

Opportunities and Challenges from Artificial Intelligence in Public Service Delivery in Vietnam

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Abstract

This study aims to analyze the impact of artificial intelligence (AI) on public service delivery in Vietnam, thereby proposing some key policy implications for Vietnam. This study employs a narrative literature review approach. The results show that AI offers opportunities to improve the quality of public service delivery, expand access to services, and support civil servants in handling their work. However, challenges exist stemming from the limitations of AI itself, the lack of a shared digital data platform, the shortage of human resources, and the lack of necessary funding. The study proposes policy implications for developing a "hybrid" model of public service communication between humans and machines, focusing on building digital databases, enhancing the digital capacity of civil servants, increasing state budget allocation, and expanding the mobilization of resources from society and internationally.

Keywords: Artificial intelligence (AI), public service delivery, digital government, digital transformation, e-government, Vietnam

1. Introduction

Digital technologies, especially artificial intelligence (AI), are rapidly advancing and fundamentally transforming how governments deliver public services. Governments around the world are increasingly deploying algorithms to automate or support decision-making in the delivery of public services – from responding to citizen queries and processing administrative documents to triaging social care cases and identifying fraud (Stankovich et al., 2023). In the contemporary digital age the delivery of public services should be targeted at satisfying the evolving demands of citizens and businesses through more effective, accessible and responsive governance (Imanbekova et al., 2024). Governments are therefore changing the way they operate to improve public service delivery and achieve objectives including greater transparency, interoperability, and citizen satisfaction (Mergel et al., 2019).

But the application of AI in government is occurring in a vastly different context than in the private sector. Governments have huge power over people's lives and with this comes a duty

of care for the public good beyond that of private companies (OECD, 2025). Their actions, especially in the fields of citizens' data and digital technologies, must be guided by democratic values, individual rights and the rule of law. This is particularly the case when deploying AI in sensitive areas such as welfare benefits, law enforcement, immigration controls and fraud prevention. But the government is still lagging behind the private sector in its use of AI, and the transformative potential of AI for government has yet to be fully realized (OECD, 2025). Furthermore, artificial intelligence systems used for public service delivery can be harmful, violate human rights through perpetuating discrimination or undermining personal data privacy, and are often not transparent and accountable (Stankovich et al., 2023)-threats that make responsible AI governance in the public sector more complex and consequential than in commercial settings.

International literature devoted a lot of attention to opportunities and challenges of AI for public service delivery. However, most of the existing studies are based on evidence from developed countries. There is a large gap in systematic knowledge on AI adoption when compared to developing countries. Vietnam is one of the countries implementing the application of AI in the governance, but there is no empirical research on how well it works. AI governance in Vietnam is still an experiment, and the frameworks used in developed countries may not work as is due to different regulatory environments (Muhammad et al., 2024). Vietnam is a middle-income country that is rapidly undergoing digital transformation. The country has prioritized the development of the digital economy and digital government through national resolutions and strategic action programs. However, the integration of AI in the delivery of public services has not been studied in a comprehensive manner. This gap between policy ambition and analytical understanding motivates the present study.

The core research question is: How does AI impact public service delivery in Vietnam, as reflected in terms of opportunities and challenges? And what policy implications can Vietnam consider to optimize benefits and minimize risks from AI in public service delivery?

This article aims to achieve the following objectives: Analyze the impact of AI on public service delivery in Vietnam (each impact is analyzed from two perspectives: opportunities and challenges); Provide practical examples of AI applications in public service delivery in Vietnam to illustrate theoretical trends; Propose some policy implications for Vietnam to leverage opportunities and mitigate challenges from AI to improve the efficiency of public service delivery.

This article fills the current research gap in three aspects: (1) Theoretical contribution: building a comprehensive analytical framework on the impact of AI on public service delivery; (2) Practical contribution: providing practical examples from Vietnam, reflecting the opportunities and challenges in public service delivery under the impact of AI; (3) Policy contribution: offering policy implications to improve the efficiency of public service delivery in Vietnam, focusing on four priority issues: developing a "hybrid" human-machine public service communication model, building a digital database, enhancing the digital capacity of civil servants, increasing the state budget, and expanding the mobilization of resources from society and internationally.

2. Literature Review

Studies consistently affirm that digital transformation has a strong impact on public service delivery in two main aspects: opportunities and challenges.

