International Journal of Communication 20(2026), 2238–2261 1932–8036/20260005

Thailand 5.0? Reimagining the Nation's Digital Future With Artificial Intelligence (AI)

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Thailand stands at a critical juncture in Southeast Asia's digital transformation, transitioning from a mobile-first society into an artificial intelligence (AI)-enabled economy. Although widespread connectivity and super app ecosystems demonstrate rapid technological adoption, research—especially in communication studies—tends to examine AI development through separate lenses of policy, innovation, and inclusion. This study addresses this gap by analyzing how alignment or misalignment among these dimensions shapes whether AI-driven transformation yields equitable outcomes or reinforces inequalities. Findings indicate that despite comprehensive national AI strategies and strong commercial adoption, gaps persist between policy ambition and implementation capacity. Dependence on foreign technological infrastructures limits sovereign AI capabilities, while digital divides produce uneven access and benefits. Authority-driven diffusion accelerates scale, but often results in compliance without meaningful capability development. The study argues that without targeted interventions in capability building, sovereign infrastructure, and culturally grounded governance, Thailand's AI transformation risks reinforcing existing inequalities rather than promoting inclusive digital development.

Keywords: artificial intelligence, AI governance, AI imaginaries, digital transformation, digital divide, institutional isomorphism, diffusion of innovations

Across emerging economies, artificial intelligence (AI) is increasingly positioned as a driver of economic growth, innovation, and national competitiveness. However, the rapid adoption of AI technologies does not automatically produce inclusive development. This risk of intensified inequality is particularly salient in the Global South, where societies are often mobile-first—the smartphone is the primary gateway through which citizens access the Internet, digital services, and increasingly AI-enabled platforms—yet continue to

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Date submitted: 2026-03-22

[1] The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. This research was supported by funding from the Institute for Culture and Society, Western Sydney University.

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grapple with longstanding inequalities in digital literacy, capability, and meaningful access and are now confronting a new frontier of AI inclusion, exclusion, and marginalization (Arora, 2025). Thailand offers a revealing case precisely because it sits at this intersection: a middle-income, mobile-first economy with near-universal connectivity yet persistent structural exclusions that AI adoption risks deepening rather than resolving.

This study argues that Thailand's AI trajectory is characterized by three structurally produced conditions: policy ambition that outpaces institutional enforcement capacity, innovation diffusion that accelerates adoption while constraining domestic technological autonomy, and connectivity that has not translated into meaningful inclusion. Together, these conditions reveal an AI imaginary—of sovereign, human-centered, inclusive development—that is performed credibly at the policy level, but remains unrealized in its structural conditions. This risk is particularly acute in Thailand, where the transition from a mobile-first society to an AI-enabled economy is already a lived reality, supported by nationwide 5G coverage exceeding 95% and near-universal mobile and Internet access (Global System for Mobile Communications Association [GSMA], 2024a). Smartphones operate as the primary gateway to digital life, facilitated by super app ecosystems such as LINE and Grab that converge communication, commercial activity, and financial services within a unified platform environment. These platforms are progressively incorporating AI-driven personalization, automation, and predictive analytics, signaling the rapid emergence of mobile AI ecosystems, which embed machine intelligence into the everyday practices of local communities (Saelim & Kijsirikul, 2022).

Nevertheless, despite rapid technological adoption, digital technologies have yet to translate into broadly shared economic and social benefits across Thai society (Chakpitak et al., 2018). Structural challenges persist across three interconnected fronts: Governance and institutional capacity remain fragmented; innovation capacity remains constrained by low digital investment, limited technology penetration, and critical shortages of advanced IT skills (Jongwanich, 2023); and digital inclusion remains uneven, with significant disparities in literacy, affordability, and meaningful access between urban and rural populations (Nanthakorn et al., 2022).

