examine the implementation of IKD in Riau Province. Its primary focus is on the enabling and inhibiting factors of implementation, including community participation, digital infrastructure, and socio-cultural as well as religious values. This study is expected to provide policy recommendations that are more inclusive and just in the context of digital transformation in public service delivery.

B. LITERATURE REVIEW

1. Population Administration Services

As a welfare state, Indonesia is obligated to provide public services that are equitable, accessible, and responsive to the needs of its citizens, including civil registration and population administration services (Adisasmita, 2011; UNDP, 2022). Quality public service is characterized by transparency, participation, efficiency, and a focus on vulnerable groups. However, several studies have highlighted persistent challenges in its implementation, such as limited infrastructure, digital access inequality, and low human resource capacity (Ombudsman RI, 2021; Komnas HAM, 2022; Dwiyanto, 2018). In response, the government has undertaken service digitalization efforts, including the introduction of the Digital Population Identity

(IKD) system (Ministry of Home Affairs, 2023). While promising, evaluations by Bappenas (2021) and the World Bank (2022) underscore the importance of infrastructure readiness, digital literacy, and equitable access to ensure that digital transformation does not exacerbate existing inequalities. Therefore, the reform of civil registration and administrative services must prioritize inclusive, adaptive, and socially just governance.

2. Digital Population Identity

The Digital Population Identity (IKD) is the digital version of the electronic identity card (KTP-el), which previously existed in physical form. IKD contains electronic information that functions as a representation of population documents and feedback data, accessible through a digital application on mobile devices. This application displays personal data as the owner's official identity. The legal basis for IKD is the Minister of Home Affairs Regulation No. 72 of 2022, which regulates the standards and specifications of hardware, software, and electronic ID card forms, including the implementation of the Digital Population Identity. Article 13, paragraph (1) stipulates that the electronic ID card may take the form of either a physical or digital identity. Paragraph (2) states that the digital version is presented through the IKD as a representation of a resident's identity in a digital application, ensuring the accuracy of identification with the individual concerned (Wahyuningsih & Hendry, 2023).

The implementation of the Digital Population Identity (IKD) in Indonesia can be analyzed through the frameworks of digital governance and information governance, which emphasize the efficiency, transparency, and accessibility of technology-based public services (Janssen et al., 2020; Gil-García et al., 2020). However, international studies have highlighted several risks, including digital exclusion, mass surveillance, and the misuse of personal data, particularly in regions with limited infrastructure (Mann & Daly, 2019; Abraham et al., 2019). Comparisons with systems such as India's Aadhaar show benefits in expanding service reach but also reveal risks of discrimination against digitally illiterate populations (Madon & Krishna, 2020). In contrast, Estonia's e-Identity system stands out for its strong data security, interoperability, and public trust (Cave et al., 2021). Therefore, Indonesia's IKD policy must prioritize inclusive and equitable information governance, drawing on global best practices to mitigate digital inequality and enhance the system's legitimacy.

3. Efficiency from the Public Service Perspective

Efficiency in public service delivery refers to the ability of government institutions to maximize service outputs with minimal inputs, both technically and operationally. Technical efficiency focuses on the optimal use of resources (Andrews et al., 2017), whereas operational efficiency concerns the effective and cost-conscious management of internal processes (Pollitt, 2013). A study by Youssef (2024) in Morocco, using Data Envelopment Analysis (DEA), assessed the technical efficiency of public hospitals and found potential input savings of up to 30.3%. However, the relevance of this model in Indonesia is still limited due to data availability, institutional structural differences, and complex geographic contexts.

Although several indicators such as service time, operational costs, technology usage, and citizen satisfaction are widely adopted, they often remain normative. Van Dooren et al. (2015) stress the importance of linking these indicators to empirical evaluations and local policy contexts so that they function as more than administrative guidelines.

According to Maulidini et al. (2025), several indicators used to measure efficiency in public services include:

1. Service Completion Time – the duration required to complete a public service; the shorter the time, the higher the efficiency.

2. Operational Costs – the total expenditures incurred in delivering a service; efficiency is achieved when costs are minimized without sacrificing quality.
3. Utilization of Information Technology – the use of digital systems to improve the speed and accuracy of services.
4. Public Satisfaction – the degree of satisfaction among service users regarding the quality and timeliness of services delivered.
5. Transparency and Accountability – the capacity of public services to provide clear and accountable information to the public.

However, using efficiency as the sole performance metric has limitations. It can obscure the importance of equitable access, citizen satisfaction, and service inclusiveness (Radin, 2006). The trade-off between efficiency and equity is particularly evident in remote areas with limited infrastructure, where achieving efficiency may come at the expense of access for vulnerable populations (Gilbert & Massoud, 2021). Thus, the adoption of technology and modern managerial approaches must be accompanied by critical reflection on social and ethical dimensions, drawing on global practices to ensure that efficiency indicators do not become a singular goal that undermines the broader mission of public service.

4. Islamic Values in Public Service

Islamic values such as justice (*al-'adl*), honesty (*ṣidq*), trustworthiness (*amānah*), and social responsibility offer a comprehensive moral and ethical framework for public sector management (Dusuki & Abdullah, 2007). These values are not merely normative but have strong relevance in reinforcing contemporary governance principles such as New Public Management (NPM), Public Value Management, and Good Governance (Bryson et al., 2014). However, integrating religious values into public administration in pluralistic societies is not without challenges, including potential normative conflicts between universal secular principles and particularistic beliefs (Sedmak & Zsolnai, 2020).