Regarding governance capacity, integrating data into public sector decision-making processes not only improves service quality but also promotes collaboration, creating real-time solutions to support the resolution of complex social issues (Bertot et al., 2014; Osakwe, 2025). Building appropriate data infrastructure and governance mechanisms facilitates data sharing and reuse among government agencies (Wimmer et al., 2020). For citizens, digital technologies simplify processes and increase convenience, accessibility, and security of public services; simultaneously, they open up interactive channels using natural language, capable of handling more complex needs than existing digital channels (Imanbekova et al., 2024; Androutsopoulou et al., 2019).

In this context, AI emerges as a key driver of the next phase of digital government development. At the policy-making level, AI has the potential to support decision-making, predict social issues, and adjust policies in real time throughout the implementation cycle (Valle-Cruz et al., 2020). At the operational level, AI promotes transparency, efficiency, and inter-agency coordination (Muhammad et al., 2024). At the service access level, chatbots and virtual assistants help citizens, especially in remote areas, access information and public services faster, without having to travel long distances and stand in long lines (Dube, 2024). Furthermore, AI is expected to support countries in promoting economic growth and improving welfare, achieving sustainable development goals in the context of globalization (Stankovich et al., 2023; Siripipatthanakul et al., 2025).

However, alongside these opportunities, studies also point to a number of significant challenges. Firstly, there are challenges related to infrastructure, resources, and expertise: many countries still lack data infrastructure, have low data quality, limited human resources, and low expertise (United Nations, 2020; Muhammad et al., 2024).

Secondly, there are ethical and accountability challenges: AI systems can inadvertently amplify existing social biases, creating discrimination and accountability gaps and algorithmic biases (Stankovich et al., 2023; Mittelstadt et al., 2016; Ghosh et al., 2025).

Thirdly, there are broader social risks including data privacy, cybersecurity, equity of access to services and the impact of automation on employment, issues of particular concern for both individuals and civil society organizations (Dube, 2024; United Nations, 2020). Similarly, the move to AI-powered public services could exacerbate existing digital divides: populations without internet access, knowledge of technology, or adequate data representation may miss out on the benefits of AI, as the algorithms informing policymaking and service delivery often lack representative data for these groups (OECD, 2025).

Fourth, and less discussed in the literature, governments also face a risk of inaction. If we do not harness AI we lose opportunities. The divide between what the public and private sectors are able to do grows wider. Governments may not be able to meet the increasing demands of their citizens. If governments do not develop internal AI capacities in a timely manner, it will

be difficult to catch up as the technology continues to evolve (OECD, 2025).

The overwhelming majority of studies agree that the implementation of AI in public service provision should be part of a framework of responsible governance with the basic principles of transparency, accountability, fairness and avoiding harm to fundamental human values (Stankovich et al., 2023; Siripipatthanakul et al., 2025). To harness the benefits of AI and mitigate its risks, governments should build enablers for trustworthy adoption including data infrastructure, digital skills, financial investment and flexible procurement processes, as well as guardrails to steer responsible use and engagement mechanisms to ensure citizen-centric approaches (OECD, 2025). At the same time, governments should invest systematically in the digital capacity of civil servants and partner with the private sector to develop a sustainable deployment platform (Muhammad et al., 2024).

3. Method

3.1 Research Strategy

This study employs a narrative literature review approach. Unlike systematic reviews, which focus on a single well-defined query with explicit and comprehensive article selection criteria, narrative reviews can address one or more questions and are aimed at identifying and summarizing what has been previously published, avoiding duplication, and seeking new study areas not yet addressed (Ferrari, 2015). The selection criteria for inclusion of articles in a narrative review may not be specified as explicitly as in a systematic review, allowing for a broader and more integrative synthesis across diverse sources and evidence types (Ferrari, 2015).

This approach is appropriate for the present study for two reasons. First, the topic of AI in public service delivery in Vietnam is still at an early and rapidly evolving stage, where the available evidence is heterogeneous - spanning peer-reviewed studies, international organization reports, government documents, and official Vietnamese media - and does not yet lend itself to the formal protocol of a systematic review. Second, the objective of the study is not to evaluate the efficacy of a specific intervention against a defined outcome, but rather to synthesize theoretical and contextual evidence across multiple dimensions of AI adoption, identify patterns of opportunity and challenge, and derive policy implications-purposes for which the broader scoping capacity of a narrative review is well suited (Ferrari, 2015).

3.2 Data Sources and Search Strategy

The study drew on four categories of sources: (1) peer-reviewed journal articles on AI, digital government, and public service delivery; (2) reports from international organizations; (3) Vietnamese legal documents, government reports, and ministerial publications; and (4) official news sources and press releases from Vietnamese public agencies, used to document specific AI implementation cases. Academic literature was retrieved through Google Scholar, Semantic Scholar, and library databases, using the following keywords and combinations: "artificial intelligence," "public service delivery," "digital government," "digital transformation," "e-government," and "Vietnam." Searches were done in English, mostly

concentrating on publications from 2014 onward, with a preference for those published between 2019 and 2025 to cover the most recent developments in AI governance.