In response, the government has demonstrated a strong commitment to addressing these challenges through policy frameworks and digital economy initiatives, particularly under the Thailand 4.0 agenda, where AI is positioned as a key driver of innovation, inclusion, and sustainability. Building on this framing, this article analyzes what could be effectively seen as Thailand 5.0, the intensified, AI-driven phase of transformation following the National AI Strategy. Despite this policy momentum, however, Thailand continues to face significant challenges in fully realizing its digital potential, necessitating an examination of institutional infrastructure imbalance that may reconfigure existing social and economic hierarchies and inequalities.

In this context, and built on the work of AI imaginaries by Goggin and Zhuang (2025), particularly their argument that disability and inclusion remain marginalized in Asian AI imaginaries despite rhetoric about AI for social good, and the work of Yu (2025), which emphasizes that platform studies is no longer confined to traditional Western-centric frameworks, but rather requires understanding diverse approaches to platform development, governance, and integration into society, the present research seeks to

conceptualize how AI is reimagining Thailand's digital future under the Thailand 5.0 vision, underscoring the interdependence of policy, innovation, and inclusion as the three foundational pillars shaping the country's AI-driven digital transformation.

These perspectives compel us to interrogate whose imaginaries shape Thailand's AI-driven future: Are they top-down visions imposed by tech companies and policymakers, or do they emerge from meaningful engagement with diverse communities, including marginalized populations? Do Thailand's AI initiatives replicate ableist, Western-centric assumptions about progress and efficiency, or do they forge alternative pathways that reflect Thai cultural values, social realities, and development priorities? Understanding AI imaginaries as sociotechnical visions that both draw on and reshape cultural identities and power relations (Jasanoff & Kim, 2015) is essential for evaluating whether Thailand 5.0 represents genuine transformation or merely technological solutionism dressed in inclusive rhetoric. This perspective aligns with communication scholarship showing how technological futures are shaped through narratives of progress, governance, and efficiency, which often obscure issues of accountability and structural inequality (Mansell & Plantin, 2022; Powell, 2026).

Drawing on Yu's (2025) analytical lens, this study argues that Thailand's AI-driven digital transformation is shaped by the interaction of three interconnected dimensions—policy, innovation, and inclusion—which together determine whether technological adoption produces equitable development or reinforces existing inequalities. These dimensions operate as foundational pillars of Thailand's digital transformation, in which policy provides the institutional structure and regulatory legitimacy, innovation drives technological and economic change through public and private actors, and inclusion determines the extent to which the benefits of AI are equitably distributed. While these elements ideally function as a mutually reinforcing system, this study contends their misalignment generates uneven development outcomes and exposes tensions between rapid technological advancement and inclusive growth.

Accordingly, this study poses a central question:

RQ1: How does the alignment or misalignment among policy, innovation, and inclusion shape Thailand's AI imaginaries?

Practical and policy implications arising from this analysis are addressed in the conclusion.

Approach and Methods

This study integrates AI imaginaries, institutional theory, and diffusion of innovation (DOI) theory to examine how AI is reimagining Thailand's digital future. While AI imaginaries reveal the visions and values that drive AI adoption, institutional theory explains the structural forces that shape how those visions are translated into policy and practice, and DOI theory traces how and for whom the resulting technologies spread. Together, these three frameworks provide a multilayered account of Thailand's AI transformation, moving from ideational foundations to structural conditions to lived adoption outcomes.

https://doi.org/10.65476/qthxxk34

AI Imaginaries

The conceptual foundation of this research is grounded in sociotechnical imaginaries, which Jasanoff and Kim (2015) describe as "collectively held, institutionally stabilized, and publicly performed visions of desirable futures" (p. 4). These imaginaries extend beyond individual aspirations; they represent socially shared visions of progress that are mobilized by governments, institutions, and powerful actors to legitimize particular developmental pathways (Bareis & Katzenbach, 2022). In the Thai context, the Thailand 4.0 vision exemplifies this dynamic: Digital transformation is framed as a national imperative, positioning AI-led development as the pathway through which Thailand can transcend middle-income constraints and achieve long-term economic and social stability (Tanomvorsin & San-Um, 2018). Crucially, such imaginaries do not merely describe a technological future; they construct one, directing resources, institutions, and public expectations toward specific visions of national progress.

