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Digital Transition in Public Financial Management: A Comparative Study of Strategies, Success Factors, and Challenges in Thailand and Singapore

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ABSTRACT

In the first quarter of the 21st century, digital transformation emerged as a key catalyst for reshaping public administration systems across Asia. This study examines the transition of public financial management (PFM) systems toward digitalization in Thailand, with comparative insights drawn from Singapore, which is recognized as a regional leader in digital governance. Anchored in the field of public administration, this study explores how national strategies, institutional frameworks, and technological integration influence the effectiveness, transparency, and responsiveness of public fiscal systems. Using a qualitative comparative approach, this study analyzes secondary data, including national digital policies, government reports, and academic literature. Key findings highlight that while Thailand has made significant progress through centralized platforms such as the GFMIS and e-GP, challenges remain in areas such as inter-agency data integration, cybersecurity, and adaptive capacity. In contrast, Singapore demonstrates strengths in strategic planning, AI adoption, and whole-of-government infrastructure development. The study concludes with policy recommendations for enhancing Thailand's digital PFM by leveraging lessons from Singapore, emphasizing data interoperability, capacity building, and regulatory innovation. This study contributes to contemporary public administration discourse by addressing digital governance challenges within emerging economies and offering a practical roadmap for enhancing fiscal accountability and efficiency in the digital age.

Introduction

In an era where digital technology has transformed public sector management worldwide, the development of Digital Government has become a key strategy for enhancing public service delivery, promoting transparency, and increasing the efficiency of bureaucratic systems (United Nations, 2022; OECD, 2023). This is particularly true in the post-COVID-19 context, where the transition to digital systems has rapidly accelerated and become inevitable.

The public financial management system is a core mechanism for driving public policy and plays a crucial role in budget planning, resource allocation, and effective control of government spending (Allen, Hemming, & Potter, 2013; IMF, 2020). The adoption of digital technologies in fiscal management supports real-time data-driven decision-making, reduces redundancy in paperwork, and promotes systematic checks and balances.

Singapore is regarded as a leading model for the comprehensive transition to digital public financial management. This transformation has been implemented under the "Smart Nation" initiative, which integrates digital systems into fiscal governance—for example, through the Networked Trade Platform (NTP), Peppol-standard e-Invoicing system, GeBIZ electronic procurement platform, and PayNow Corporate digital payment system (Smart Nation and Digital Government Office [SNDGO], 2023; Tan

& Wu, 2021). Furthermore, Singapore has successfully integrated data across the public and private sectors using APIs and blockchain technology to enhance transparency and build trust in public finance management.

Thailand has also made efforts to develop its public financial management system toward digitalization through the implementation of the New Government Financial Management Information System Thai (NEW GFMIS Thai), which aims to improve the efficiency of budget management, procurement, and financial accounting in the public sector (Comptroller General's Department, 2023). However, the system still faces limitations in the functionality of certain modules, such as the registry system, preparation of disbursement requests, and retention of supporting documents, which continue to rely heavily on paper-based processes. These issues highlight the practical gaps in Thailand's digital transition.

To better understand the phenomenon of digital transition in public financial management as it has emerged in Thailand and Singapore, this study addresses the following questions:

(1) How do national strategies, institutional frameworks, and approaches to integrating digital technology into public financial management systems differ between Thailand and Singapore?(2) In what ways does the digital transition of public financial management impact the efficiency, transparency, and responsiveness of the public sector in both countries, and how are these effects similar or different?(3) How can Thailand apply the lessons learned and best practices from Singapore to enhance its digital public financial management system, and what level of policy recommendations would be most appropriate for the Thai context?

Methodologically, this study compares Singapore, where digital public financial management has clearly advanced, and Thailand, which is still undergoing adaptation. Therefore, it is crucial to analyze the approaches, strategies, and success factors of the digital transformation of public finance. Such an analysis can offer valuable policy lessons and inform the development of Thailand's system toward greater sustainability and genuine adherence to the principles of good governance (Heeks, 2010; World Bank, 2019). Hence, this study conducts a comparative study of digital transition strategies in public financial management between Thailand and Singapore.

This study focuses on analyzing the key success factors, obstacles, and challenges in implementing digital fiscal policies in both countries, with the aim of proposing appropriate policy recommendations for Thailand. This study contributes significantly to the academic fields of public administration and public financial management by expanding the body of knowledge on digital transformation in the Southeast Asian context, an area that remains relatively underexplored. Moreover, it supports the formulation of evidence-based public policies and offers practical insights that can be applied to Thai public sector agencies in the future.

Reviewing the Literature on Digital Government in Thailand and Singapore

In an era where digital technology permeates every dimension of public administration, the concept of Digital Government has emerged as a crucial topic in the academic fields of public administration, fiscal economics, and public policy design. This concept is linked to the reform of bureaucratic systems to make them more agile, transparent, and responsive to citizens (Mergel, 2016). The focus ranges from the application of information technology in service delivery (e-government) to the structural redesign of institutions to fully accommodate digital transformation (Koo, 2019; Wiseman, 2020). This study highlights the relationship between digital technology and institutional change in the public sector, which serves as a fundamental basis for the long-term advancement of public financial systems and fiscal governance.

Building on macro-level concepts, research has increasingly focused on the specific area of Public Financial Management (PFM), which serves as the central system for executing government policy and public services. The International Monetary Fund (IMF) (2023) proposed a Digital-by-Design PFM framework, emphasizing that a digitally enhanced PFM system must be holistically redesigned, from data architecture and disbursement processes to performance evaluation. This aligns with the approach of GovTech Singapore and the World Bank (2022), which advocates for data integration based on a Single Source of Truth (SSOT) and the use of intelligent tools such as Artificial Intelligence (AI), Robotic Process Automation (RPA), and real-time budget tracking systems to promote efficiency, transparency, and budget control capabilities.