3.3 Inclusion and Exclusion Criteria

Sources were included if they: (a) discussed AI or digital technologies within the framework of governance, public administration or delivery of public services; (b) were published in peer-reviewed journals, by recognised international organisations or by official Vietnamese government bodies; and (c) were available in English or Vietnamese. Sources were excluded if they were opinion pieces without empirical or analytical grounding or if they addressed AI exclusively in private-sector contexts without relevance to public administration.

3.4 Case Selection

The illustrative case examples drawn from Vietnam were selected to reflect geographic diversity (including Hanoi, Ho Chi Minh City, Da Nang, Thanh Hoa, Phu Tho, and Hai Phong), functional diversity (covering tax administration, traffic management, administrative reception, document processing, and citizen support services), and variation in the scale of implementation (from national platforms to ward-level pilots). These cases were not intended to constitute a comprehensive inventory of AI initiatives in Vietnam but to serve as illustrative evidence grounding the theoretical analysis.

3.5 Analytical Approach

The research process involved three stages: (1) systematizing the relevant theoretical and international literature to establish the analytical framework; (2) synthesizing Vietnamese case evidence to identify how general patterns of AI opportunity and challenge manifest in the local context; and (3) deriving policy implications by bridging the gap between international knowledge and Vietnamese practice. All arguments are built on documented sources, ensuring analytical rigor and adherence to academic standards.

4. Results

4.1 AI Offers Many Opportunities for Vietnam

In Vietnam, the application of AI has opened up many opportunities for the government in providing public services.

4.1.1 AI Contributes to Improving the Quality of Public Service Delivery

AI provides strong support for standardizing and improving the quality of information provided to citizens. For example, Hanoi's virtual assistant for tax filing is developed based on a rich database. Based on the aggregation and classification of the entire database on legal regulations, policies, and tax administrative procedures (with 100 specialized laws), and the compilation of over 10,000 bilingual questions, this virtual assistant automatically, quickly, and accurately answers taxpayers' questions with detailed, easy-to-understand content, integrating current administrative procedure forms and intuitive, easy-to-understand instructional videos (Dieu, 2024). In Da Nang city, the Da Nang AI digital assistant is also capable of automatically answering people's questions on various fields such as

socio-economics, culture and tourism, and administrative procedures (Anh, 2025a).

AI also brings very practical benefits to people in their daily lives. Hanoi's Intelligent Traffic Control Center, with over 1,800 AI-powered cameras, is gradually optimizing traffic flow, reducing congestion, and aiming to build a modern, intelligent, and sustainable urban transportation system (Thu & Khanh, 2026). In Thanh Hoa province, the public lighting system is optimized, automatically adjusting to actual lighting conditions, saving energy and reducing operating costs thanks to the assistance of AI. Farmers in this province are also supported in weather prediction, soil analysis, pest and disease identification, and crop optimization through the implementation of AI-based projects (Tran, 2024).

In particular, AI has become a valuable assistant when citizens visit government offices to carry out administrative procedures. AI robots deployed in Cua Nam Ward, Hanoi, have performed many useful functions: guiding citizens through initial steps, automatically printing reservation slips, directing people to appropriate waiting areas, collecting satisfaction feedback via interactive screens, and transmitting data to ward leaders for timely improvements. The robots also utilize SLAM positioning technology and AI to navigate the central area, distribute drinking water and snacks, and play relaxing music while moving, creating a friendly and welcoming atmosphere and reducing waiting times. Beyond assisting with reception and guidance, the robots can also categorize and suggest appropriate service doors based on the content chosen by citizens. This makes it easier for the elderly or those unfamiliar with technology to access and use the services. In cases requiring in-depth consultation, robots can connect citizens with responsible officials, providing detailed guidance on document preparation and implementation procedures (Le, 2025). In Hanoi, the AI chatbot on the iHanoi application helps citizens ask questions about administrative procedures handled by the police force, including services such as residence registration, identity card issuance, and driver's license issuance. In particular, with the AI Call Center feature, citizens can chat with the police's AI application via voice (Nguyen, 2025a). In Phu Tho province, the AI virtual assistant system has also been deployed at several public administrative service centers. The AI virtual assistant is directly integrated into the information system for handling administrative procedures and computers at the one-stop service center, helping officials and citizens conveniently search and process documents. The AI is capable of filtering and identifying document components, summarizing legal documents, guiding the process of carrying out administrative procedures, and assisting in searching for documents, forms, fees, and processing times (Thuy, 2025).