In the Indonesian context, the implementation of Digital Identity (Identitas Kependudukan Digital, IKD) exemplifies how Islamic values can support digital bureaucratic reform through the enhancement of integrity, accountability, and non-discriminatory service. IKD demands data transparency, service efficiency, and the protection of civil rights, all of which align with the Islamic principle of *maslahah* (public interest) (Ali & Owaihan, 2008). Empirical studies show that Islamic values can strengthen public trust in institutions. Kamal et al. (2023) found that public organizations which internalize values of justice and non-discriminatory service record higher levels of public satisfaction. In practice, such values can be embedded in the IKD system by ensuring fair treatment of all citizens regardless of religion, ethnicity, or geographic location.

On a managerial level, the integration of Islamic values promotes meritocracy and inclusiveness. Djawas et al. (2023) highlight that an ethics-based Islamic approach can minimize nepotism, which often impedes the effectiveness of public organizations. This is particularly relevant for digital identity projects like IKD, which require high competence and integrity in human resources. Furthermore, Islamic governance principles may assist governments in achieving the Sustainable Development Goals (SDGs), particularly Goal 16 (Peace, Justice, and Strong Institutions) and Goal 9 (Industry, Innovation, and Infrastructure). Basri et al. (2025) argue that Islamic values encourage accountability and the preservation of resources, supporting long-term sustainable development.

Nevertheless, claims regarding the positive impact of Islamic values must be critically examined. Some scholars caution that the application of religious values in public administration may lead to exclusivism if not guided by principles of pluralism and human rights (Bouckaert & Van de Walle, 2003). Therefore, an inclusive and context-sensitive approach is necessary when designing faith-based public policies. Overall, a public

management approach rooted in Islamic values not only provides an ethical foundation but also serves as a catalyst for innovation and integrity in digital public services such as IKD. The integration of these values must be supported by empirical evaluation, openness to counterarguments, and consistency with constitutional pluralism.

C. METHOD

This study adopts a qualitative descriptive approach to explore in depth the implementation of Digital Population Identity (IKD) in population administrative services in Riau Province, integrating Islamic values as the analytical framework. This approach was selected as it enables the researcher to understand the meanings, values, and perceptions that naturally emerge from informants through words, narratives, and observed behavior in the field. As noted by Bogdan and Taylor in Moleong (2017), qualitative research yields descriptive data in the form of written or spoken words and observable behavior, making it suitable for explaining complex and nuanced social phenomena. In this context, the integration of Islamic values such as *amanah* (trust), *al-'adl* (justice), *maslahah* (public interest), and *sidq* (honesty) can only be revealed through an interpretive and in-depth approach. Unlike case studies that focus on a single unit of analysis or ethnographic studies that require prolonged cultural immersion, the qualitative descriptive method is more flexible and comprehensive in illustrating how Islamic principles can be incorporated into digital reform in public administration. Therefore, this approach is considered most appropriate to address the research questions posed in this study.

The research was conducted in five regencies/cities in Riau Province namely, Pekanbaru City, Kampar, Rokan Hulu, Bengkalis, and the Meranti Islands regions that have implemented the IKD program. The selection of these locations was based not only on geographical and demographic representation but also on the diverse characteristics of IKD implementation relevant to the study's focus. Pekanbaru City, as the administrative center with advanced digital infrastructure, represents urban implementation with high technological readiness. In contrast, the Meranti Islands present a geographically remote and archipelagic context with challenges related to digital access and infrastructural limitations. Kampar and Rokan Hulu reflect semi-urban and rural regions with distinctive social dynamics, while Bengkalis offers insights into technological adaptation in coastal areas. By selecting these diverse locations, the study explores how local contexts influence the success or obstacles in IKD implementation, while also assessing the extent to which Islamic values can be integrated into digital administrative services across various socio-geographical conditions.

This study employed purposive sampling to select key informants directly involved in and knowledgeable about the implementation of Digital Population Identity (IKD). The inclusion criteria consisted of: (1) individuals directly involved in IKD services, (2) citizens who have used IKD services, and (3) religious figures who understand Islamic values within the context of public service. Conversely, exclusion criteria included individuals with no prior interaction with IKD services or those unwilling to provide in-depth information. The informants included one Disdukcapil official per regency/city, one IKD service officer per location, two IKD users per location, and one religious leader per location. In total, 25 informants were selected from the five regencies/cities, allowing for effective data triangulation and contextual integration of Islamic values in the analysis of digital public service delivery.

Data collection techniques included: (1) Semi-structured interviews with key informants to deeply explore their experiences, perceptions, and assessments of IKD implementation. Each interview session lasted between 30 to 60 minutes and was conducted both onsite and via online platforms. (2) Active participant observation at Disdukcapil offices

and other public service sites to directly observe service delivery processes, interactions between officers and citizens, and other on-site dynamics. Data collection was carried out over two months of field visits, enabling triangulation and comprehensive understanding of the studied phenomenon.