Despite the theoretical promise of these concepts, the practical implementation of digital innovations in the public sector still faces challenges related to institutional design, regulatory mechanisms and cross-sector collaboration. Pei (2018) and Fan (2018) examined the role of regulatory bodies in Singapore, such as the Monetary Authority of Singapore (MAS), in developing FinTech and establishing a Regulatory Sandbox, highlighting the government's efforts to balance the promotion of innovation with the mitigation of risks to financial stability. This reflects that the transition to a digital financial system is not merely a change in tools but a dynamic transformation of ideas and power structures within the public sector.

Beyond the Monetary Authority of Singapore's (MAS) role as a leader in FinTech development and the Regulatory Sandbox, the Singaporean government has also advanced fiscal reform through the Smart Nation initiative, with GovTech serving as the central mechanism for developing the national digital infrastructure. Wa'u and Nambiar (2024) highlight that Singapore has adopted a Single Source of Truth (SSOT) data structure, together with investments in Big Data, AI, and Blockchain, to build an efficient and accountable e-procurement and public financial management system with real-time transparency. Furthermore, Wiseman (2020) argues that Singapore's success does not stem from technology alone but from the holistic integration of human resources, legal frameworks, and public sector information systems into an integrated digital governance model, which has enabled the state to respond rapidly to crises, such as COVID-19.

In the context of Thailand, most of the literature still emphasizes the Government Financial Management Information System (GFMIS) and the Medium-Term Expenditure Framework (MTEF) as the central mechanisms of fiscal reform. Umpawa et al. (2024) note that the GFMIS has improved budget allocation efficiency and expenditure monitoring at the agency level, but it continues to face challenges related to inter-agency data connectivity, outdated information, and the absence of advanced data analytics (predictive analytics). Similarly, Ingkakul (2007) observes that although the system was designed to enhance transparency, internal government operations remain centralized, rigid, and exclude public participation from fiscal governance processes. These limitations reflect the structural and organizational cultural barriers that hinder Thailand's genuine transition toward digital public finance.

When comparing the conceptual foundations of digital fiscal reform in Thailand and Singapore, significant differences emerge in terms of administrative philosophy and the degree of institutional integration. Singapore has adopted a data-centric, whole-of-government approach that emphasizes redesigning the bureaucracy to fully harness data and technology (GovTech & WB, 2022; Wiseman, 2020). In contrast, Thailand still relies on traditional concepts such as e-government, good governance, and budgetary control within bureaucratic systems. Despite technological efforts through the GFMIS and online budget-tracking systems, Thailand lacks a conceptual framework that supports transformative institutional change. Moreover, studies in Singapore often focus on the connection between technology and

state outcomes, such as transparency, trust, and service innovation, whereas studies in Thailand continue to emphasize internal efficiency rather than the creation of public value.

Therefore, this study aims to fill this academic gap by addressing the questions of how policy strategies, success factors, and obstacles in the digital transition of public financial management compare between Thailand and Singapore. Additionally, it investigates the extent to which lessons from Singapore's experience can be adapted and applied in the Thai context. These questions will lead to the formulation of policy recommendations that are grounded in an in-depth comparative analysis, contextually appropriate, and capable of driving genuine systemic transformation.

Conceptual Framework

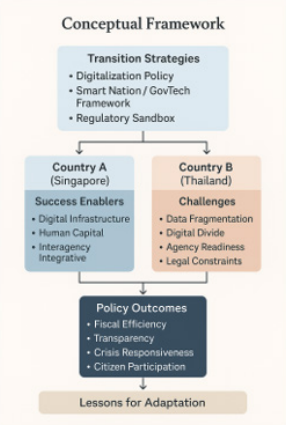

Figure 1: Conceptual Framework of the Study

The central idea presented in this Conceptual Framework diagram is a comparative analysis of the digital public finance transition between Thailand and Singapore, focusing on three key dimensions: (1) Digital Transformation Strategy, (2) Enablers and Challenges, and (3) Outcomes and Implications. The framework does not treat public finance merely as a technical tool but conceptualizes it as a governance ecosystem that requires the integration of technology, data, institutions, and human capital, particularly at the level of strategic planning and policy design.

A novel contribution of this framework is its structural juxtaposition of Thailand's and Singapore's processes, enabling readers to clearly see how Singapore's trajectory is grounded in a "digital by design" approach. This begins with a centrally coordinated policy design under GovTech, the integration of government data through a Single Source of Truth (SSOT), and proactive investment in both human resources and technology. In contrast, Thailand's process started with the adaptation of GFMIS within the traditional bureaucratic framework, which reflects a "digital by default" model—using technology to accelerate existing processes rather than fundamentally redesigning the bureaucracy. Furthermore, Singapore systematically employs Regulatory Sandboxes and state-private sector collaboration, whereas Thailand continues to face constraints in terms of legal frameworks, data governance, and human capital readiness.

The key lessons that Thailand can learn from Singapore include the following:

1. Establishing new digital institutions in the form of specialized agencies (e.g., GovTech) to strategically drive transformation.

2. Investing in SSOT-based data systems to strengthen planning, control, and policy responsiveness is essential.
3. Employing advanced technologies such as AI, Big Data, and Blockchain to analyze public expenditure.
4. Creating policy and innovation testing environments through Regulatory Sandboxes that facilitate bureaucratic learning and adaptation.
5. Shifting the culture of public administration toward results and transparency rather than procedural compliance.