Scholarly attention has increasingly turned to AI imaginaries, examining how machine intelligence becomes the stage on which societal hopes, anxieties, and contested futures play out (Cave et al., 2020). A central critique is that dominant AI imaginaries are deeply rooted in Western technocapitalist values that often travel poorly to non-Western contexts, imposing frameworks misaligned with local social and cultural realities (Schneider & Yu, 2025). In Thailand, these tensions become visible in state-led narratives that position AI as a driver of economic upgrading and global competitiveness, yet these visions often prioritize technological progress and market expansion over the social conditions required for equitable participation, raising questions about whose interests such futures ultimately serve.

To deepen this critique, this study draws on emerging scholarship examining how Asian AI imaginaries construct marginalization. Goggin and Zhuang's (2025) analysis of disability imaginaries in Asian AI initiatives demonstrates these visions often rely on deficit-based, biomedical framings that treat disability as a problem to be technologically "fixed" rather than addressing structural sources of exclusion. This pattern of disability dongles—technologies designed to remedy individual impairment rather than transform inaccessible systems—illustrates how seemingly benevolent AI innovation can reproduce existing inequalities while claiming to advance social good. Yu (2025) further illustrates how platform ecosystems in Asia are shaped by state-aligned governance and culturally situated logics distinct from Western platform models. Rather than focusing solely on what platforms do, Yu (2025) urges scholars to ask: What world do they build, for whom, and through which forms of power? This framework is particularly instructive for analyzing Thailand's AI imaginaries, which similarly intertwine technological development with state ambitions, social order, and culturally embedded visions of progress.

Institutional Theory

Understanding whose visions drive Thailand's AI agenda is only part of the story. Equally important is examining the institutional structures through which these imaginaries are formalized, legitimized, and enforced. Institutional theory posits that organizations conform to embedded rules, norms, and belief systems that confer legitimacy rather than solely pursuing technical efficiency (Meyer & Rowan, 1977). DiMaggio and Powell (1983) further identify coercive, normative, and mimetic pressures as key mechanisms driving such convergence. Extending this perspective, Napoli (2014) shows how institutional forces shape

the algorithmic production and consumption of media, arguing that AI-driven systems are not merely technical infrastructures, but institutionally embedded arrangements that reproduce existing structures of power and legitimacy—a dynamic evident in Thailand, where super app platforms normalize AI through everyday digital practices.

At the regulatory level, coercive forces arise from formal rules, state regulations, and policy directives that compel organizations to conform to national strategies. In Thailand, coercive pressures are embodied in frameworks such as the National AI Strategy and the Personal Data Protection Act (PDPA), which set ethical, legal, and operational standards for AI deployment. These forces shape the policy pillar, defining how AI is governed, funded, and evaluated across ministries and public agencies.

At the ecosystem level, normative forces emerge from professional standards, shared knowledge systems, and institutionalized practices that legitimize certain forms of innovation. In Thailand, universities, start-up incubators, and industry associations (e.g., Digital Economy Promotion Agency [DEPA], National Innovation Agency [NIA], and Techsauce) promote standards of responsible and competitive AI development. Conformity to these models functions as a marker of legitimacy in the innovation ecosystem.

The third force, mimetic pressure, emerges when organizations and societies imitate successful models under conditions of uncertainty or rapid change. Thailand's rapid digital transformation is characterized by accelerating technological change, geopolitical competition, and domestic capacity gaps (Jongwanich, 2023). This has produced clear mimetic patterns: The PDPA mirrors the European Union's General Data Protection Regulation (GDPR), smart city ambitions closely follow Singapore's governance model, and platform ecosystems reflect regional super-app strategies. However, these processes rarely produce exact replication. As global models travel, they are selectively translated and adapted to local contexts, producing what Deleuze (1968/1994) describes as repetition with a difference.