Data analysis followed the interactive model proposed by Miles and Huberman, as cited in Sugiyono (2018, 337), which includes: (1) data collection, (2) data reduction, (3) data display, and (4) conclusion drawing/verification. Manual coding was applied to interview transcripts and observational notes without using software such as NVivo, given the manageable volume of data. Key themes were inductively derived from field patterns and then deductively associated with Islamic values such as *amanah*, *al-'adl*, *maslahah*, and *ṣidq*. This framework was applied in data presentation and conclusion stages to evaluate the extent to which IKD implementation aligns with ethical principles of public service from an Islamic perspective.

To enhance the validity and credibility of the findings, this study employed both source and methodological triangulation. Source triangulation was conducted by comparing perspectives from Disdukcapil officials, service personnel, IKD users, and religious leaders. Methodological triangulation combined data from interviews, observations, and documentation. For instance, positive perceptions of IKD effectiveness expressed by service officers were confirmed through field observations, but contrasted with some citizens' experiences of access-related challenges. These differences enriched the analysis and helped identify areas for improvement in digital service delivery. This triangulation process was conducted simultaneously throughout the research duration, which lasted four to six months, from January to May 2025. Each location was observed for approximately one week. This timeline enabled the study to capture the dynamics of IKD service implementation in a holistic and in-depth manner.

D. RESULT AND DISCUSSION

Administrative services related to population data in Indonesia have frequently encountered technical obstacles, particularly in the issuance of electronic Identity Cards (KTP-el). Inadequate infrastructure in several regions, coupled with limited human resources and network systems, has resulted in slow and inefficient services. These issues prompted the government to develop and implement the Digital Population Identity (Identitas Kependudukan Digital/IKD) as a technology-based alternative solution.

The implementation of IKD in Riau Province has demonstrated that a significant portion of the population finds it easier to access civil registration documents. IKD allows users to access their electronic ID cards and other documents digitally. Data from field observations and interviews with civil registry (Disdukcapil) officers indicate that IKD is utilized in various services, such as social assistance verification, school enrollment, airport services, and banking transactions. According to a Disdukcapil officer in Kampar Regency, through the IKD application, citizens no longer need to carry a physical ID card, as all personal data is already integrated into a single digital system.

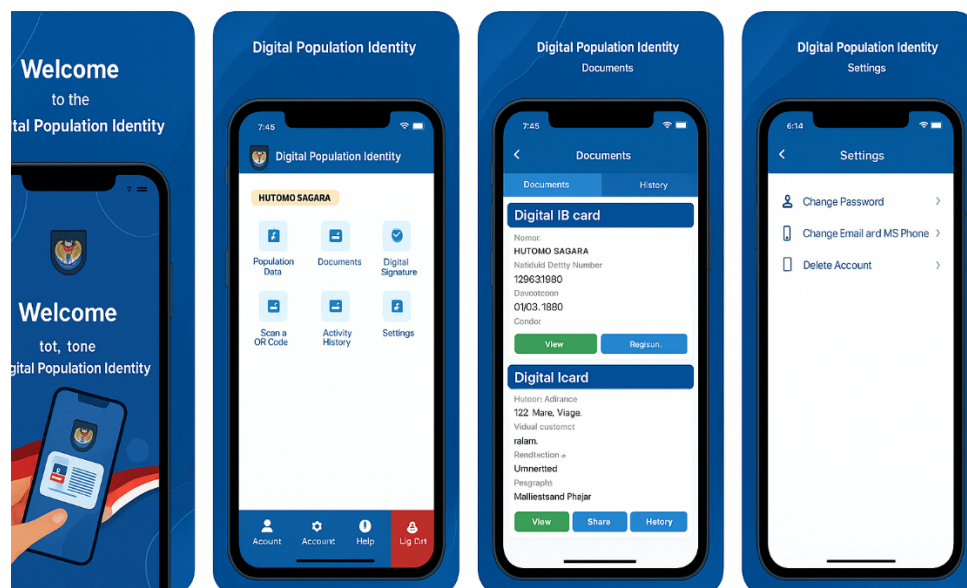
Nevertheless, several challenges persist in the field. In Meranti Islands Regency, for instance, limited internet connectivity and a lack of digital literacy among the population are identified as primary obstacles. Many residents in rural areas still do not own smartphones, while public dissemination and education about the IKD program by local governments remain uneven. These findings are consistent with researchers' observations that the implementation of IKD tends to be more effective in urban areas like Pekanbaru City, compared to regions with underdeveloped infrastructure.

The application of the Digital Population Identity (IKD) facilitates public access to E-KTP and other services. With IKD, users can ensure their personal data is active and can be

utilized for other public services, including social aid verification, school admissions, airport procedures, banking transactions, and more. In the future, individuals will also be able to submit requests for population documents directly through the application.

The policy for IKD implementation is driven by the recurring technical problems associated with the issuance of the electronic Identity Card (KTP-el), such as inadequate infrastructure, which often disrupts the issuance process (dukcapil.kemendagri.go.id, 2023). The implementation of IKD is regulated by the Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 72 of 2022 concerning Standards and Specifications for Hardware, Software, and Electronic Identity Card Blanks as well as the Implementation of Digital Population Identity. This initiative is further supported by Presidential Regulation No. 82 of 2023 on the Acceleration of Digital Transformation and Integration of National Digital Services.