Accordingly, the primary proposition of this research is the development of a conceptual and policy framework suited to Thailand's context, informed by Singapore's successful example. This involves not merely replicating tools or systems but re-envisioning both the "system of thought" and the "system of practice' to establish sustainable digital public finance in the contemporary era.

Research Methods

This study adopts a qualitative research design within the field of Public Administration, focusing on conducting a comparative case analysis between Thailand and Singapore. This design aims to capture the complexity of the digital transition in public financial management (Digital PFM) by examining both contextual similarities and differences in processes, strategies, success factors, and challenges.

This research is guided by the concept of digitalization, understood as the systematic adoption of digital technologies by governments to improve efficiency, transparency, and responsiveness in fulfilling state functions (Mergel, 2016; OECD, 2019). Importantly, digitalization is not confined to the application of technological tools but also encompasses data governance, policy mechanism design, and embedding digital systems into bureaucratic culture to enhance overall governance capacity.

This study employs a two-case study design, selecting Thailand and Singapore as the units of comparison. This design was chosen for two reasons. First, both countries are in Southeast Asia and share regional socio-economic characteristics; however, they represent distinct trajectories of digital transition—Thailand following a Digital by Default approach and Singapore pursuing a Digital by Design strategy. Second, by limiting the comparison to two cases, this study allows for in-depth exploration and interpretive analysis rather than broad generalizations, thereby providing richer insights into institutional mechanisms and policy outcomes. Thus, the two-case design balances analytical depth with cross-contextual learning, making it particularly suitable for identifying lessons that Thailand may adapt from Singapore's experience.

The findings reveal that Singapore's transition toward digital public financial management (Digital PFM) has followed a systematic and strategically aligned approach. It emphasizes a centralized, data-driven model that integrates digital infrastructure across government agencies. Key elements of this transition include the adoption of a Single Source of Truth (SSOT) framework for public finance data, the establishment of a dedicated technology agency (GovTech), and the implementation of Regulatory Sandbox mechanisms to test and scale fiscal innovation initiatives (GovTech Singapore & The World Bank, 2022; Wa'u & Nambiar, 2024). These institutional arrangements have allowed Singapore to improve the efficiency and transparency of its fiscal system and enhance its responsiveness to crises, as evidenced during the COVID-19 pandemic.

In contrast, Thailand's digital transition in the public finance domain has largely focused on the implementation of the Government Fiscal Management Information System (GFMIS), which, although

effective in automating basic financial processes, still faces several limitations. These include fragmented data systems, limited interoperability between agencies, and a lack of participatory mechanisms for stakeholders in the financial governance. Additionally, structural rigidity within public institutions remains a significant barrier to a more dynamic and integrated digital fiscal ecosystem (Umpawa et al., 2024). This comparative contrast highlights the need for Thailand to move beyond digital tools toward more systemic reforms in governance, coordination, and data-driven strategy development.

The data were analyzed using critical descriptive qualitative content analysis. This method was chosen because it allows for the systematic categorization of textual data while maintaining interpretive depth, which is essential for understanding the nuanced processes of digital transition. Critical descriptive qualitative content analysis is particularly appropriate for this study because it enables the researcher to move beyond descriptive summaries toward conceptually informed interpretations that align with the theoretical framework. The analysis focused on three predetermined dimensions: national strategies and institutional approaches, success factors and challenges, and policy outcomes in terms of efficiency, transparency, and government responsiveness.

The combination of content analysis and comparative case analysis enables the identification of both convergent and divergent patterns across the two countries. This methodological approach ensures that the findings are not only descriptive but also analytically robust, offering policy-relevant insights that can guide Thailand's digital transition in public financial management.

The choice of a qualitative approach is justified by the research objective, which emphasizes understanding processes and interpretations rather than measuring variables. The two-case design provides an effective balance between depth and comparability, allowing for a detailed exploration of institutional mechanisms while still highlighting cross-national contrasts. Similarly, qualitative content analysis is well-suited for examining diverse documentary sources and enables the synthesis of complex policy information into meaningful analytical categories. Together, these methodological choices ensure that the study generates empirically grounded and contextually relevant insights that contribute to both academic understanding and practical policy-making.

Results

Digital Transition in Public Financial Management in Thailand

The findings indicate that the digital transition in Thailand's public financial management is a continuous process closely linked to long-term national strategies, particularly the 20-Year National Strategy and the Digital Government Development Plan (2023–2027), which establishes the "Digital by Default" framework for managing public services and financial administration (Digital Government Development Agency [DGA], 2023). This process reflects a structural transition from traditional financial systems to data-driven and digital infrastructure-centered systems.

A salient feature of the digital transition in Thailand is reflected in the National e-Payment Master Plan and the implementation of the PromptPay system, which signifies efforts to integrate digital technology into public financial management to increase efficiency and reduce transaction costs. Data from the Bank of Thailand (2021) reveal that the use of mobile digital payment services grew by an average of 116 percent annually during 2016–2018, and more than 46.5 million accounts were registered with PromptPay, demonstrating broad acceptance of digital financial services among citizens and businesses. Nevertheless, empirical studies have also pointed to limitations, particularly the persistence of the digital divide, with older adults and rural communities facing barriers in terms of digital literacy and access to appropriate

devices (Ingkakul 2007). Furthermore, cybersecurity vulnerabilities and fraud risks remain significant concerns, which contrasts with Singapore's strong institutional emphasis on fostering digital trust and resilience.