4.1.2 AI Expands People's Access to Public Services

AI has enhanced the ability to provide online public services to citizens and businesses. For example, the Vietnamese customs sector has deployed chatbots to support businesses online 24/7, creating a continuous customs clearance environment, independent of office hours (Binh, 2025).

Thanks to AI, citizens no longer have to waste time and effort going to government offices and queuing for direct consultations. In Hanoi, citizens can interact with "AI staff" through various channels: via chatbots on the website dichvucong.hanoi.gov.vn; the iHanoi

application; the hotline number 19001009; the hotline on the iHanoi OTT application; automated kiosks located in centers; intelligent reception robots in the reception area; or technology platforms such as Vedax AI Platform, ZeroChat, and ZeroPhone (Nguyen, 2025b). Citizens and businesses in Hanoi can also easily use and interact with virtual assistants to support tax payment anytime, anywhere, through technological devices such as smartphones, tablets, and computers with internet access directly on the tax sector's electronic portal, the Etaxmobile electronic tax application, and the Ihanoi digital citizen application (Dieu, 2024). In Ho Chi Minh City, a virtual assistant for citizens and businesses interacts with people and businesses in real time 24/7, answering questions about administrative procedures, providing guidance on paperwork, and searching for records. Each day, this application can support thousands of interactions (Anh, 2025b). Thanh Hoa province has also used AI to build smart electronic portals, helping people quickly access administrative procedures. The virtual assistant system is integrated into online public service applications, guiding people to carry out processes accurately and efficiently (Tran, 2024).

AI systems have increased the government's response speed to citizens. In Ho Chi Minh City, a citizen-business virtual assistant can provide responses to citizens in just a few seconds (Anh, 2025b). In Da Nang, through the continuously operating digital assistant platform DaNang AI, people can ask questions and receive answers in just a few seconds (Anh, 2025a).

It can be affirmed that AI has great potential to create a more efficient, convenient, and transparent communication channel with citizens. This technology contributes to building a digital government and improving the citizen experience when using public services.

4.1.3 AI Provides Strong Support for Civil Servants in Handling Administrative Procedures

AI enables the automation of repetitive administrative processes and utilizes predictive analytics to optimize resource allocation. This frees up civil servants' time, allowing them to focus on more complex tasks. For example, when citizens submit applications through the National Public Service Portal, AI can automatically check the basic validity of the application against predefined criteria, ensuring fair processing and minimizing the arbitrary request for additional documents.

AI contributes to reducing the workload of manual tasks, helping civil servants reduce errors and focus more on complex tasks. In Thanh Hoa, the AI-integrated smart camera system not only records images but also analyzes behavior, detects traffic violations, provides "post-violation" penalties, or handles emergency situations such as accidents and fires more quickly (Tran, 2024). In Ho Chi Minh City, AI assistants recognize and filter documents, automatically classify files, scan and check documents using computer vision technology, detect errors (missing documents, missing signatures, incorrect information, etc.), and support civil servants in making accurate decisions (Anh, 2025b). In Phu Tho, AI virtual assistants help civil servants filter and identify document components, summarize legal documents, guide administrative procedures, and assist in searching for documents, forms, fees, and processing times (Thuy, 2025). In Hai Phong, the "Hai Phong AI" platform can assist civil servants in searching for files, documents, and decrees; drafting administrative

documents; writing reports; creating plans; and summarizing documents (Nguyen, 2025). Hanoi's virtual assistant for tax filing has classified and resolved basic taxpayer inquiries, allowing tax officials to focus on more specialized and complex tasks (Nguyen, 2025b).

In particular, AI contributes to saving time and increasing the productivity of civil servants. For example, the Robotic Process Automation (RPA) solution in Ho Chi Minh City helps administrative agencies receive documents automatically. Notable features include intelligent document classification and screening (AI tools scan and recognize documents, automatically identify relevant procedures, and warn of omissions) and automatic digitization of paper documents into electronic documents. As a result, the city processes an average of over 15,000 documents per day (both in-person and online), saving more than 2,000 working hours per day, equivalent to 175 full-time employees per year (Anh, 2025b).

4.2 AI Poses Challenges for Vietnam

However, alongside the opportunities it brings, AI also creates many challenges for the Vietnamese government in the process of providing public services.

4.2.1 Challenges Stemming from the Limitations of AI

AI still has limitations in terms of accuracy, completeness, and contextual appropriateness of information. The quality of information provided by AI depends heavily on the quality of the input data. AI is only effective when the input data is updated promptly and accurately. If AI systems (chatbots, virtual assistants) are not regularly updated with the latest regulations, the risk of transmitting misinformation is very high.