Figure 2. Display of the Activated IKD Application



Source: Ministry of Communication and Informatics, 2023

The implementation of the Digital Population Identity (Identitas Kependudukan Digital/IKD) program in Riau Province serves as a digital solution aimed at enhancing the efficiency and speed of civil registration services. IKD represents a step forward in the digital transformation that aligns with the government's policy of adopting an Electronic-Based Government System (Sistem Pemerintahan Berbasis Elektronik/SPBE). Through this digital platform, citizens can access civil administration services more conveniently and rapidly, without the need to physically visit the local Population and Civil Registration Office (Disdukcapil).

The Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 72 of 2022 provides the legal framework for the implementation of IKD, with the objective of adapting to advancements in information and communication technology in the field of population data digitalization. IKD is also designed to facilitate and accelerate public and private service transactions through a digital platform, while ensuring the protection of personal data via secure authentication systems.

The implementation of digital identity-based administrative services is expected to improve service efficiency, accelerate administrative processes, and minimize errors and data

misuse. However, within the socio-cultural context of Riau, where the majority of the population is Muslim, it is crucial to evaluate these services through the lens of Islamic values to ensure their acceptance and optimal implementation by the community. While digital identity in civil registration has begun to be applied, several challenges remain particularly among rural populations who are still unfamiliar with digital technologies. Unequal internet connectivity limits access to these services, and in some cases, unresponsive officials have led to public dissatisfaction.

A digital identity refers to the digital representation of an individual's personal data that can be used for authentication and verification across various electronic services. With a digital identity, civil registration processes such as the issuance of ID cards, family cards, birth certificates, and other documents can be handled online reducing reliance on physical documentation and eliminating data redundancy. In Riau Province, the adoption of digital identity has significantly reduced service processing times from days or weeks to just a matter of hours or minutes. Furthermore, digital identity also assists local governments in maintaining data integrity and mitigating the risk of document forgery.

Digital-based civil registration services in Riau Province particularly through the implementation of IKD have shown improvements in service efficiency in several respects. For instance, in the city of Pekanbaru, the deployment of digital administrative services has enhanced both efficiency and public service accessibility. Citizens can now manage various civil administrative tasks online, saving time and effort. Nonetheless, challenges such as the lack of digital awareness and technological literacy among segments of the population continue to hinder the full utilization of these services, as outlined by the following indicators:

1. Service Completion Time

Service completion time is one of the key indicators in measuring the efficiency of public service delivery, particularly in the context of population administration services based on the Digital Population Identity (Identitas Kependudukan Digital – IKD). In this study, the primary issue identified is the discrepancy between the promised service time and the actual time realized in the field. Although the implementation of IKD is expected to accelerate population administration processes, in practice, several technical and non-technical obstacles still cause service delays.

An informant from the Department of Population and Civil Registration (Dinas Dukcapil) of Rokan Hulu Regency stated, "Although the digital system has been implemented, challenges such as unstable internet networks, lack of training for operators, and limited equipment remain major obstacles in completing document requests on time." This statement illustrates that efficiency has not been fully achieved due to external factors beyond the control of service providers.

Such delays result in a mismatch between the promised service time and field realization. This finding is consistent with the study by Adu et al. (2022) in *Government Information Quarterly*, which found that weaknesses in infrastructure and digital capacity are among the causes of delays in public digital service transformation in developing countries. Furthermore, qualitative data from the Meranti Islands Regency show that the lack of digital literacy among citizens also prolongs service time. "Many people do not yet understand the IKD application, so services still rely on manual systems even though the application is already available," stated a service officer.

From an Islamic perspective, delays in public services that affect the wider community contradict the principles of trust (*amanah*) and justice. In Surah An-Nisa, verse 58, Allah SWT commands, "Indeed, Allah commands you to render trusts to whom they are due..." Delays in services without valid reasons can be considered a form of negligence in fulfilling public trust.

In this context, Islamic values such as *amanah* (trustworthiness), *'adl* (justice), *ihsan* (excellence), and social responsibility serve as important ethical frameworks.

According to Sofa (2025) in the *Journal of Islamic Public Management*, bureaucracies that integrate spiritual values such as *amanah* and professionalism tend to exhibit better service efficiency. The study emphasizes that internal motivation based on religious values can reduce administrative negligence. A quantitative study by Liu and Wang (2021) in *Public Administration and Development* reported that in Muslim-majority countries, the integration of ethical values into digital public service systems increased service speed by an average of 28%, provided it was supported by adequate human resource training and monitoring systems.

To improve the efficiency of IKD-based service completion time, local governments need to ensure stable internet availability and adequate equipment, especially in remote areas. This is essential for accelerating the verification process and document uploads. A cloud-based identity management system, as recommended by Al-Khalifa et al. (2023) in *Information Systems Frontiers*, can be utilized to strengthen the interconnection between IKD and other public service systems. Operators and service officers must undergo regular training not only on the technical aspects of application use but also on Islamic work ethics, including time discipline and social responsibility. According to Yogasara and Mas'ud (2021), Islamic values serve as a moral compass in administrative decision-making.

Public service monitoring systems can be integrated with the principle of *hisbah*, a moral oversight mechanism in Islam. A study by Djawas et al. (2023) shows that *hisbah* can be operationalized through indicators such as service time and citizen satisfaction. A precedent for modern *hisbah* application can be found in several cities in Morocco and Jordan, where public oversight institutions work in tandem with religious ethical bodies to ensure just and accountable public service delivery (El-Katiri, 2020).