In terms of public administration, the Ministry of Finance launched the Digital MOF Plan 2023–2027, which emphasizes the integration of financial data, development of e-services, and establishment of mechanisms for cybersecurity governance, with the ultimate goal of ensuring greater speed, transparency, and fairness in government operations (Ministry of Finance, 2023). This initiative marks an important step beyond mere "digitization" towards "digitalization" and "digital transformation." However, the integration of financial data across agencies remains incomplete, with persistent interoperability issues between central systems, such as New GFMIS Thai, and local government platforms, such as e-LAAS (Kraiwas & Nattarid, 2019). As a result, despite well-intentioned policies, the practical implementation has yet to achieve seamless data integration or deliver a comprehensive overview of public finance in the way that Singapore's systems have.

From an institutional perspective, Thailand established the Government Chief Information Officer (GCIO) Committee and specialized digital agencies, such as the Digital Government Development Agency (DGA), to drive digital governance in an integrated manner (DGA, 2024). These initiatives represent important steps towards a whole-of-government approach. However, significant constraints on human capital and budgetary resources remain. Many government agencies still lack sufficient digital skills and technical expertise, which hampers coordination between central and local administrations and often results in delays in project execution (Umpawa et al. 2024). These challenges suggest that although Thailand has laid down the structures and mechanisms for digital transition, their effectiveness is limited, in contrast to Singapore's more capable and well-resourced institutions such as GovTech and the Infocomm Media Development Authority (IMDA).

In terms of efficiency, the digital public financial management system has reduced transaction costs, facilitated tax payments and government disbursements, and enabled the application of big data analytics for more effective budget planning (IMF 2023). With respect to transparency, advancements in open data initiatives, such as the Govspending Data Portal and online procurement systems (e-GP), have played a crucial role in building credibility and reducing opportunities for corruption (Paipan & Chatruprachewin, 2022). In terms of responsiveness, citizens have gained faster access to financial and welfare services through digital platforms, helping to reduce inequality and enhance participation (UNDP, 2024).

In conclusion, the findings suggest that Thailand's digital transition is not merely about adopting technology in fiscal management but constitutes a combined institutional and operational transformation aimed at achieving fiscal sustainability. It has yielded positive outcomes in efficiency, transparency, and citizen responsiveness; However, Thailand's digital transition continues to face significant structural constraints, most notably the limited readiness of human resources, as many public officials still lack adequate digital skills and opportunities for continuous training (Ingkakul, 2007; Umpawa et al., 2024). In addition, the integration of financial and administrative data remains incomplete, with persistent interoperability issues across government agencies that hinder seamless policy coordination and implementation (Kraiwas & Nattarid, 2019; United Nations, 2024). Furthermore, resource and budgetary limitations have constrained the government's ability to sustain investments in digital infrastructure and systems development (World Bank, 2011; OECD, 2023). These constraints indicate that Thailand's digital transition has yet to reach its full potential and continues to represent a critical policy challenge that requires sustained institutional focus and strategic investment.

Digital Transition in Public Financial Management in Singapore

The findings indicate that the digital transition in Singapore's public financial management is characterized by institutional integration, systematically driven by national-level strategies. Since the launch of the Smart Nation Initiative in 2014, the Singapore government has set the vision of building a government that is "digital to the core, and serves with heart," positioning technology as the backbone of citizen services (Government Technology Agency, 2018). This strategy was further reinforced in Smart Nation 2.0, which emphasizes three dimensions—Trust, Growth, and Community—to create a digital government that is reliable, promotes the digital economy, and responds inclusively to society (Ministry of Digital Development and Information, 2024).

In terms of the transition process, Singapore developed the Digital Government Blueprint and established dedicated agencies, such as GovTech, the Infocomm Media Development Authority (IMDA), and the Monetary Authority of Singapore (MAS), to serve as key institutional architects in policymaking, technological development, and digital finance regulation. Initiatives such as the GovTech Stack and the Singapore Digital Utility Stack have created shared digital infrastructures, such as digital identity (Singpass), e-payments (PayNow), e-invoicing, and data exchange, which standardize and seamlessly integrate public financial management systems across government agencies (GovTech Singapore, 2020).

The study also finds that Singapore has applied digital technologies to public financial management (PFM) in a concrete way. For instance, GovWallet enables the government to directly and transparently disburse social welfare benefits, such as GST Vouchers and other support packages, amounting to over 430 million transactions (GovTech Singapore, 2022). In addition, the LifeSG application consolidates more than 100 government services into a single platform, covering key life events from birth, education, and employment to retirement, thus ensuring a genuinely citizen-centric service delivery (Government Technology Agency, 2022).

In terms of financial governance, the MAS has played a pivotal role in creating a "Smart Financial Center" by establishing the FinTech and Innovation Group (FTIG) and deploying a Regulatory Sandbox mechanism. This allows financial institutions and startups to experiment with innovations such as blockchain, e-payments, and digital currencies under flexible oversight that balances promotion and risk management (Pei, 2018). This reflects that Singapore's digital transition goes beyond the digitization of processes to embrace a redesign of institutional systems that accommodate innovation and transparency.

The outcomes of Singapore's digital transition are evident in multiple dimensions. In terms of efficiency, the government has reduced transaction costs and accelerated service delivery through digital payments, such as PayNow and e-invoicing, which are now adopted by more than 95% of SMEs (IMDA, 2024). In terms of transparency, the use of centralized data systems and open data portals, such as MyInfo and OpenCerts, has enabled real-time verification and data exchange. In terms of responsiveness, during the COVID-19 pandemic, the government effectively disbursed relief payments and managed vaccinations through digital platforms, demonstrating the robustness of Singapore's digital infrastructure and culture (Smart Nation and Digital Government Group, 2021).