Therefore, the Vietnamese government has had to issue guidelines for civil servants on the use of AI. Accordingly, civil servants need to carefully check and evaluate the results provided by AI chatbots before using them. Civil servants must ensure that the information is accurate, relevant to the work context, and does not cause misunderstandings or errors when applied. In particular, civil servants should not rely entirely on AI chatbots but need to combine them with their personal knowledge and experience to make decisions (Ministry of Science and Technology, 2025).

In addition, AI still has limitations regarding privacy and data security. AI typically processes large volumes of personal information and sensitive data belonging to citizens (declarations, financial records, etc.). Therefore, without robust security measures, the use of AI could lead to information leaks or difficulties in controlling the scope of data usage. This is particularly dangerous in fields such as healthcare and social security, where personal data could be exploited for fraud or harm.

Furthermore, the issue of accountability is also a major challenge in case AI causes negative consequences. Determining responsibility when AI provides incorrect advice is very complex. In the process of providing public services to citizens, due to errors or misunderstandings of context, AI can provide incorrect advice or guidance, causing harm to citizens or government agencies.

4.2.2 Challenges Related to the Lack of Shared Digital Data Platforms

The effective use of AI in public service delivery requires the government to have a massive, synchronized, and high-quality digital database. However, this also presents a significant challenge for Vietnam.

Government agencies possess relatively large but fragmented databases that lack interconnectedness. For example, while a national population database has been implemented, data interoperability between this database and specialized databases on land, justice, insurance, etc., still faces many obstacles. This is further evidenced by the limited interoperability between databases of central and local government agencies.

According to the Policy and Media Development Research Institute and the United Nations Development Programme (2025), the limited sharing and connectivity of data between agencies and levels prevents agencies from fully utilizing the rich data sources available in other sectors and agencies, especially vertical data, which remains closed and not widely shared. For example, the health sector holds a very large amount of data, including 6 data groups according to the Law on Medical Examination and Treatment, with an average of 2 million examinations per day. However, this data is not yet connected or integrated, especially at the lower levels.

Furthermore, the issue of infrastructure for building and maintaining data centers is also a significant challenge. According to Vu (2025), the operating capacity of data centers in Vietnam is currently low. According to Cushman and Wakefield's 2024 statistics, Vietnam has 51 MW of operational data center capacity, 11 MW under construction, and is expected to have an additional 28 MW in the future. In addition, the biggest challenge is the ability to provide a stable and robust power supply to maintain the operation of data centers (Vu, 2025).

4.2.3 The Challenge of a Shortage of Skilled IT Personnel in the Public Sector

The civil servant workforce is a crucial factor in determining the success of applying artificial intelligence to public service delivery. However, currently, the civil servant workforce in Vietnam has not kept pace with the rapid development of science and technology, especially in the field of information technology.

There is a shortage of civil servants with IT skills. According to the Policy and Media Development Research Institute and the United Nations Development Programme (2025), in 2022, the percentage of civil servants working in digital transformation out of the total number of civil servants was 2.19%. Of this, the percentage at the central level was 4.07%, and at the local level, it was 2.09% (this percentage in developed countries is over 10%).

Furthermore, the limited IT skills of civil servants also pose a significant challenge. Vietnamese civil servants lack in-depth knowledge and skills in AI and data science. This creates numerous difficulties in managing, operating, and monitoring complex AI systems. Many government agencies lack sufficient technical personnel to test, evaluate, and maintain AI systems and therefore rely on third parties for technological support.

4.2.4 The Challenge of Lacking Necessary Funding to Apply AI to Public Service Delivery

The investment cost for using AI is very high. This cost includes expenses for hardware, software, and storage systems and also the cost of maintaining a team of technicians and experts. Meanwhile, the state budget allocated to this field is limited and has not met the needs.

Another cost challenge stems from government agencies themselves. Currently, there are no specific rules or regulations on the budgeting, management, use and settlement of state budget funds for research, development and application of AI models and systems. Because of complicated procurement processes, government agencies have a hard time getting high quality information technology infrastructure.

The Policy and Media Development Research Institute and United Nations Development Programme (2025) also noted that software is difficult to value (due to being intangible intellectual property), and AI solutions from businesses have different prices depending on the level of competition among service providers. Therefore, there is a significant risk when government agencies purchase packages from service providers offering different prices. As a result, government agencies are afraid of making mistakes and are hesitant to make purchases.