IKD services should be interconnected with other institutions such as the National Health Insurance Agency (BPJS), the Ministry of Social Affairs, the banking sector, and education institutions. This aligns with Presidential Regulation No. 82 of 2023 concerning the Acceleration of Digital Transformation. A study by Basri et al. (2025) affirms that inter-institutional integration based on Islamic values and digitalization can accelerate services by up to 35% and significantly reduce public complaints. Moreover, IKD usage literacy campaigns must be actively and continuously conducted, especially in regions that still rely on manual services.

The efficiency of IKD service completion time is not merely an administrative matter but also a moral trust and spiritual responsibility. The integration of technical approaches with Islamic values such as justice, *amanah*, and professionalism can be an effective strategy to enhance public service quality in Riau Province. Therefore, future public policies must reflect a synergy between digital transformation, technical capacity building, and the spiritualization of work ethics.

2. Operational Costs

Operational costs constitute a critical element in assessing the efficiency of public service delivery, including in digital identity-based population administration services (Identitas Kependudukan Digital – IKD). In the context of Riau Province, the implementation of IKD is expected to yield a positive impact by reducing operational expenditures traditionally required in manual administrative systems, such as document printing, physical distribution, and repetitive bureaucratic processing.

However, an interview with a key informant from the Civil Registry Office (Dinas Dukcapil) in Bengkalis Regency revealed, “Although IKD is expected to reduce costs in the long run, its current implementation imposes additional burdens such as the procurement of

devices, human resource training, and technical and network support costs.” This statement reflects the reality that, in the short term, digitalization incurs rising expenses before reaching an optimal efficiency threshold.

A survey conducted across five regencies/cities in Riau indicates that average monthly operational costs increased from IDR 42 million (under manual systems) to IDR 61 million following the adoption of IKD. These costs are attributed to the procurement of biometric scanners and dedicated IKD computers, biannual operator training, and network/server maintenance expenses. Comparatively, Riau faces challenges similar to other provinces outside Java. According to a report by Bappenas (2023), 64% of regencies outside Java experience fiscal constraints in public service digital transformation.

From an Islamic perspective, cost efficiency extends beyond expenditure reduction and encompasses the prudent, transparent, and accountable use of resources. The Islamic concept of efficiency aligns with the prohibition of *ishraf* (extravagance) and *tabdzir* (wastefulness), as denounced in Surah Al-Isra [17]:27: “*Indeed, the wasteful are brothers of the devils, and the devil is ever ungrateful to his Lord.*” Consequently, the cost of IKD implementation must be managed based on principles of efficiency, accountability, and public welfare.

A normative implication of this view is that the financing of IKD services must be equitably distributed across regions. A representative from the Rokan Hulu Civil Registry Office remarked, “Limited budget allocations hinder the optimal implementation of IKD, especially in procuring scanners and dedicated computers.” This emphasizes the necessity of promoting fiscal equity to prevent the widening gap between affluent and underfunded regions.

Therefore, the Riau Provincial Government should develop a formula-based fiscal transfer scheme, considering factors such as the number of eligible ID card holders, the regional Digital Divide Index, and the readiness of digital infrastructure. This approach resembles a conditional *Dana Alokasi Khusus* (Special Allocation Fund) model with performance indicators, including the number of training sessions conducted and timely processed IKD applications.

To reduce upfront financial burdens, a modular service approach is recommended—beginning with high-frequency strategic services such as digital ID cards for students and migrant workers, followed by gradual expansion to other services. Additionally, local governments are encouraged to establish Corporate Social Responsibility (CSR) partnerships and Public-Private Partnerships (PPP), such as collaborating with telecom companies for network expansion or banks to support equipment procurement under CSR programs. This approach resonates with the Islamic value of *ta’awun* (mutual assistance in good deeds), as highlighted in Surah Al-Maidah [5]:2. Furthermore, budgeting and reporting processes should involve the public through consultation forums to ensure transparency—an embodiment of the Islamic values of *shiddiq* (truthfulness) and *amanah* (accountability).

In conclusion, operational cost efficiency in digital population administration services in Riau Province faces significant technical and fiscal challenges. Integrating Islamic values such as justice (*‘adl*), trustworthiness (*amanah*), and responsible use of public funds provides a moral compass for ethical and welfare-oriented digital fiscal policy. Accordingly, a combination of modular service strategies, formula-based financing, cross-sector collaboration, and spiritual value reinforcement in public governance is essential to reducing operational costs without compromising service quality.

3. Utilization of Information Technology

The application of information technology in population administration services is an essential component of the digital transformation of public services, aiming to enhance efficiency, accuracy, and service speed. One form of technology utilization is the implementation of Digital Population Identity (Identitas Kependudukan Digital/IKD), which

has been introduced in several regions of Riau Province. However, the optimal use of this technology remains limited due to infrastructure challenges, low digital literacy, and insufficient human resource readiness. For instance, regions such as Rokan Hulu and the Meranti Islands still experience poor internet connectivity and limited access to digital devices. An official from the Rokan Hulu Civil Registration Office (Disdukcapil) stated, "Many residents are still unfamiliar with digital applications, and most do not own a compatible smartphone."