In summary, the findings show that Singapore's digital transition in public financial management exemplifies a whole-of-government approach, fully integrating digital infrastructure with fiscal systems across strategies, institutional frameworks, and technological tools. This has resulted in outcomes of efficiency, transparency, and responsiveness that exceed the international standards.

A Comparative Study of Digital Transition in Public Financial Management in Diverse Contexts

Table 1: Comparative Findings between Thailand and Singapore

Factors	Singapore	Thailand
Strategy & Institutional Frameworks	There are Smart Nation 2.0 and the Digital Government Blueprint, both of which have been designed under a Digital by Design approach from the institutional structure level, with central agencies such as GovTech, IMDA, and MAS driving advancements in both digital technology and digital finance (Wiseman, 2020; Pei, 2018).	Thailand has adopted the National e-Payment Master Plan, the Payment Systems Roadmap, and the Digital MOF Plan (2023–2027), which emphasize the development of core infrastructures such as PromptPay, GFMIS, and e-GP. These initiatives follow the trajectory from digitization to digitalization to digital transformation, yet they do not fully embody a genuine Digital by Design approach (Bank of Thailand, 2021; Ministry of Finance, 2023).
Achievements	Singapore has achieved notable success in e-invoicing (Peppol), GovWallet, and LifeSG, which have made public financial management more citizen-centric and enabled direct, transparent, and rapid disbursement of welfare benefits to citizens (GovTech, 2022; Wa'u & Nambiar, 2024).	Thailand has expanded the use of PromptPay to more than 46 million accounts, reducing transaction costs and increasing convenience in tax payments and disbursements. In addition, the e-GP system has enhanced transparency in public procurement processes (Paipan & Chatruprachewin, 2022; IMF, 2023).
Challenges	The main challenge lies in the governance of innovations such as AI and FinTech, where it is crucial to maintain a balance between promoting innovation and managing associated risks (Pei, 2018). In addition, issues of cybersecurity and digital trust remain significant concerns (Lee, 2024).	Thailand continues to face challenges related to cash-based spending behavior and the digital skills gap among personnel, which hinder the inclusiveness of the digital transition. At the same time, obstacles concerning the interoperability of public financial systems remain significant (INGKAKUL, 2007; Kraiwas & Nattarid, 2019; IMF, 2023).

The comparison reveals that Singapore's digital transition has advanced to the stage of digital by design, with the establishment of digital public utilities such as digital identity, e-payments, e-invoicing, and GovWallet, which are fully integrated into national public financial systems and fiscal policies. In contrast, while Thailand has made notable progress in infrastructure, such as PromptPay, GFMIS, and e-GP, it still remains in the stage of digitization to digitalization, without yet achieving seamless cross-agency data and system integration.

Although Thailand has made notable progress in expanding access to digital financial services and enhancing a certain level of transparency, policy outcomes remain less evident than in Singapore due to structural constraints relating to human capacity and data interoperability. Empirical evidence illustrates that the lack of digital skills among government officials has long been a barrier to e-government development. For instance, Ingkakul (2007) found that the implementation of the Government Fiscal Management Information System (GFMIS) in the Department of Medical Services was hindered by inadequate staff training and limited technical expertise, which prevented the system from being fully utilized. Similarly, Kraiwas and Nattarid (2019) demonstrated that fiscal data management and procurement systems across Thai government agencies remain fragmented and poorly integrated, delaying disclosure and weakening transparency. These findings are reinforced by the United Nations (2024) E-Government Survey, which

observed that Thailand still lacks a comprehensive whole-of-government approach to digital governance, particularly in terms of interoperability between central and local systems. Consequently, while initiatives such as PromptPay, e-GP, and New GFMIS Thai have yielded some positive results, the absence of sufficiently skilled human resources and continued fragmentation of data systems undermine the overall effectiveness of the digital transition. This underscores the necessity for Thailand to invest more strategically in developing digital human capital and establishing standardized data and interoperability frameworks, lessons that can be drawn from Singapore's more integrated and citizen-centric digital public finance ecosystem.

This research adopts a conceptual framework that views the digital transition in public finance not merely as process digitization but as an institutional transition, encompassing policy design, legal frameworks, and regulatory mechanisms linked to the notions of digital by default and digital by design (OECD, 2025; IMF, 2023).

The Comparison Demonstrates That Thailand Can Learn from Singapore

According to the comparative study above, this article proposes that, in terms of digital transition, Thailand could learn from Singapore in various ways.

Developing digital public infrastructure and shared data standards

Singapore's effectiveness in establishing digital public infrastructure lies in its long-term strategic vision and the existence of central coordinating agencies, such as GovTech and the Smart Nation and Digital Government Group (SNDGG). These institutions have implemented a comprehensive digital utility stack that includes Singpass (digital identity), PayNow (e-payments), and Peppol e-invoicing, which ensures standardized and interoperable services across the government and private sectors (GovTech Singapore, 2022). According to The Straits Times (2022), Singpass now has over 4.2 million active users and grants access to more than 2,000 digital services, reflecting citizen trust and widespread adoption. This demonstrates that investing in shared digital infrastructure and establishing common data standards enables greater efficiency, accountability, and user-centric governance.

