

# Driving Malaysia's Digital Transformation: A Policy Analysis of MyDIGITAL, RMK13 and the National 4IR Policy

Nur Fatihah Mohd Zakrey<sup>1\*</sup>, Mazlan Che Soh<sup>2</sup> & Suhaimi Abd. Samad<sup>3</sup>

<sup>1,2,3</sup> Faculty of Administrative Science & Policy Studies, Universiti Teknologi MARA, Malaysia

Corresponding Author: [nurfatihahmohdzakrey@gmail.com](mailto:nurfatihahmohdzakrey@gmail.com)

## Abstract

Malaysia's digital transformation is critical to achieving its vision of becoming a high-income, technologically advanced nation by 2030. Key frameworks such as the Malaysia Digital Economy Blueprint (MyDIGITAL), the National Fourth Industrial Revolution Policy (National 4IR Policy), the newly launched National AI Action Plan 2026–2030 and the Thirteenth Malaysia Plan (RMK13) provide strategic direction, yet implementation remains constrained by institutional silos, uneven digital readiness and cybersecurity vulnerabilities. This paper examines the role of government agencies in advancing MyDIGITAL within these broader frameworks, focusing on their responsibilities as coordinators, regulators and implementers of digital governance. Drawing on qualitative document analysis of official policy texts, the study explores how agencies translate national strategies into actionable initiatives and address governance challenges. Findings indicate that while MyDIGITAL offers a structured roadmap covering infrastructure, public sector digitalisation, talent development, inclusivity and cybersecurity, its success depends heavily on inter-agency collaboration, capacity building and citizen trust. Furthermore, the study highlights the urgency of meeting global benchmarks, such as targets set within the OECD Digital Government Index and the ITU Global Cybersecurity Index. The article concludes that strengthening governance mechanisms, embedding ethical frameworks and investing in digital talent are crucial to ensuring Malaysia's digital transformation enhances global competitiveness while delivering equitable and sustainable progress.

**Keywords:** Digital transformation, MyDIGITAL, Policy implementation, Public sector; 4IR, Digital governance

## INTRODUCTION

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Malaysia's ambition to become a high-income and digitally driven nation is anchored in the Malaysia Digital Economy Blueprint (MyDIGITAL), the National Policy on the Fourth Industrial Revolution (4IR), the National AI Action Plan 2026–2030, and the Thirteenth Malaysia Plan (RMK13). These strategies collectively position digitalisation and artificial intelligence as catalysts for economic growth, social inclusion, and institutional reform. Globally, governments are recognising that digital transformation is not simply about deploying technology but about redesigning governance structures, enhancing public trust, and ensuring equitable access to opportunities (United Nations, 2022; OECD, 2023). For Malaysia, the challenge lies in aligning ambitious blueprints with effective implementation across

diverse agencies and sectors, while simultaneously addressing structural inequalities and capacity gaps.

Government agencies are central to this process, as they function as the primary actors responsible for translating policy aspirations into tangible outcomes. Unlike private-sector stakeholders, whose focus is largely on innovation and competitiveness, public agencies carry the mandate of ensuring inclusivity, equity, and public accountability (Margetts & Dunleavy, 2013). In Malaysia, this dual role requires agencies to act as coordinators, regulators, and implementers, often across overlapping policy domains such as health, education, security, and finance (Ministry of Economy, 2025). The effectiveness of MyDIGITAL, therefore, depends on the institutional capacity of agencies to deliver coherent, citizen-oriented digital services.

The broader literature highlights both opportunities and risks associated with digital transformation. Comparative studies demonstrate that successful digital governance depends on whole-of-government coordination, cross-sectoral partnerships, and citizen engagement (Dunleavy et al., 2006; Yoon, 2021). However, in many developing countries, including Malaysia, digitalisation efforts are hampered by bureaucratic inertia, fragmented mandates, and uneven digital inclusion (Yunis et al., 2018). Empirical evidence further indicates that without reforms in institutional culture, digital governance may reproduce existing inequalities rather than reduce them (Weerakkody et al., 2013; Mohd et al., 2025). To objectively measure governance capacity, Malaysia's performance is routinely benchmarked against international metrics, revealing critical gaps between current global rankings and the nation's targets (see Table 1).

Table 1:  
*Global Index Metrics*

| Global Metrics          | Index         | Baseline / Current Standing (as of 2025/2026) | National Target (2030 Goal)       | Primary Strategic Focus Area                                                                   |
|-------------------------|---------------|-----------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------|
| OECD Government (DGI)   | Digital Index | Tier 2 (Developing/Medium Digital Maturity)   | Top 10 Globally                   | GovTech integration, end-to-end (E2E) digital public services and data-sharing mandates.       |
| ITU Cybersecurity (GCI) | Global Index  | Tier 1 (Role-Modelling Category)              | Maintain Tier 1 & Top 10 Standing | Critical National Information Infrastructure (CNII) resilience, Cyber Security Act compliance. |

This article contributes to the field of administrative science by critically examining the role of Malaysian government agencies in driving digital transformation. It employs content analysis of official government documents, complemented by scholarly research and international benchmarks, to evaluate how agencies function as coordinators, regulators, implementers, and enablers of a whole-of-nation approach across the MyDIGITAL and AI governance architecture. The study also identifies persistent challenges—including institutional silos, uneven connectivity, cybersecurity vulnerabilities, and skills shortages—and assesses their direct implications for governance capacity. By integrating policy analysis with contemporary scholarly insights, this article provides an actionable framework for strengthening MyDIGITAL's implementation, ensuring that Malaysia's digital transition remains structurally inclusive, resilient, and accountable.