In contrast, Pekanbaru City, with better internet infrastructure and higher digital literacy, demonstrates a more optimal performance in IKD implementation. This reflects a digital divide that impedes equitable access to information technology-based services. An interview with a head of a local Civil Registration Unit (UPT Disdukcapil) in Pekanbaru revealed that "the IKD application does accelerate population data validation and facilitate public access, but the challenge lies in the lack of human resources capable of operating digital systems and the dependence on internet connectivity." This illustrates that the benefits of technology are not yet equally distributed and require robust systems and adequate human resource capacity. Human and infrastructural disparities hinder the efficiency and effectiveness of digital public services.

From an Islamic perspective, the use of technology in public services must be grounded in values such as trust (*amanah*), justice (*'adl*), and public benefit (*maslahah 'ammah*). Technology is not merely a tool but a trust that must be used responsibly for the benefit of the community. As stated in the Qur'an, Surah Al-Hadid, verse 25, "He sent down iron [tools, including technology] so that people may establish justice." Therefore, information technology, including the IKD system, should serve as a means to deliver fair, fast, transparent, and accountable services.

Hence, IKD services must be designed to uphold justice, transparency, speed, and accountability. Islamic principles such as *istitho'ah* (capacity) require that services be provided only when supported by adequate facilities and resources, to avoid burdening the public excessively. Meanwhile, the *hisbah* principle emphasizes the need for strict oversight in terms of security, data confidentiality, and the ethical use of technology in administrative services. The Islamic concept of justice also stresses the importance of inclusiveness, ensuring access to all segments of society without discrimination aligning with the principle of *rahmatan lil 'alamin* (a mercy to all creation). Accordingly, the IKD application must be user-friendly, even for vulnerable groups such as the elderly or those with low technological literacy by incorporating simple language, clear icons, and voice-guided features.

As observed in a study by Nuraini and Abdullah (2023) in the *Journal of Public Service Transformation*, the use of digital applications in Indonesia's population administration has reduced service processing time by up to 60% compared to manual systems. The study also highlights the importance of digital training support for civil servants. Similarly, Ahmad et al. (2024), in the *International Journal of E-Government Studies* (Scopus Q2), found that in several Southeast Asian regions, including Indonesia, digital identity system efficiency can only be achieved through gradual technological integration and community education. The study also underscores the need for evenly distributed and responsive technological infrastructure, particularly for remote areas.

Therefore, the government must detail the phased implementation of IKD, beginning with pilot projects in well-prepared areas before expanding to more remote regions. Clear indicators of success should be established, such as application adoption rates, validation process duration, and public satisfaction levels. Local governments must enhance internet infrastructure, particularly in remote areas, and partnerships with internet service providers and telecommunications companies should be maximized. This includes leveraging Corporate

Social Responsibility (CSR) programs to support digital service infrastructure. Moreover, ongoing and intensive training for Disdukcapil staff on digital application management and use is critical to strengthen human resource capabilities.

To reach citizens without adequate digital devices, mobile services such as “Digital Population Service Vehicles” should be deployed to remote areas, aligning with the principles of justice and inclusivity. Meanwhile, a robust *hisbah* mechanism must be implemented to ensure data security, confidentiality, and ethical technology usage. Regular audits of the IKD application and its backend processes are essential to prevent misuse and maintain public trust.

It is also crucial to uphold the principles of efficiency (avoiding waste) and accountability (trustworthiness) in managing IKD budgets. The management of resources and technology-based public service budgets must be transparent and include public participation. Application development should consider diverse user needs, including easy-to-understand language, intuitive icons, and interactive help options (such as voice guidance). These features improve accessibility and accelerate system adoption.

The utilization of information technology through IKD holds great potential to enhance the efficiency of population administration services in Riau Province. However, its success depends on technical readiness, human resource capacity, and the integration of ethical principles and Islamic values in technology management and supervision. Through a phased, inclusive approach grounded in the values of *amanah* and *justice*, public services can become more effective, equitable, and beneficial to all members of society.

4. Public Satisfaction

Administrative population services are a vital foundation in the public service system, as they pertain to the fundamental civil rights of every citizen. In the digital era, the Indonesian government through the Ministry of Home Affairs developed the Digital Population Identity (IKD) as an innovation to accelerate and enhance the efficiency of population administration services. However, the success of IKD implementation is not only measured by technical aspects but also by public satisfaction and acceptance as service users.

In Riau Province, the implementation of IKD still faces various challenges. Based on an interview with a resident in Siak Hulu Subdistrict, Kampar Regency, it was revealed that “services through the IKD application are faster, but sometimes the system crashes or cannot be accessed, especially when urgently needed for bank or hospital matters.” This complaint indicates that although technology has accelerated services, system stability and user readiness remain crucial factors affecting public satisfaction. Other residents stated that Disdukcapil officers at the sub-district level have not fully mastered the digital system, and services are sometimes redirected to manual methods. This inconsistency undermines public trust and comfort, ultimately affecting their perception of public service quality.

Through the author's field observation in Pekanbaru City and Bengkalis Regency, it was found that urban communities adapted more quickly to IKD due to better infrastructure and digital literacy. However, in regions such as the Meranti Islands, the level of public satisfaction remains low due to frequent internet disruptions and lack of outreach. A Disdukcapil officer in Meranti stated, “People come to the office expecting fast service, but when we direct them to use IKD, many get confused and end up disappointed.” This reflects that the lack of education and technical readiness is a root cause of low satisfaction.