In contrast, Thailand has attempted to digitalize public finance through New GFMIS Thai, e-LAAS, and e-GP, but continues to suffer from fragmentation and interoperability issues (Kraiwas & Nattarid, 2019). Applying the OECD's (2023) "digital by design" principle, Thailand should prioritize the development of a national financial data standard and API-based integration across systems. Such reforms would not only address inefficiencies but also build trust and transparency in public financial management, aligning Thai practices more closely with Singapore's integrated model.

Integrating direct digital disbursements to citizens

Singapore's success in implementing direct digital disbursement stems from the GovWallet system, which allows the government to transfer subsidies and welfare payments directly into citizens' digital wallets or linked accounts. This was particularly evident during the COVID-19 crisis, when Singapore rapidly disbursed the Solidarity Payment and GST Vouchers to millions of residents through GovWallet, integrated with PayNow and other e-wallets. Channel News Asia (2020) reported that these transfers were executed within days, minimizing bureaucratic delays and ensuring inclusivity in the process. This efficiency is underpinned by Singapore's accurate and up-to-date national digital identity infrastructure (Singpass) and central population registry, which enables effective targeting and verification.

In Thailand, similar measures were attempted through PromptPay in schemes such as "Rao Mai Ting Kan" and "Khon La Khrueng," but challenges remained due to the digital divide, particularly among elderly

citizens and informal workers who lacked access to bank accounts or mobile applications (Ingkakul, 2007). Drawing from Sen's (1999) Capability Approach, equitable access to technology is a critical capability required for citizens to benefit from digital policies. Therefore, Thailand should expand PromptPay coverage into a universal government e-wallet platform linked to a reliable national population database to ensure inclusivity and enable the state to deliver targeted fiscal support efficiently.

Establishing a central digital finance agency

Singapore's ability to coordinate its digital transition is largely due to strong central institutions, such as GovTech and the Infocomm Media Development Authority (IMDA), which act as the state's policy-technology arms. These agencies are responsible for setting digital standards, managing cross-government platforms, and developing innovations. During the COVID-19 pandemic, GovTech's development of the TraceTogether and SafeEntry applications was highlighted by The Straits Times (2021) as an example of a rapid and effective whole-of-government approach to contact tracing. Such centralized capacity ensures coherence, avoids duplication, and strengthens accountability in the realm of digital governance.

Thailand currently has agencies such as the Digital Government Development Agency (DGA) and the Government Chief Information Officer (GCIO) Committee; however, their mandates remain broad and not specifically focused on public financial management. As Umpawa et al. (2024) note, fragmentation and insufficient human resources weaken Thailand's ability to coordinate digital-finance initiatives effectively. From the perspective of New Public Management (NPM), which emphasizes performance outcomes and accountability, Thailand would benefit from establishing a dedicated, central agency for digital PFM. This body could oversee interoperability standards, coordinate cross-agency initiatives, and accelerate digital innovation in public finance, mirroring Singapore's more effective institutional models.

A comparative analysis of the digital transition in public financial management between Thailand and Singapore highlights striking differences in institutional structures and levels of readiness. Singapore has successfully developed digital public utilities and adopted a digital-by-design approach that integrates all dimensions of fiscal management—from revenue collection and expenditure to oversight—resulting in policy outcomes that are efficient, transparent, and highly responsive to citizens' needs. In contrast, while Thailand has made significant progress in building digital infrastructure, such as PromptPay, e-GP, and the New GFMIS Thai, the country continues to face persistent constraints in data integration, reliance on cash transactions, and digital skills of public officials. These challenges have rendered Thailand's digital transition a form of "partial transition" rather than a "full transition."

The findings suggest that Thailand can draw key lessons from Singapore in three main areas: (1) developing common data standards and shared digital public infrastructure, (2) advancing a universal direct digital disbursement system for citizens, and (3) strengthening a central coordinating agency dedicated to digital PFM. Beyond offering practical policy recommendations, this study also contributes to the broader theoretical discourse on Digital Transition by demonstrating that, in developing country contexts, the process does not necessarily follow a single linear path. Instead, the digital transition may unfold through multiple pathways, where even partial transitions provide important insights and policy lessons for shaping more inclusive, transparent, and resilient systems of public financial management.

Discussion

A comparative study of the digital transition in public financial management (PFM) between Thailand and Singapore offers important theoretical and policy insights into how states manage institutional reforms under the pressures of digital transformation. This discussion engages directly with the conceptual and

theoretical frameworks of Digital Transition, situates the findings in relation to existing literature, and highlights the contributions of this research to the field. In doing so, it also emphasizes the contextual complexity of digital reforms in developing country settings, showing that Thailand represents a "partial transition" case that complicates the more linear models often derived from OECD or Western contexts.

The concept of "digital transition" in public governance has been widely discussed by international organizations and scholars. The OECD (2019, 2020) defines digital transition in government not merely as digitizing existing processes but as adopting a "digital by design" approach, which reconfigures institutions, processes, and service delivery around digital technologies from the outset. This implies a transformation of organizational culture and governance structures, not just technology adoption alone. Mergel, Edelmann, and Haug (2019) reinforce this perspective, noting that digital transformation in the public sector must be understood as both a socio-technical and institutional change, shaped by context, path dependency, and citizen trust.

From a fiscal perspective, the International Monetary Fund (IMF, 2017) introduced the notion of "digital revolutions in public finance," arguing that PFM systems must integrate big data, automation, and digital payment systems to achieve efficiency, transparency, and responsiveness in public finance. These theoretical positions frame the digital transition as multi-dimensional, including technological modernization, institutional reform, and citizen engagement.