## LITERATURE REVIEW

### *Malaysia's Digital Transformation Journey*

Malaysia's digitalisation evolved from sector-specific clusters such as the Multimedia Super Corridor (MSC) in 1996 and the Digital Free Trade Zone (DFTZ) in 2017 into broad frameworks under the Eleventh and Twelfth Malaysia Plans (Ramasamy et al., 2004; EPU, 2015; MDEC, 2017; EPU, 2021). This trajectory was further accelerated by the COVID-19 pandemic, which underscored digital connectivity as a critical prerequisite for economic resilience and agile public service delivery (United Nations, 2022; World Bank, 2023). The transition from RMK12 (2021–2025) to RMK13 (2026–2030) marks a paradigm shift—positioning digitalisation as a core strategic pillar under the Ekonomi MADANI theme of 'Redesigning Development' (EPU, 2021; Ministry of Economy, 2025). RMK13 operationalises this through a two-pronged focus: "raising the ceiling" via high-growth, high-value (HGHV) sectors like advanced semiconductors and artificial intelligence—driven by the National AI Action Plan 2026–2030—and "raising the floor" by ensuring equitable public infrastructure access and digital literacy (Ministry of Economy, 2025). Ultimately, Malaysia's digital journey represents a structural progression toward a whole-of-nation approach. Integrated blueprints such as MyDIGITAL, the National 4IR Policy, and RMK13 firmly embed emerging automated technologies as central conduits to achieving long-term socioeconomic goals (Government of Malaysia, 2021; Ministry of Economy, 2025).

*Malaysia Digital Economy Blueprint (MyDIGITAL)*

Launched in 2021, the Malaysia Digital Economy Blueprint (MyDIGITAL) (Economic Planning Unit, 2021) serves as the cornerstone macro-policy for advancing Malaysia into a digitally driven, high-income nation and a regional leader in the digital economy by 2030. The blueprint outlines six strategic thrusts supported by 22 strategies, 48 national initiatives, and 28 sectoral initiatives, systematically executed across three distinct implementation phases from 2021 to 2030:

- Drive digital transformation in the public sector - Emphasising GovTech, integrated online services and data-driven decision-making.
- Boost economic competitiveness through digitalization - Enabling MSMEs and industries to embrace digital adoption.
- Build enabling digital infrastructure - Focusing on 100% internet penetration, 5G rollout and cloud adoption across government agencies.
- Build agile and competent digital talent - Transitioning from baseline digital literacy targets to advanced artificial intelligence upskilling across the civil service, reinforced by the National AI Action Plan 2026–2030.
- Creating an inclusive digital society - Bridging the rural-urban divide, empowering gig workers and enhancing accessibility.
- Build a trusted, secure and ethical digital environment - Strengthening data privacy, cybersecurity and public trust in digital transactions, supported by modern regulatory updates like the Artificial Intelligence Governance and Ethics (AIGE) framework.

MyDIGITAL positions government agencies as foundational institutional enablers tasked with policy design, active regulation, and cross-sectoral coordination. Macro-governance is overseen by the National Digital Economy and 4IR Council. Operationally, the former Strategic Change Management Office (SCMO) has been institutionalised as MyDIGITAL Corporation under the Ministry of Digital, with the National AI Office (NAIO) coordinating the deployment of the National AI Action Plan 2026–2030.

#### *National Fourth Industrial Revolution Policy (National 4IR Policy)*

Complementing MyDIGITAL, the National 4IR Policy (Government of Malaysia, 2021) focuses specifically on accelerating the adoption of disruptive core technologies—including artificial intelligence, blockchain, advanced automation, robotics, and the Internet of Things (IoT). It explicitly recognises that the 4IR epoch is

not only transforming commercial industries but is also profoundly reshaping public governance, national education systems, and broader social norms. The policy is firmly anchored on three core objectives:

- Seizing growth opportunities from emerging technologies by boosting productivity and value creation.
- Creating a conducive ecosystem for innovation and adoption, balancing economic competitiveness with social and environmental sustainability.
- Building trust in an inclusive digital society, emphasising ethical, secure and responsible use of 4IR technologies, which is further operationalised through the Artificial Intelligence Governance and Ethics (AIGE) guidelines.

The policy explicitly targets definitive 2030 outcomes, such as a 30% aggregate productivity boost, the upskilling of 20% of the semi- and low-skilled workforce, and enabling 80% of all government services with 4IR technologies—a target now systematically driven by the National AI Action Plan 2026–2030. It complements MyDIGITAL by providing the underlying technological framework, while MyDIGITAL outlines the macroeconomic roadmap for digital economy growth. Together, these complementary policies align directly with the core socioeconomic equity pillars of the Ekonomi MADANI framework and the strategic thrusts of the Thirteenth Malaysia Plan (RMK13), heavily modernising equitable growth, social cohesion, and ecological sustainability.

### *Thirteenth Malaysia Plan (RMK13)*

The Thirteenth Malaysia Plan (2026–2030) structurally embeds comprehensive digital transformation within the broader economic vision of Ekonomi MADANI, anchored by the foundational theme “Melakar Semula Pembangunan” (Ministry of Economy, 2025). It systematically conceptualises digitalisation as a cross-cutting mechanism to achieve four primary strategic objectives:

- Raising the ceiling – restructuring the economy toward high-value, knowledge-intensive sectors, including the digital economy, semiconductors and AI, the latter strategically accelerated by the National AI Action Plan 2026–2030.
- Raising the floor – improving citizens’ quality of life through digital inclusion, e-government and social protection.