5. Discussion

5.1 AI Opportunities in Vietnam: Convergence with International Evidence

The opportunities identified in the experience of Vietnam's AI adoption are largely consistent with those described in international literature. The use of chatbots, virtual assistants and intelligent document processing systems in Vietnamese localities has a trajectory that has been observed in similar governance contexts. Dube (2024) posits that the deployment of chatbots to public services will facilitate citizens' access to information and services without requiring them to travel far or wait in long queues-a finding that directly resonates with the Vietnamese cases of 24/7 chatbot service in Ho Chi Minh City, Hanoi, and Da Nang documented in Section 4. Androutsopoulou et al. (2019) also propose the establishment of a new digital communication channel between citizens and government that uses natural language and can respond to more complex needs than current digital channels and serves both information-seeking and transactional purposes-a vision that Vietnam's multi-channel service delivery model (chatbots, voice interfaces, kiosks, and reception robots) is beginning to operationalize.

The productivity gains reported in Vietnam are also supported by the international literature. AI enables the government to handle dynamic challenges more effectively and improve public services (Muhammad et al., 2024). The coordination between the AI-assisted government and data analytics is the key to enhancing the efficiency, transparency, and responsiveness of governance. This line of thought is exemplified in the specific case of Ho Chi Minh City saving 2,000+ working hours a day through RPA. In broader terms, the OECD (2025) estimates that AI could automate 84 percent of repetitive public service transactions in the United Kingdom, saving the equivalent of 1,200 person-years of work each year,

providing some comparative weight to the gains documented in Vietnam. The rapid expansion of AI models across multiple cities and provinces in Vietnam also reflects what Mergel et al. (2019) describe as governments changing their mode of operation to improve public service delivery and achieve greater transparency, interoperability and citizen satisfaction. This process is identified to be driven primarily by external pressures from technological change and citizen expectations, mirroring the policy-driven momentum behind Vietnam's digital government programs.

5.2 AI Challenges in Vietnam: A Developing Country Perspective

Vietnam's experience makes a unique analytical contribution in its challenges, which mirror structural conditions that are typical of a middle income country going through a rapid but uneven digital transformation – conditions that differ significantly from those documented in the predominantly OECD-focused literature.

In Vietnam, the data fragmentation challenge echoes the finding of OECD (2025) that challenges in data access and sharing quality data are among the most common cross-cutting implementation challenges for government AI adoption. However, in Vietnam this problem is more foundational: it is not a matter of coordination and standards refinement-as in OECD contexts-but of basic connectivity between national, sectoral, and local databases that has not yet been established. Wimmer et al. (2020) emphasize that establishing appropriate governance mechanisms for data infrastructure enables data sharing and reuse for public service delivery-precisely the institutional capacity that Vietnam is still in the process of building. This gap between the governance ideal and the structural baseline represents a challenge less prominent in OECD country studies.

The human capital gap is also one of a kind in its scale and depth. Vietnam's 2.19% of civil servants engaged in digital transformation efforts is in line with the OECD's (2025) finding that skills gaps are the most common barrier to government AI adoption, cited by 60% of public sector respondents in a five-country survey and 70% of UK government bodies, compared to over 10% in developed countries. The OECD (2025) also warns that lack of internal skills results in over-reliance on external providers through procurement, creating a vicious cycle where governments lack the capacity to design upskilling programs, identify required competencies, or evaluate vendor offerings, a dynamic that is clearly observed in Vietnam's current situation. Similarly, Muhammad et al. (2024) note that many governments lack the capacity and expertise to implement the AI solutions effectively and as such, the outcomes are sub-optimal. Stankovich et al. (2023) emphasize that the effectiveness of AI depends on the quality of data, human capital and expertise of the inter-disciplinary team that is responsible for developing the AI.

The accountability and procurement challenges documented in this study-particularly the reluctance of civil servants to commit to AI purchases due to audit risk-find partial resonance in the OECD's (2025) observation that risk aversion is a cross-cutting implementation challenge and that the fear of getting AI wrong can create "analysis paralysis" that prevents even low-risk deployments from proceeding. Yet, the particular form of this challenge in Vietnam-fostered by the absence of clear state budget guidelines for AI procurement and the

consequent audit exposure for civil servants-is a dimension that the international literature has not yet adequately theorized. Stankovich et al. (2023) argue that artificial intelligence systems used in public service delivery are often opaque and unaccountable. However, they focus on algorithmic accountability from the citizen perspective, rather than institutional risk aversion within procuring agencies. This gap between the citizen-facing and agency-facing dimensions of accountability constitutes a potentially generalizable insight for other developing countries facing similar public financial management constraints.