The findings of this study confirm these theoretical insights but also nuance them. The case of Singapore strongly supports the OECD and IMF models, illustrating how a digital-by-design approach and integrated public digital infrastructure yield measurable improvements in fiscal efficiency and citizen trust. In contrast, the Thai case demonstrates how resource constraints, fragmented institutions, and digital divides can limit the outcomes of digital transition, resulting in a partial rather than a full transformation.

Singapore has consistently been recognized as a global leader in digital governance (GovTech Singapore 2018; OECD 2023). Its Smart Nation 2.0 strategy articulates a vision of being "digital to the core and serving with heart," emphasizing integrated digital services across the government. The country's digital utility stack—comprising Singpass (digital ID), PayNow (e-payments), Peppol e-invoicing, and GovWallet—embodies the OECD's digital-by-design principle.

This is reinforced by empirical evidence. According to The Straits Times (2022), Singpass has more than 4.2 million active users and provides access to over 2,000 public and private services, illustrating widespread citizen adoption and trust in the system. GovWallet, integrated with PayNow, has allowed the government to deliver subsidies and welfare payments directly to citizens' bank accounts. During the COVID-19 pandemic, CNA (2020) reported that the government used GovWallet to disburse Solidarity Payments and GST Vouchers within days, showcasing the responsiveness and efficiency of Singapore's PFM system. These examples validate the OECD 's(2019) claim that digital-by-design governance enhances efficiency and responsiveness in service delivery.

From an institutional standpoint, Singapore's success is tied to its strong coordinating agencies. GovTech and the Infocomm Media Development Authority (IMDA) act as the government's technology arms, overseeing interoperability standards, digital platforms, and innovation in Singapore. The Straits Times (2021) highlighted the development of TraceTogether and SafeEntry during COVID-19 as an example of how GovTech enabled a whole-of-government response. This reflects what Mergel et al. (2019) describe as the institutional capacity for digital transformation, where governance and technology are tightly interlinked.

Thus, Singapore exemplifies the "full transition" envisaged by the OECD and IMF frameworks. This case supports the theory that when digital infrastructure, institutional design, and citizen trust align, the

digital transition produces tangible improvements in fiscal governance.

Thailand presents a contrasting scenario. While it has made significant progress in digital infrastructure, such as the National e-Payment Master Plan, PromptPay, e-GP, and New GFMIS Thai, the outcomes have been more limited. The Bank of Thailand (2021) reported that mobile digital payment usage grew by 116 percent annually between 2016 and 2018, and more than 46.5 million PromptPay accounts were registered. This demonstrates the public uptake of digital financial services. However, implementation challenges have persisted.

First, the digital divide undermines inclusivity. Bangkok Post (2020) reported that during the "Rao Mai Ting Kan" COVID-19 relief scheme, many citizens struggled to access payments because they lacked bank accounts, smartphones, or digital literacy. This aligns with Ingkakul (2007), who found that inadequate staff training and digital skills hindered the effectiveness of the GFMIS in the Department of Medical Services. These findings reveal that technological infrastructure alone is insufficient without human capacity, a theme echoed by the IMF (2017).

Second, interoperability problems constrain the policy outcomes. Kraiwas and Nattarid (2019) observed that fiscal and procurement data across Thai agencies remain fragmented, limiting transparency and delaying disclosure. Similarly, the UN E-Government Survey (2024) noted that Thailand lacks a comprehensive whole-of-government approach, particularly in integrating central and local systems. These constraints explain why, despite infrastructure gains, Thailand's policy outcomes in terms of efficiency and transparency are less evident than Singapore's.

From a theoretical standpoint, Thailand's case complicates OECD's digital-by-design model by showing how structural constraints—human capacity, fragmented institutions, and limited resources—produce "partial transitions." As such, it argues against overly deterministic readings of digital transition theory, emphasizing the role of context and institutional readiness.

This study contributes to the theory of digital transition in three significant ways. First, it supports the OECD's digital-by-design and IMF's digital revolution models by showing that in Singapore, digital infrastructure and strong institutions yield measurable fiscal outcomes. Second, it nuances these theories by introducing the concept of partial transition, as evidenced in Thailand, where progress exists, but outcomes remain constrained. Third, it expands the literature by situating digital transition in the Global South context, where challenges such as digital divides, resource constraints, and fragmented governance complicate linear models.

Thus, the study aligns with Mergel et al.'s (2019) call for context-sensitive approaches, showing that digital transition has multiple pathways rather than a single trajectory. This is evident in the contrast between Singapore, where strong institutional capacity and citizen trust enabled a full transition consistent with the OECD's digital-by-design model, and Thailand, where structural constraints in human resources, data interoperability, and resource allocation produced only a partial transition. By situating these divergent outcomes within the same regional and temporal context, this study demonstrates how national readiness and institutional design condition the trajectory of digital reforms. This not only adds to theoretical debates but also provides practical lessons for policymakers in developing countries.

In summary, this comparative discussion shows that Singapore represents a "full transition" case, validating theoretical claims about the benefits of digital-by-design governance. In contrast, Thailand illustrates a "partial transition," highlighting the structural and institutional constraints that shape digital reforms in the Global South. The study contributes to theory by demonstrating that digital transition is context-dependent and path-divergent, and to policy by offering lessons that Thailand can adapt to close its policy gaps.

Conclusion

The study of digital transition in public financial management (PFM) through a comparative analysis of Thailand and Singapore provides a comprehensive understanding of how institutional structures, human capacity, and technological readiness interact to shape fiscal governance outcomes. Anchored in the theoretical framework of digital transition, this study examined how the integration of digital technologies into PFM systems produces outcomes in terms of efficiency, transparency, and responsiveness, and how these outcomes differ across contexts. The findings illustrate both support for and qualification of existing theories, offering important lessons for policy reforms in developing countries.