- Strengthening governance – enhancing service delivery through GovTech, digital monitoring and transparent decision-making
- Sustainability and resilience – using digital technologies to address climate change, environmental preservation and disaster management.

RMK13 explicitly highlights the critical role of government agencies as the vanguard of public service reform, noting that deep-seated digitalisation is essential for improving institutional efficiency, accountability, and citizen trust. Chapter 4 of the plan specifically mandates the comprehensive empowerment of GovTech infrastructure, radical reform of public service delivery, and the tightening of inter-agency coordination to achieve citizen-centric governance—a macro-mandate structurally driven by the Ministry of Digital and executed across public sector machineries to dissolve costly bureaucratic duplication.

### *Global Perspectives on Digital Governance*

Digital transformation fundamentally reshapes how sovereign states deliver public services, regulate markets, and engage with citizens. The OECD (2023) emphasises that mature digital government goes beyond mechanical efficiency to actively foster institutional transparency, social inclusivity, and citizen trust—principles that form the operational baseline for global benchmarks like the OECD Digital Government Index (DGI). Comparative international experiences underscore that state capacity, institutional coherence, and proactive citizen engagement are critical determinants of digital policy success. For instance, South Korea’s “Digital New Deal” demonstrates how centralized government investment and continuous citizen engagement produce an integrated, resilient digital ecosystem (Yoon, 2021). Similarly, Singapore’s SkillsFuture initiative illustrates how strategic state–industry partnerships ensure continuous workforce reskilling and agile talent alignment with evolving technological demands (Buckley et al., 2020).

Concurrently, global digital governance is increasingly evaluated through the lenses of sustainability, inclusivity, and systemic resilience, with developing states facing unique structural challenges in bridging infrastructure gaps (United Nations, 2022, 2024). Without deep institutional reform, rapid digitalisation risks reproducing historical inequalities and entrenching bureaucratic inefficiencies (Jobin et al., 2019; Tsatsou, 2021). Furthermore, emerging disruptive technologies—such as generative

artificial intelligence and high-tier automation—introduce profound ethical dilemmas surrounding algorithmic bias, mass surveillance, and domestic labour displacement (World Economic Forum, 2020; Malik et al., 2022).

Ultimately, global security standards, including the International Telecommunication Union (ITU, 2024) Global Cybersecurity Index (GCI), highlight that a secure cyber environment is critical to sustaining public trust amidst rising transnational vulnerabilities. Collectively, these insights suggest that Malaysia’s digital transformation must be assessed not merely against efficiency and GDP metrics, but in relation to multi-demographic inclusivity, citizen empowerment, cybersecurity infrastructure, and ethical governance.

### *Malaysia’s Digital Transformation Trajectory*

Malaysia’s digitalisation journey reflects both structural ambition and operational complexity. The launch of MyDIGITAL in 2021 signaled a comprehensive attempt to embed digital transformation into public governance and socioeconomic development. Anchored initially in the Twelfth Malaysia Plan (12MP) and now operationalised under the strategic mandates of RMK13, this trajectory integrates contemporary technology mandates—including the National AI Action Plan 2026–2030—to align with global trends (EPU, 2021; Ministry of Economy, 2025). Scholars note that MyDIGITAL positions digitalisation as a core “whole-of-nation” strategy integrating macroeconomic competitiveness with social equity (OECD, 2024). However, success depends on overcoming persistent structural barriers, including bureaucratic silos, infrastructural inequality, and acute digital talent shortages (Cordella & Tempini, 2015).

Sectoral case studies illustrate Malaysia’s uneven progress across public domains. In healthcare, the rapid deployment of the MySejahtera application during the COVID-19 pandemic exemplified agile crisis management, evolving into a permanent public health management ecosystem (Md Ashar et al., 2025). In finance, Bank Negara Malaysia and the Securities Commission have advanced digital banking licenses, central bank digital currencies (CBDCs), and fintech regulation, demonstrating how proactive regulatory coordination fosters innovation while safeguarding systemic stability (Buckley et al., 2020). Conversely, infrastructure initiatives under JENDELA



have sought to expand connectivity, yet digital exclusion persists in remote and indigenous geographical pockets (Mohd et al., 2025).

Scholarly critiques highlight systemic weaknesses within Malaysia's historical governance model. Institutional fragmentation remains a recurring challenge in developing countries' e-government efforts, often leading to costly duplication (Yunis et al., 2018). In Malaysia, overlapping mandates historically exacerbated administrative inefficiencies despite central coordinating bodies like the National Digital Economy and 4IR Council (EPU, 2021). While the institutionalisation of the Ministry of Digital and MyDIGITAL Corporation serves to streamline cross-agency execution, deeply entrenched hierarchical administrative cultures continue to prioritise routine compliance over agile innovation, slowing the adoption of GovTech solutions (Cordella & Tempini, 2015). Consequently, unless these structural barriers are addressed, Malaysia risks lagging behind regional leaders like Singapore and South Korea in digital readiness (OECD, 2023; ITU, 2024).

### *Theoretical and Policy Frameworks for MyDIGITAL*

The conceptual foundations of MyDIGITAL sit at the intersection of two public governance paradigms: New Public Management (NPM) and Digital-Era Governance (DEG). NPM emphasizes market-like efficiency, performance measurement, and institutional responsiveness, directly aligning with MyDIGITAL's mandate to streamline public services (Margetts & Dunleavy, 2013). Conversely, DEG stresses macro-integration, citizen-centricity, and open networked collaboration across agencies (Dunleavy et al., 2006). Malaysia's approach synthesizes both paradigms to maximize public sector efficiency while constructing participatory, inclusive administrative systems.