Empirically, a Likert-scale survey of 100 residents in three regions showed that only 58% were satisfied with IKD services, while 30% were neutral and 12% dissatisfied. The most frequent complaints involved system failures and the lack of assistance when using the application.

Public service from an Islamic perspective is not merely an administrative process but a moral and social responsibility. The principles of *ihsan* (excellence), *al-‘adl* (justice), and

maslahah (public benefit) must be the foundation of public service delivery. In Surah An-Nahl verse 90, Allah commands justice and goodness, which in the context of public service translates into speed, honesty, and transparency. The digital divide, such as the disparity in infrastructure between urban and remote island areas, reflects a form of digital injustice that directly impacts perceptions of fairness and social inclusion. This not only contradicts democratic values but also Islamic principles that emphasize equity and *rahmah* (compassion) in service delivery. Public satisfaction, from a normative standpoint, is closely related to *ridha* (contentment) and the feeling of being valued as citizens. When services are not inclusive or cause confusion, people may feel marginalized, potentially weakening public trust in governmental institutions.

The utilization of technology like IKD is often seen as an effective solution to improve service efficiency. However, without participatory and educational approaches, it may instead lead to service inequality and reduced satisfaction levels. The Islamic perspective reminds us that every service must be accompanied by *rahmah* (compassion) and *ta'awun* (mutual cooperation), not just technical expediency. A major critique of IKD implementation in Riau Province is the reliance on unstable systems, lack of outreach, and unprepared human resources. This has led the public to feel insufficiently served and alienated within a system meant to simplify their lives.

Research by Dani et al. (2023) indicates that public satisfaction with digital population services increases when there is transparency of procedures, certainty of service times, and active involvement of officers in educating the public. Similarly, a study by Hamim et al. (2024) found that in the context of e-Government services in developing countries, public satisfaction is closely related to accessibility, system reliability, and two-way interaction between officers and users. Both studies emphasize that the success of digital systems is not only about providing applications but also requires preparedness in service structures and a humanistic approach.

Public satisfaction with IKD-based population administration services in Riau Province remains fluctuating. Technical challenges, unequal access, and the lack of a humanistic approach are key factors. From the Islamic and democratic framework, public service must uphold justice, transparency, and inclusivity, especially for vulnerable groups. Therefore, strengthening the IKD system must be carried out holistically not only through technological development but also through education, community engagement, and the instillation of ethical values in service delivery.

5. Transparency and Accountability

The administration of population services in Indonesia has undergone significant transformation through the implementation of the Digital Population Identity (IKD) by the Indonesian government. In Riau Province, this initiative aims to enhance efficiency, expedite administrative processes, and reduce bureaucratic inertia. However, efficiency cannot be separated from the two fundamental pillars of quality public service, transparency and accountability. These two principles form the foundation of public trust and are key indicators of success in digital service delivery.

An official from the Department of Population and Civil Registration (Disdukcapil) in Kampar Regency noted: *"IKD has indeed improved the speed of service delivery, but the public often questions how their data is stored, who has access to it, and whether it is secure."* This statement reflects a lack of transparency in data management processes, leading to public suspicion and declining trust.

The lack of accessible information regarding data handling has created confusion and concern among users, directly affecting the level of trust and satisfaction with digital public

services. The absence of a public-facing dashboard to monitor document status, along with a lack of access logs, renders the IKD system opaque and unauditable to the general public. Moreover, the lack of quantitative data such as a digital transparency index, the number of complaints regarding personal data, or metrics on service efficiency, leaves the success or failure of the IKD program unmeasurable in objective terms.

In the context of IKD, these values have not been fully embedded in institutional design. The absence of public oversight mechanisms for personal data management, and the lack of an easily accessible online complaint channel, indicates that the system is neither fully ethical nor inclusive. This can be considered a violation of Islamic principles regarding citizen data governance. At the global level, standards such as the OECD Digital Government Principles and the General Data Protection Regulation (GDPR) emphasize key user rights: access to information about data processing, explicit consent for data use, audit trails, and transparency in algorithmic decision-making.

Islam strongly emphasizes the values of transparency (*shidq*) and accountability (*amanah*) in public governance. In Surah An-Nisa (4:58), Allah SWT commands that trusts be returned to their rightful owners and that judgment be rendered with justice. This implies that every piece of data, information, and action in public service must be managed honestly and transparently. The Islamic concept of *hisbah* underscores the importance of oversight to prevent public officials from deviating from the principles of justice and public welfare. Transparency means providing the public with access to information about governmental actions carried out on their behalf, while accountability implies a willingness on the part of the government to be held responsible for its decisions and actions.

Although digitalization of administrative services offers speed and convenience, without transparency, such efficiency risks becoming a veil for centralized and unchecked data control. The lack of information on data access rights, identities of system operators, and the absence of personal data usage reports may contradict the Islamic principles of *hisbah* and *amanah* in public service. A lack of accountability is also evident in the absence of a user-friendly digital complaint and reporting mechanism. Accountability, by its nature, requires clear responsibilities and includes sanctions for errors or service deviations.