The theoretical foundations guided the research design. According to the OECD (2019, 2020), digital transition in governance is not limited to the digitization of existing processes but constitutes a digital-by-design approach, wherein processes, institutions, and service delivery are reconfigured around digital technologies. This view is reinforced by Mergel, Edelmann, and Haug (2019), who argue that digital transformation in the public sector is a sociotechnical change involving institutional reform and citizen trust. In fiscal terms, the IMF (2017) conceptualizes digital transition as "digital revolutions in public finance," emphasizing the role of big data, automation, and digital payments in improving fiscal efficiency and fiscal transparency. These perspectives framed the study's research questions: (1) How do national strategies and institutional frameworks support the digital transition in PFM? (2) What outcomes in terms of efficiency, transparency, and responsiveness have been realized? (3) What lessons can Thailand learn from Singapore?

Methodologically, this study adopted a comparative documentary research approach, drawing on primary policy documents, international reports, scholarly works, and media coverage. Sources included Thailand's National e-Payment Master Plan, the Digital MOF 2023–2027 Plan, and Bank of Thailand reports, alongside Singapore's Smart Nation 2.0, the Digital Government Blueprint, and GovTech publications. Complementary evidence was derived from the UN E-Government Survey (2024), IMF guidelines, and media such as The Straits Times and CNA to illustrate real-world implementation. This method enabled the triangulation of data across the theoretical, institutional, and empirical domains, ensuring credibility and contextual sensitivity.

The findings reveal stark differences between the two countries. Singapore represents a "full transition" case, where digital public utilities—Singpass (digital ID), PayNow (e-payment), Peppol e-invoicing, and GovWallet—provide integrated platforms that enhance efficiency, transparency, and citizen trust. Empirical reports confirm this: The Straits Times (2022) notes that Singpass connects more than 4.2 million users to over 2,000 services, while CNA (2020) reported that GovWallet enabled the rapid disbursement of COVID-19 relief within days. Strong central agencies, particularly GovTech and the IMDA, ensure coherence, innovation, and whole-of-government implementation. These outcomes support the OECD's digital-by-design principle and the IMF's emphasis on digital revolutions in public finance, demonstrating that when institutional capacity, technology, and citizen trust align, digital transition yields tangible policy outcomes.

Thailand, by contrast, illustrates a "partial transition." While significant progress has been made—PromptPay achieved more than 46 million registrations and e-GP increased transparency in procurement—the outcomes remain limited. Challenges include the digital divide: Bangkok Post (2020) reported that many citizens were excluded from COVID-19 relief due to a lack of smartphones or bank accounts. Similarly, Ingkakul (2007) found that inadequate digital training limited effective use of the GFMIS. Another barrier is fragmentation and poor interoperability: Kraiwas and Nattarid (2019) showed that fiscal and

procurement data remain siloed across agencies, a point echoed by the UN E-Government Survey (2024). These constraints have produced mixed outcomes, with efficiency and transparency improvements not being as clear as in Singapore. Thailand's case, therefore, complicates deterministic theories, highlighting how institutional readiness and resource allocation shape the results.

Policy outcomes and lessons were derived from these findings. Three lessons stand out in this regard. First, Thailand must strengthen its digital public infrastructure and common data standards, drawing from Singapore's Singpass and Peppol to improve interoperability across PFM systems. This reflects the OECD's (2023) call for digital governance by design. Second, Thailand should advance a direct digital disbursement system, modeled on Singapore's GovWallet, to ensure inclusive and efficient welfare payments. Here, Sen's (1999) Capability This approach highlights the need to expand digital access so that all citizens can benefit. Third, Thailand would benefit from a central agency dedicated to digital PFM, analogous to Singapore's GovTech, to reduce fragmentation and enhance accountability, consistent with the principles of New Public Management (Hood, 1991). These outcomes indicate that Thailand's transition can move from partial to full transformation by adapting proven strategies while addressing contextual constraints.

The contributions to the theory are equally significant. The study validates OECD and IMF frameworks in the case of Singapore but introduces the concept of partial transition to explain Thailand's trajectory. This demonstrates that the digital transition in the Global South is not linear but consists of multiple pathways shaped by institutional capacity, citizen readiness, and socioeconomic inequalities. By situating Thailand's experience within the global literature, this study enriches the theoretical understanding by adding a case from a developing country context where structural barriers influence outcomes. This aligns with Mergel et al.'s (2019) call for context-sensitive approaches to digital transformation.

The broader implications of this study are twofold. For policymakers, this study highlights the necessity of investing in digital human capital, ensuring interoperability through data standards, and establishing strong central institutions. Without these, digital initiatives risk remaining fragmented and yielding only partial benefit. For scholars, the findings suggest that the digital transition should not be analyzed as a universal, one-directional process but as a complex, context-dependent evolution with multiple possible trajectories.

In conclusion, this comparative study underscores that while Singapore exemplifies a best-practice case of digital transition in PFM, Thailand represents a valuable alternative case that reveals the challenges of implementing reforms in a developing context. This juxtaposition not only provides Thailand with concrete lessons to improve its systems but also contributes to global theory by showing that partial transitions, although incomplete, generate critical insights and policy lessons. Therefore, digital transition is not a uniform journey but a multifaceted process whose outcomes depend on the interplay of technology, institutions, and human capacity.

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