The whole-of-government and whole-of-nation frameworks underpinning MyDIGITAL reflect international digital governance standards. The OECD (2023) highlights that integrated governance structures are essential to eliminate administrative duplication and guarantee strategy coherence across disparate sectors. Similarly, the United Nations (2024) stresses that mature digital government must be deeply participatory—embedding citizen feedback loops and open-data mechanisms to foster public trust. In Malaysia, these frameworks are operationalised through state instruments like MyDIGITAL Corporation under the Ministry of Digital; however, their



effectiveness remains highly contingent on statutory enforcement and a shift away from hierarchical institutional cultures (Weerakkody et al., 2013; Alibeigi & Munir, 2020).

Concurrently, MyDIGITAL recognizes the structural risks associated with 4IR technologies, including labor displacement, ethical dilemmas in machine learning, and widening digital divides (Government of Malaysia, 2021). Mitigating these systemic threats requires robust digital social safety nets, ethical AI governance, and inclusive talent pathways (Ministry of Science, Technology and Innovation [MOSTI], 2024; Malik et al., 2022). Consequently, the operationalisation of the National AI Action Plan 2026–2030 and the Artificial Intelligence Governance and Ethics (AIGE) framework establishes necessary guardrails for advanced technology deployment. While the policy emphasis on reskilling and digital safety literacy aligns with global benchmarks, it requires stronger domestic accountability mechanisms to secure long-term sustainability (World Bank, 2020; Yoon, 2021).

## METHODOLOGY

This study employs a qualitative content analysis approach to critically examine Malaysia's key contemporary digital policy documents, namely the Malaysia Digital Economy Blueprint (MyDIGITAL), the National 4IR Policy, the National AI Action Plan 2026–2030, the Artificial Intelligence Governance and Ethics (AIGE) framework, and the Thirteenth Malaysia Plan (RMK13). This macro-policy analysis is systematically complemented by diverse secondary sources—including peer-reviewed academic research, institutional governance reports, and authoritative international indices. Content analysis is recognized as a systematic method. This approach has been widely applied in public policy and administrative science research, as it provides an objective, replicable, and rigorous mechanism for evaluating how statutory ideas and macro-strategies are framed, communicated, and operationalised within state apparatuses (Bryman, 2016). By applying this robust analytical method, this study systematically traces how Malaysian government agencies are structurally positioned as coordinators, regulators, implementers, and enablers within the nation's digital and artificial intelligence transformation agenda, while simultaneously uncovering recurring systemic challenges and long-term policy implications. Consistent with the boundaries of a purely document-based research design, no primary data collection—such as surveys, focus groups, or field interviews—was conducted; the analytical matrix relies entirely on official document-based frameworks and verified secondary data sources.

## FINDINGS AND DISCUSSION

### *Government Agencies as Coordinators*

A central role of Malaysian government agencies under MyDIGITAL is to act as coordinators of digital initiatives across sectors. The Ministry of Digital, working in tandem with the Ministry of Economy, ensures that digitalisation strategies align with RMK13's development agenda by integrating sectoral plans from ministries such as Communications, Education (MOE), and Health (MOH). Crucially, the Ministry of Digital, via the National AI Office (NAIO), acts as the apex coordinating node to streamline the National AI Action Plan 2026–2030 across public spheres. Research shows that cross-sectoral coordination is critical to avoid duplication and strengthen policy coherence, as demonstrated in advanced economies (Margetts & Dunleavy, 2013; OECD, 2023). At the financial sector level, Bank Negara Malaysia (BNM) and the Securities Commission (SC) coordinate to regulate fintech ecosystems, digital banking, and e-payment systems, aligning with global findings that institutional collaboration is vital for digital trust and stability (Buckley et al., 2020; World Bank, 2020). At the regional level, the Malaysia Digital Economy Corporation (MDEC), operating under the Ministry of Digital, coordinates SME digitalisation and state-level initiatives, reflecting arguments that subnational integration enhances inclusivity in digital transformation (Tsatsou, 2021).

### *Government Agencies as Regulators*

Regulation is another crucial function of agencies in Malaysia's digitalisation process. BNM and SC play leading roles in establishing regulatory frameworks for digital financial innovation, balancing systemic stability with fintech growth (Buckley et al., 2020). Similarly, the digital regulatory environment has matured via updates to the Personal Data Protection Act (PDPA), alignment with international benchmarks like the EU's GDPR (Bélanger & Carter, 2008; Md Ashar et al., 2025). Furthermore, the enforcement of the Cyber Security Act grants the National Cyber Security Agency (NACSA) explicit statutory mandates to enforce compliance across Critical National Information Infrastructure (CNII) sectors, addressing past vulnerabilities regarding fragmented inter-agency responsibilities (Alibeigi & Munir, 2020; Md Ashar et al., 2025). To govern emerging risks, this architecture is augmented by the non-statutory Artificial Intelligence Governance and Ethics (AIGE) framework, ensuring technology

creators adhere to ethical guardrails. These regulatory efforts highlight a structural shift towards balancing rapid technological innovation with robust safeguards, a mechanism central to high-performing digital statecraft (OECD, 2023; ITU, 2024).