5.3 Theoretical Contribution

By systematically mapping AI's impact across three opportunity dimensions-service quality, access expansion, and civil servant support-and four challenge categories-AI system limitations, data infrastructure, human capital, and financing-against a developing country context, this study contributes a multidimensional analytical framework that extends existing scholarship in two respects.

First, existing studies on AI in public service delivery tend to focus on individual applications or single governance dimensions. Dube (2024) examines chatbots specifically through the lens of public value theory in South Africa; Androutsopoulou et al. (2019) focus on natural language processing as a channel of citizen-government communication; Muhammad et al. (2024) concentrate on data analytics and visualization. The OECD (2025) offers the most comprehensive cross-functional analysis but draws predominantly on OECD member country experiences. By integrating multiple dimensions of AI's impact and grounding the analysis in a rapidly digitalizing middle-income country, this study offers a more holistic and contextually situated account of AI adoption dynamics than currently exists in the literature for the Southeast Asian developing country context.

Second, the Vietnamese cases illuminate a set of governance constraints-fragmented data infrastructure, weak absorptive capacity, and procurement risk aversion rooted in audit culture-that together constitute what might be called a "developing country profile" of AI implementation challenges in the public sector. This profile differs meaningfully from the algorithmic bias, transparency, and citizen-facing accountability concerns that dominate the literature on AI governance in advanced economies (Mittelstadt et al., 2016; Ghosh et al., 2025; Stankovich et al., 2023). As Stankovich et al. (2023) note, existing literature on algorithmic transparency in public service delivery focuses mainly on developed economies, and new analytical frameworks are needed to generate insights applicable to developing countries. The present study responds to this gap by documenting a developing country experience that advances both the empirical and theoretical understanding of AI adoption in government beyond the OECD-centric literature that currently predominates.

5.4 Policy Implications for Vietnam

Based on the above analysis, several key policy implications are proposed for the safe and effective deployment of AI in public service delivery in Vietnam.

5.4.1 Develop a "Hybrid" Model for Official Communication between Humans and Machines

This is an application of a "hybrid" interaction model—a model of citizens, machines, and civil servants. The interaction process between citizens and the government is mediated by machines and technology. AI does not replace the role of civil servants but collaborates with them in a coordinated model. Civil servants have to deal with complex situations that require expert assessment or involve psychological and emotional factors. In this model, AI does the bulk of the simple tasks and provides initial answers to simple citizen questions. AI is the first step in the request process, but it still needs human verification.

For example, virtual assistants in public service centers will automatically sort and solve basic citizen inquiries, freeing up civil servants to focus on more specialized work and address more complex issues once citizens have received initial AI support. This creates a new communication ecosystem where AI and humans work together, using the strengths of each to improve the citizen experience and make public services more efficient.

To build this model, the government needs to invest in solutions for data protection, access control and compliance with information security and personal data protection laws. The AI system needs to be compliant with security standards from the design stage and be transparent about how data is stored and used. Ethical principles should be established to ensure that AI applications are consistent with the culture, traditions and laws of Vietnam.

5.4.2 Focus on Building Digital Databases to Support the Provision of Public Services

Complete the national digital database and improve data connectivity between the national database and databases of various sectors and fields, as well as with local databases, to support the provision of public services.

Vietnam needs to promote data sharing to support AI research, development, and application. This involves the development of mechanisms, rules and sanctions for the exchange of data on the basis of mutual benefit. The government should provide incentives for data sharing, but also ensure decentralized data access, improve information security and stop leakage of private data of individuals or organizations. Vietnam also needs to invest more in building large and high-quality data centers to meet the needs of the digital age.

5.4.3 Enhance the Digital Capabilities of Civil Servants

Innovate recruitment and human resource allocation policies in the public sector by integrating digital capabilities into the criteria and conditions for selecting, assigning, transferring, and appointing personnel.

Regularly hold capacity building activities in digital skills for civil servants involved in providing public services. In terms of content, organize training courses on database management and exploitation skills, AI system usage and monitoring skills, AI results analysis skills, and technology risk identification skills to ensure civil servants can manage and work effectively in the digital environment. In terms of format, implement diverse training and development methods: self-training; in-person and online training; and training and development both domestically and internationally.

5.4.4 Strengthen the State Budget and Expand the Mobilization of Resources from Society and Internationally

The government needs to invest in building network infrastructure and technological equipment. It should accelerate the procurement and provision of information technology equipment and facilities to support public service delivery. To develop digital infrastructure, Vietnam needs to prioritize allocating a central government budget for this. During the procurement of public assets, procedures and processes need to be modified and adjusted to be more flexible and better suited to the rapid changes of the digital age.