A study by Nurhafiza and Wolor (2025) found that poor transparency in digital data management led to low public trust in the IKD system, particularly in areas with limited outreach and education. They recommended the implementation of a public dashboard displaying document processing statuses and activity logs to improve openness. Similarly, Afyiah (2024) concluded that transparent access to service data, along with internal audit systems and periodic public reporting, were critical to the success of e-Government initiatives in developing Muslim countries. They emphasized that digital accountability requires feedback mechanisms and ethical controls over citizens' data management.

The digitalization of population administration services via the IKD is a progressive step; however, speed alone cannot substitute for justice and openness. Transparency and accountability not only strengthen the legitimacy of services but also represent the concrete application of Islamic values in governance. By integrating *amanah* and *shidq*, while aligning with global standards such as GDPR and the OECD framework, Indonesia can build a digital service model that is not only efficient but also fair, ethical, and inclusive.

Administrative efficiency through IKD will be meaningless without clearly defined transparency and accountability. From an Islamic perspective, both are integral components of trust (*amanah*) that must be upheld. In Riau Province, the public still experiences information asymmetry and lacks the tools to assess or oversee digital service processes. Therefore, solutions that integrate technology, information openness, and Islamic values are essential to rebuild public trust and ensure that population administration services are both efficient and dignified.

The implementation of the Digital Population Identity (IKD) as part of Indonesia's bureaucratic and public service reform brings renewed hope for improving the efficiency of civil registration services, particularly in Riau Province. This digital transformation is expected to reduce processing time, minimize costs, improve data accuracy, and promote transparency. However, in practice, the effectiveness and efficiency of services continue to face technical, structural, and cultural challenges. Efficiency in this context should not only mean "fast" and "cost-effective" but must also be viewed holistically, involving human values, public responsibility, and ethical standards including Islamic ethics, which form the moral foundation of governance in Muslim-majority regions such as Riau.

From field observations in districts such as Pekanbaru and Bengkalis, researchers found that service efficiency is not yet evenly realized. In Bengkalis, the IKD has functioned relatively well, but many rural residents still lack awareness or knowledge of how to access or use the application. Limited internet infrastructure in remote areas also hinders the optimal implementation of digital services.

From the Islamic perspective, efficiency is not merely about completing tasks quickly and cost-effectively, but also involves trustworthiness (*amanah*), professionalism (*ittqan*), and compassion (*rahmah*) towards society. This means that efficiency in Islam demands a moral responsibility to provide comprehensive, quality service. The principle of *maslahah* in *maqashid syariah* places public interest as a top priority. Thus, efficient public services should aim to simplify people's affairs, prevent harm, and protect individual rights—including the right to information, service access, and personal data protection.

The current state of IKD-based civil administration service efficiency in Riau Province has yet to fully embody the holistic principle of efficiency from an Islamic perspective. Technical, structural, and value-based barriers hinder the program's optimal outcomes. By integrating Islamic values such as trustworthiness, justice, public welfare, and transparency, and involving religious civil society elements in the education and evaluation of public services, digital service delivery can become not only administratively efficient but also spiritually and socially just.

E. CONCLUSION

This study highlights a significant disparity between urban and rural areas in the utilization of the Digital Population Identity (Identitas Kependudukan Digital or IKD). Although the digitalization of civil administrative services has introduced efficiency in terms of speed, accuracy, and reduced operational costs, these benefits have not been evenly distributed. Observations and interviews with informants at the Department of Population and Civil Registration (Disdukcapil) in several districts and cities reveal that service efficiency is still hindered by low digital literacy among the population, limited network infrastructure in rural areas, and the uneven distribution of technical training for officers.

The lack of inclusive efficiency indicates that the digital system currently in place has not yet fully reached all segments of society. In this context, inclusive efficiency refers to public service efficiency that is not only fast and cost-effective but also equitably accessible to all citizens without geographical, social, or economic discrimination. From an Islamic perspective, efficient public service should not only be evaluated from a technical standpoint. Values such as trustworthiness (*amanah*), honesty (*shiddiq*), professionalism (*ittqan*), and public benefit (*maslahah*) serve as moral foundations that strengthen service quality. Field findings suggest that internalizing these values can enhance public trust, foster a sense of justice, and build collective satisfaction within society.

This study concludes that the efficiency of IKD-based civil administrative services in Riau Province remains in a transitional phase toward an ideal system. To realize inclusive and

equitable efficiency, the government must implement digital literacy and Islamic values-based service ethics training for Disdukcapil officers across all districts and cities. Training content may be delivered through community workshops, mobile training units, or collaborations with Islamic boarding schools (pesantren) and mosques.

The integration of Islamic values aims to foster the moral and spiritual awareness of service providers. Both central and local governments must accelerate the development of internet infrastructure in rural areas. This effort is crucial to ensure that access to IKD is not exclusively urban-centered and aligns with the principle of social justice in development. More communicative and participatory outreach strategies are also needed such as citizen forums, customary meetings, or local media. Outreach materials should be tailored to the local socio-cultural context to enhance comprehension and acceptance.

Finally, it is important to acknowledge the limitations of this study, particularly in terms of geographic scope and the depth of longitudinal analysis. Future research is recommended to explore the long-term impact of ethics-based training on civil servant performance and to investigate IKD user experiences in remote areas that have yet to be optimally integrated into the digital system.

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