### *Government Agencies as Implementers*

Beyond coordination and regulation, agencies are the primary implementers of GovTech solutions and inclusion programs. In the public sector, RMK13 calls for integrated digital identity systems and end-to-end online services, demonstrated through the nationwide rollout of MyDigital ID and the evolution of the MySejahtera ecosystem (Md Ashar et al., 2025). The Inland Revenue Board's (LHDN) execution of the national e-Invoicing system exemplifies how GovTech can reduce bureaucracy, curb shadow economies, and increase fiscal transparency (World Bank, 2020). For digital inclusion, MDEC administers SME Digitalisation Grants, while the Ministry of Rural and Regional Development expands connectivity infrastructure under the JENDELA framework, although rural exclusion remains a structural barrier (Keling et al., 2025; Mohd et al., 2025). In talent development, the Public Service Department (JPA) has pivoted to advanced artificial intelligence upskilling, operationalising targets within the National AI Action Plan 2026–2030 to build an AI-ready workforce. This aligns with global evidence that high-tier public sector capacity is critical to sustainable digital governance (van Laar et al., 2017; OECD, 2023).

### *Case Examples of Government Agency Roles*

Several case examples illustrate the practical roles of these public agencies. First, MySejahtera shows how digital platforms can successfully evolve from emergency crisis response to long-term public health governance infrastructure, consistent with global findings on GovTech scalability (Yoon, 2021). Second, the nationwide deployment of MyDigital ID underscores how a secure, unified digital identity underpins seamless e-government integration, safeguarded by the compliance parameters of the Cyber Security Act (ITU, 2024). Third, SME Digitalisation Grants administered by MDEC illustrate how agencies can proactively bridge gaps in market digital readiness, aligning with international studies on the importance of targeted financial subsidies for enterprise resilience (World Bank, 2020). Collectively, these examples reveal the operational versatility of public agencies as dynamic policy actors

shifting fluidly between implementation, regulation, and coordination to advance Malaysia's digital transformation trajectory.

### *Whole-of-Government and Whole-of-Nation Approach*

MyDIGITAL and RMK13 stress the need for a whole-of-government and whole-of-nation approach. In cybersecurity, joint implementation involves NACSA, the Ministry of Defence, and the Ministry of Home Affairs—a multi-agency synergy statutorily institutionalised through the Cyber Security Act to fortify critical infrastructure protection (OECD, 2023; ITU, 2024). Public–private partnerships (PPP) also accelerate infrastructure deployment, particularly under the multi-provider 5G network rollout supervised by the Ministry of Digital, mirroring agile governance practices in Southeast Asia (Buckley et al., 2020). Citizen engagement is equally vital: targeted digital literacy programs embedded within the National AI Action Plan 2026–2030 and participatory policymaking platforms are central to building public trust. This echoes comparative evidence that inclusive citizen feedback loops are indispensable for sustainable digital transformation (Tsatsou, 2021; Ramadhani et al., 2025).

### *Challenges in Implementation*

While Malaysia's digital transformation agenda is ambitious and comprehensive, translating these policies into tangible outcomes presents complex challenges. Despite the strong frameworks outlined in MyDIGITAL, the National 4IR Policy, the National AI Action Plan 2026–2030 and RMK13, implementation is often constrained by institutional, infrastructural and societal barriers. Identifying these challenges is essential to strengthen the role of government agencies and ensure that Malaysia's digital future is both inclusive and sustainable.

#### *(a) Institutional Silos and Bureaucratic Inertia*

Research consistently shows that institutional silos undermine the efficiency of digital governance in developing countries (Yunis et al., 2018). In Malaysia, overlapping mandates across ministries have historically produced fragmented implementation of digital initiatives (EPU, 2021). Cordella & Tempini, (2015) emphasise that Malaysia's bureaucratic culture, rooted in hierarchical traditions, constrains agility and delays GovTech adoption. While recent institutional centralisation

under the Ministry of Digital and MyDIGITAL Corporation was specifically engineered to dismantle these boundaries, navigating embedded legacy frameworks across older ministerial machineries remains a complex hurdle. Comparative findings on Southeast Asia reinforce that without cross-agency reforms that reward collaboration and innovation over rigid compliance, bureaucratic inertia will continue to create operational friction within the MyDIGITAL roadmap (Lau et al., 2021).

*(b) Digital Divide and Infrastructure Gaps*

The persistence of Malaysia's urban–rural digital divide is widely documented, with rural populations facing inadequate connectivity and affordability challenges (Weerakkody et al., 2013; Mohd et al., 2025). Keling et al. (2025) stresses that device costs further exacerbate exclusion, while ITU (2024) highlights that global best practices require parallel investment in physical infrastructure, targeted affordability subsidies, and localized digital skills. Despite JENDELA's structural ambition (EPU, 2021), historical implementation delays and uneven regional rollout reinforce concerns that rapid digitalisation risks reproducing socio-economic inequality, a trend also observed across other developing ASEAN nations (World Bank, 2024). To mitigate these systemic disparities within the RMK13 timeline, government agencies have increasingly integrated alternative connectivity models, such as Low Earth Orbit (LEO) satellite broadband, to reach ultra-rural nodes. However, establishing sustainable, long-term maintenance frameworks for these remote infrastructures remains a critical operational bottleneck for implementing agencies.