At the same time, it is necessary to strengthen public-private partnerships and international cooperation to mobilize resources to participate in digital transformation in the provision of public services. Strengthening public-private partnerships is crucial to encourage technology companies and research organizations to participate in developing AI products and solutions for the public sector. It is also necessary to promote public-private partnership models in developing digital infrastructure and building databases to support the provision of public services.

Strengthen cooperation with domestic and international businesses and experts to receive support for advanced technological solutions and digital transformation in public service delivery. For example, develop projects with major technology companies (Google, Microsoft, and Viettel) to receive support in cloud computing and data system security; cooperate with businesses that manufacture and distribute digital equipment to receive preferential treatment in supplying basic information technology products. Enhance activities involving visits and learning from international experiences in the field of AI. Join international associations and organizations related to AI. Participate in technical and financial support programs from international organizations to expand the scale and scope of technology application.

6. Conclusion

This study analyzed the impact of AI on public service delivery in Vietnam, examining opportunities and challenges across multiple governance dimensions and providing illustrative evidence from Vietnamese localities and official reports.

The results show that AI has opened meaningful opportunities: improving the quality of public services through intelligent information systems and citizen support tools; expanding access to services via 24/7 digital platforms; and enhancing civil servant productivity through automation and document intelligence.

At the same time, significant challenges persist, including the inherent accuracy and accountability limitations of current AI systems; fragmented digital data infrastructure with low interoperability; a shortage of digitally skilled civil servants; and insufficient and poorly regulated funding mechanisms for AI procurement.

To leverage these opportunities while addressing the challenges, the study recommends four priority policy directions: developing a hybrid human-machine public service model;

strengthening national digital databases and data-sharing mechanisms; enhancing civil servants' digital capacity; and increasing and diversifying investment in digital infrastructure.

But, there are some limitations to this study that need to be considered. As a narrative review based primarily on secondary sources, it cannot establish causal relationships between AI adoption and service outcomes. Second, the evidence for the Vietnamese case largely relies on official sources and media sympathetic to the government, which may provide an optimistic view of AI implementation. Third, the analysis is short of citizen perspectives-an important dimension of service quality assessment. Finally, some of the specific findings may become dated relatively quickly given the rapid evolution of artificial intelligence (AI) technology.

There is a need for future research to gather primary data, such as citizen surveys and interviews with civil servants, to explore the real impact of AI on service quality and equality. Comparative studies across ASEAN countries would help place Vietnam's experience in a regional context. It would be useful to do research tracking specific AI implementations over time to evaluate if efficiency gains seen at first are maintained. Finally, a key and underexplored agenda is research dedicated to the accountability and governance frameworks of AI use in Vietnamese public administration.

At the end of the day, AI is not a substitute for governance capacity but an enabler. Its real value in delivering public services will only be realized when integrated within transparent, accountable, and citizen-centered governance systems-a condition that Vietnam, like many developing countries, is still working to build.

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Glossary

Algorithm - A set of rules or instructions that tell a computer system how to do calculations, solve problems or make decisions on its own.

Artificial Intelligence (AI): The capability of computer systems to emulate human cognitive functions, such as learning, reasoning, problem-solving, and decision-making.

Big Data : Very large and complex data sets that are challenging to process using traditional data processing applications. Advanced analytical techniques are needed to analyze the data and produce useful information.

A chatbot is a computer software that is designed to simulate conversation with the users, especially over the Internet. It uses natural language processing to understand questions and provide answers and information on its own.

Computer Vision - A branch of artificial intelligence that enables computers to interpret and understand visual information from the world around us, including images and videos.

Data Governance: The management of the availability, usability, integrity and security of the data employed in an enterprise or government setting.

Digital Government: The application of digital technologies to improve government services and operations, increase efficiency, build transparency, and promote citizen engagement.

Digital Transformation: The embracing of digital technologies by a business or government, which transforms the way it operates and delivers value.

Machine Learning : A form of AI that enables computers to learn and improve from experience, without being explicitly programmed.

Natural Language Processing (NLP): A subfield of artificial intelligence that provides computers the ability to understand, interpret and generate human language in a meaningful way.

Public Service Delivery: The process by which government agencies provide services and administrative processes to people and businesses.

Robotic Process Automation (RPA) is the use of software robots to automate repetitive and rule-based administrative processes, reducing manual effort and increasing efficiency.

SLAM (Simultaneous Localization and Mapping): A technology enabling robots or autonomous systems to create a map of an unknown environment while determining their location within it.

A Virtual Assistant is an AI powered software agent that performs tasks or delivers information based on voice or text commands in a manner similar to human interaction.

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