*(c) Cybersecurity Risks and Data Privacy Concerns*

Scholars historically identified Malaysia's cybersecurity framework as fragmented and under-enforced, leaving public digital assets vulnerable to transnational threats (Alibeigi & Munir, 2020; Md Ashar et al., 2025). Similarly, past iterations of the PDPA faced criticism for lacking alignment with rigorous international benchmarks like the EU's GDPR, threatening to undermine citizen trust and cross-border digital trade capacity (Bélanger & Carter, 2008; Md Ashar et al., 2025). While the enforcement of the Cyber Security Act and statutory amendments to the PDPA have legally resolved these institutional gaps, the contemporary challenge has shifted entirely toward implementation and compliance enforcement. Implementing bodies like NACSA and the Personal Data Protection Department (JPDP) face immense operational pressure to

audit, penalise, and monitor sophisticated cyber threats across both public machineries and critical corporate sectors. Comparative studies demonstrate that Singapore's integrated and well-funded cybersecurity enforcement regime has drastically improved national resilience and public trust (ITU, 2024), underscoring the urgent need for Malaysia to back its new legislative guardrails with deep institutional capacity, advanced technological auditing tools, and skilled personnel.

*(d) Talent Shortages in the Civil Service*

Civil service talent gaps represent a critical structural barrier to the execution of high-tier digitalisation. van Laar et al. (2017) identify pervasive shortages in advanced AI architecture, big data analytics, and cybersecurity engineering within public institutions, while the World Bank (2020) stresses the urgent need for highly specialized, non-generic technical training for public officials. Within the RMK13 implementation window, this deficit poses an immediate challenge to the National AI Action Plan 2026–2030, which demands rapid upskilling of civil servants to govern complex algorithmic frameworks and public automation. Furthermore, OECD (2024) demonstrate that rigid, top-down bureaucratic structures often prevent younger, digitally native officers from leveraging their technical skills effectively within traditional public sectors. OECD (2023) warns that continuous reliance on surface-level, generic IT training inevitably leads to severely uneven digital competencies and operational capacities across different administrative agencies. In contrast, Buckley et al. (2020) highlight Singapore's agile institutional upskilling frameworks, such as the SkillsFuture initiative, as an exemplary benchmark of structured digital learning that Malaysia must adopt to avoid structural talent obsolescence.

*(e) Ethical and Socioeconomic Risks of 4IR Technologies*

The rapid adoption of AI and automation risks reinforcing bias, inequality, and systemic job displacement without adequate legislative and operational safeguards (Jobin et al., 2019; Malik et al., 2022). Ministry of Science, Technology and Innovation (MOSTI) (2024) caution that historically insufficient social safety nets in Malaysia could severely exacerbate socioeconomic inequality as institutional automation advances. While the state has introduced the Artificial Intelligence Governance and Ethics (AIGE) framework alongside the National AI Action Plan 2026–2030 to establish structural guardrails, the core challenge remains in translating these non-

statutory guidelines into binding compliance parameters for tech developers and public operators. Comparative findings on developing economies show that weak, passive governance of 4IR ecosystems inevitably breeds profound public mistrust and technological alienation (Tsatsou, 2021). Unless Malaysia firmly embeds these ethical protections and social safety mechanisms into active regulatory enforcement, MyDIGITAL's primary objectives of equitable inclusivity and citizen empowerment risk being systematically undermined by market-driven digital displacement.

*(f) Resource and Funding Constraints*

Digital transformation requires sustained financial investment, yet budgetary pressures continuously limit Malaysia's sovereign capacity to scale high-impact initiatives. Chronic fiscal constraints heavily restrict the baseline implementation of capital-intensive technologies (Fleta-Asín & Muñoz, 2020; Ma et al., 2023). Within the RMK13 planning cycle, this financial bottleneck is highly pronounced as implementing agencies struggle to allocate capital between basic connectivity infrastructure and the computational power required to back the National AI Action Plan 2026–2030. Public–Private Partnerships (PPPs) are frequently cited as strategic funding solutions to offload public debt, but institutionalized governance deficits and transparency issues historically undermine their structural effectiveness (Malaysian Industry-Government Group for High Technology [MIGHT] & Confexhub Group, 2021). Comparative analysis confirms that PPP implementation challenges are highly pervasive across developing economies (Awasthi et al., 2024). However, Malaysia's specific accountability gaps and regulatory fragmentation heighten the operational risk of producing corporate-driven, profit-heavy digital initiatives rather than public-good, citizen-focused outcomes.

*(g) Public Trust and Adoption Barriers*

Public trust is central to digital adoption, with evidence showing a strong correlation between macro e-government quality and citizen trust across ASEAN countries (Ramadhani et al., 2025). In Malaysia, high-profile cybersecurity breaches and historically inconsistent service delivery have systematically undermined public confidence in state-backed platforms (Md Ashar et al., 2025). This skepticism is further compounded by public anxiety over data centralization within MyDigital ID and the ethical implications of automated AI decision-making. While the Ministry of



Education's Digital Competency Score highlights persistent rural–urban literacy gaps, Bélanger & Carter (2008) emphasise that low-literacy communities face profound alienation from complex GovTech interfaces. To counteract this, the deployment of the Artificial Intelligence Governance and Ethics (AIGE) framework represents a critical policy attempt to build algorithmic transparency and restore trust. Without institutionalized, transparent governance and localized investment in advanced digital literacy, public reluctance and technophobia may severely stall MyDIGITAL's long-term societal adoption.

### *Recommendations*

#### *(a) Strengthening Digital Governance and Inter-Agency Coordination*

Fragmented governance remains a major barrier in digital policy execution, requiring structural adjustments to match international best practices (Yunis et al., 2018). In Malaysia, while the National Digital Economy and 4IR Council provides macro strategic direction, execution has been limited by a lack of central enforcement authority across individual ministries (EPU, 2021). Comparative studies show that centralized, statutory digital transformation bodies, such as Estonia's e-Governance framework and Singapore's Smart Nation Office, dramatically enhance institutional accountability and inter-agency alignment (Margetts & Dunleavy, 2013; Buckley et al., 2020). To institutionalise this cohesion, Malaysia should formally expand the statutory mandate of the Ministry of Digital and the National AI Office (NAIO), granting them binding oversight to audit and halt non-compliant, siloed legacy IT procurements across the public sector. Furthermore, implementing agencies must accelerate the convergence of public services into a single, unified citizen portal anchored securely by the MyDigital ID ecosystem, mirroring the operational efficiency of South Korea's 'Government 24' infrastructure (Yoon, 2021). Finally, embedding mandatory Key Digital Performance Indicators (KDPIs) tied to annual public reporting frameworks would drive cross-agency accountability, operational transparency, and citizen trust (OECD, 2023).

#### *(b) Bridging the Digital Divide through Inclusive Policies*

The digital divide between urban and rural populations remains persistent, limiting equitable access to high-tier public services (Weerakkody et al., 2013; Mohd et

al., 2025). While the JENDELA framework aims to expand broadband connectivity, physical rollout delays continue to constrain its geographical effectiveness in hyper-remote terrains (Keling et al., 2025). Evidence shows that economic affordability is equally critical, as socioeconomically vulnerable households struggle with device ownership and subscription costs despite baseline state subsidies (OECD, 2024). Comparative lessons from South Korea's Digital New Deal and Estonia's e-Government model highlight that combining targeted financial subsidies with universal, citizen-centric UI/UX design fundamentally fosters digital inclusivity (Yoon, 2021; Margetts & Dunleavy, 2013). To operationalise this, Malaysia must shift toward a technology-agnostic deployment model by subsidising Low Earth Orbit (LEO) satellite broadband receivers to immediately bypass rural terrain barriers within the RMK13 cycle. Furthermore, infrastructure expansion should be paired with dynamic, targeted digital vouchers under the Ekonomi MADANI framework to offset device costs for vulnerable communities. This ensures universal design standards that prevent technological alienation and directly support national equity mandates (EPU, 2021).

### *(c) Enhancing Cybersecurity and Data Governance*

A trusted digital ecosystem is essential to secure national digital sovereignty, yet historical evaluations often critiqued Malaysia's PDPA as lagging behind global standards like the EU's GDPR, previously compromising international competitiveness (Md Ashar et al., 2025). While the enforcement of the Cyber Security Act and statutory amendments to the PDPA have bridged these legislative gaps, the immediate priority must shift from legal drafting to operational enforcement. This alignment requires resource investment to build up the auditing and forensic capacities of regulatory bodies like NACSA and the Personal Data Protection Department (JPDP) (Alibeigi & Munir, 2020). Singapore's Cybersecurity Act demonstrates that mandating continuous, proactive technical audits and strict sector-specific risk management across critical national infrastructures is vital to sustaining public and corporate trust (Buckley et al., 2020). Additionally, public education is essential to mitigate vulnerabilities stemming from low citizen awareness of emerging cyber threats and algorithmic manipulation (Bélanger & Carter, 2008). Consequently, Malaysia must execute a refined, three-pronged strategy: stringent statutory enforcement of existing laws, centralized fiscal investment in advanced automated threat-auditing systems, and the institutionalization of public digital safety literacy campaigns across all demographics.

(d) *Developing a Future-Ready Digital Workforce*

Digital talent shortages remain a critical operational constraint to executing macro-level transformation (World Bank, 2020). Current civil service training matrices often lack specialized, agency-specific focus, slowing the onboarding of modern technology architectures (OECD, 2024). To overcome this, expanding targeted institutional training in ethical AI governance, big data engineering, and proactive cybersecurity architecture is essential, directly fulfilling the human capital mandates within the National AI Action Plan 2026–2030 (van Laar et al., 2017). International benchmarks such as Singapore’s SkillsFuture and South Korea’s Digital New Deal highlight the systemic importance of institutionalizing structured lifelong learning frameworks and collaborative public–private reskilling partnerships to maintain a higher tier public workforce (Buckley et al., 2020; Yoon, 2021). Furthermore, retaining technological talent within the public sector requires structural reform of rigid bureaucratic compensation systems, creating flexible, market-competitive incentives for specialized digital roles to reduce brain drain to the private sector. By embedding continuous technical learning pathways and performance-linked, non-linear advancement tracks into the civil service framework, Malaysia can build the agile digital workforce necessary to drive RMK13’s broader human capital agenda.

(e) *Embedding Ethical and Responsible Technology Adoption*

The rapid adoption of AI and automation raises ethical risks of algorithmic bias, intrusive surveillance, and structural labour displacement (Jobin et al., 2019; Malik et al., 2022). Without strict public safeguards, these risks will continue to undermine the state’s broader inclusivity goals. Comparative evidence shows that ethical AI governance frameworks within Canada and the EU successfully institutionalise principles of transparency, accountability, and fairness into active law (Jobin et al., 2019; European Commission, 2021). To mirror these safeguards within the RMK13 timeline, Malaysia must transition the Artificial Intelligence Governance and Ethics (AIGE) framework from a voluntary code of conduct into a binding, statutory regulation. Implementing bodies, spearheaded by the National AI Office (NAIO), should introduce mandatory Ethical Impact Assessments (EIAs) for high-risk automation deployments across both public and corporate sectors (Ministry of Science, Technology and Innovation [MOSTI], 2024). Furthermore, deliberative platforms in Finland and South Korea demonstrate how active citizen dialogue enhances

technological legitimacy and adoption trust (Tuomi, 2018; OECD, 2020). Embedding these participatory feedback loops into the MyDIGITAL and National AI Action Plan 2026–2030 execution models will guarantee that advanced technology adoption remains deeply aligned with democratic societal values and citizen wellbeing.

*(f) Leveraging Public-Private Partnerships (PPP) for Sustainability*

Fiscal constraints routinely limit large-scale digital deployments, making Public–Private Partnerships (PPPs) a critical resource mobilisation tool for developing nations. However, institutional governance deficits in Malaysia have historically limited the long-term structural effectiveness of these collaborative frameworks (Fleta-Asín & Muñoz, 2020; Ma et al., 2023). Comparative studies demonstrate that well-structured PPPs, such as India’s Digital India programme, succeed primarily by embedding clear contractual accountability, transparent procurement pipelines, and citizen-centric oversight mechanisms into their core models (Awasthi et al., 2024). To operationalise this level of resilience, Malaysia must actively scale its National Technology and Innovation Sandbox (NTIS) framework into a statutory, cross-agency platform, allowing public agencies and private startups to co-develop and test disruptive software in legally secure, controlled environments (Mazzucato, 2018). Furthermore, future PPP frameworks under the Ministry of Digital should explicitly prioritize twin-transition models; embedding green digital investments specifically targeting high-performance smart grids and AI-driven precision agriculture will simultaneously accelerate national decarbonisation mandates and achieve the core socio-ecological sustainability goals anchored within RMK13.

*(g) Cultivating Public Trust and Engagement*

Public trust is the cornerstone of digital adoption, yet Malaysia faces skepticism triggered by historical cybersecurity breaches and inconsistent platform uptimes (Bélanger & Carter, 2008). To dismantle this resistance—particularly regarding user onboarding onto MyDigital ID—implementing agencies must treat the compliance frameworks of the Cyber Security Act and the amended PDPA as active, transparent guarantees rather than backend protocols. Advanced transparency mechanisms, such as expanding the real-time analytics tracking of the centralized data.gov.my repository, can radically improve institutional accountability and citizen engagement (Zuiderwijk et al., 2019). Furthermore, targeted digital safety and literacy programmes tailored for

rural communities and elderly demographics have proven structurally transformative in digital nations like Estonia and South Korea (Yoon, 2021; van Dijk, 2020). Finally, deploying permanent, participatory feedback loops directly into primary GovTech interfaces, mirroring India's MyGov infrastructure, will strengthen public service legitimacy and transparency (Meijer & Bolívar, 2016; Awasthi et al., 2024).

## CONCLUSION

Malaysia's digital transformation agenda driven by MyDIGITAL, the National 4IR Policy, and RMK13 is a pivotal strategy for inclusive growth, competitiveness, and long-term sustainability. While highly ambitious, its operational execution is continuously tested by legacy institutional silos, regional infrastructure disparities, cybersecurity vulnerabilities, and specialized talent shortages. Consequently, this study confirms that comprehensive digital transformation is not merely a technological endeavour, but fundamentally a complex governance and societal project requiring deep, systemic reform.

Scholarly research consistently highlights that fragmented public governance and bureaucratic inertia remain critical operational barriers, while persistent urban–rural digital divides mirror global developing patterns where uneven physical connectivity inherently limits social inclusivity. Furthermore, while historical data governance frameworks particularly the legacy iterations of the Personal Data Protection Act (PDPA) previously risked eroding public trust and weakening Malaysia's competitiveness in global digital trade, the contemporary challenge has rapidly shifted toward the capacity of newly empowered state apparatuses to stringently enforce the updated statutory parameters of the current Cyber Security Act and amended data privacy frameworks.

Comparative evidence drawn from advanced digital nations such as Singapore, South Korea and Estonia demonstrates that robust institutional centralization, independent statutory digital agencies and highly integrated, unified citizen portals drastically strengthen inter-agency coordination and cultivate public confidence. Moreover, global best practices illustrate that the proactive embedding of algorithmic ethics frameworks, continuous technical reskilling programmes and decentralized participatory governance structures remains mandatory to guarantee systemic legitimacy, citizen compliance and long-term policy sustainability.

For Malaysia, strategic success within this digital epoch will strictly hinge on four operational priorities: empowering the statutory enforcement capabilities of the Ministry of Digital and National AI Office (NAIO), accelerating technology-agnostic connectivity models like LEO satellites to bridge the rural divide, executing absolute compliance oversight on data protection and aggressively cultivating a future-ready public workforce trained in high-tier algorithmic governance. Addressing these pivotal areas through a holistic, integrated approach directly aligns national technological disruption with the core equity pillars of the Ekonomi MADANI agenda, ensuring that state-driven economic growth remains profoundly inclusive, human-centric and ethically sound.

By systematically situating Malaysia's contemporary digital journey within rigorous global benchmarks, this study significantly contributes to the public policy discourse by demonstrating that resilient digital governance depends entirely on the symbiotic interplay between structural legislation, inclusive infrastructure, agile human capital and institutional trust. If pursued with unyielding political consistency, operational transparency and cross-sector accountability, Malaysia will not only accelerate its sovereign transition into a digitally advanced economy but firmly position itself as a progressive regional leader in ethical, sustainable and inclusive digital governance.

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### **Author contributions**

Author 1: Conceptualisation, methodology design, and drafting of Sections 1–7.

Author 2: Supervision, critical review of methodology, validation of findings, and academic guidance.

Author 3: Co-supervision, critical review of literature and policy framework, and refinement of recommendations.

### **Conflict of interest**

The author(s) declare no conflict of interest associated with this publication.

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