Together, these forces reveal the structural logic underlying Thailand's AI trajectory. Coercive pressures accelerate policy adoption, normative forces legitimize global innovation models, and mimetic dynamics reproduce international frameworks regardless of local fit.

DOI Theory

While institutional theory explains the structural conditions shaping AI adoption at the policy level, DOI theory examines how innovations spread through social systems (Rogers, 1983). Adoption is not determined solely by technical superiority, but by social processes shaped by five key attributes—relative advantage, compatibility, complexity, trialability, and observability—as well as by communication channels, social systems, and time (Patnaik & Bakkar, 2024). Venkatesh et al. (2003) extend this framework by incorporating social influence and facilitating conditions, recognizing that diffusion outcomes are shaped not only by the attributes of an innovation, but by the social and organizational environments into which it is introduced.

Particularly, this social dimension of diffusion has been further developed to foreground the active role of users, social innovation, and cultural practices in shaping how technologies are taken up and

https://doi.org/10.65476/qthxxk34

transformed in everyday life (Bauer & Latzer, 2024; Goggin, 2017). Rather than treating diffusion as a linear process of adoption, this perspective recognizes that media technologies are continuously remade through social use, making the communicative and cultural conditions of adoption as analytically significant as the technical attributes of the innovation itself. Applied here, this extended DOI shifts analytical focus from whether AI functions technically to how, where, and for whom AI-enabled services are adopted, adapted, or resisted within Thailand's digital economy.

Thailand's AI transformation exhibits a clear diffusion asymmetry: rapid uptake in urban, platform-centric environments and slower diffusion in structurally constrained contexts. Mobile AI embedded in super apps and digital payments diffuses quickly because it aligns with existing mobile-first practices and carries strong institutional support, whereas AI applications requiring data literacy, algorithmic trust, or organizational change diffuse more slowly, revealing structural inequalities in access and benefit. DOI theory further distinguishes among optional, collective, and authority-driven adoption decisions, each producing different outcomes (Rogers, 2003). In Thailand, authority-driven diffusion achieves rapid scale, but frequently generates compliance without meaningful use—high registration rates that do not indicate deep or equitable engagement. These patterns, which run through all three analytical dimensions of this study, reflect unequal communication channels, infrastructure, and institutional support rather than adoption failure and point toward where intervention is most needed.

This article employs a qualitative, exploratory case-study design using document analysis to map Thailand's mobile AI landscape and identify thematic intersections across policy, innovation, and inclusion. Sources were purposively selected to ensure coverage across all three dimensions and enable triangulation across institutional, commercial, and civic perspectives. Purposive sampling was employed because the research questions require materials that directly illuminate governance mechanisms, innovation capabilities, and inclusion dynamics; random or convenience sampling would not reliably produce sources relevant to these specific concerns. The corpus is organized into the following four categories:

1. **Government policy documents**, such as National AI Strategy and Action Plan 2022–2027, Digital Economy Promotion Masterplan 2023–2027, and documentation associated with the Thailand 4.0 strategy. These represent the authoritative articulations of Thailand's AI imaginary at the highest levels of state discourse, which outline national priorities and strategic directions.

2. **Regulatory frameworks**, including PDPA Act B.E. 2562 (2019), Digital Platform Service (DPS) Decree 2022, and National Broadcasting and Telecommunications Commission (NBTC) guidelines; Bank of Thailand (BOT)'s guideline for biometric technology adoption and regulatory sandbox; and Electronic Transactions Development Agency (ETDA)'s high-impact platforms designation. These provide insight into the translation of policy intent into binding legal and regulatory instruments and help to examine the gap between regulatory design and enforcement capacity.

3. **Industry and market reports** from major organizations, such as GSMA Mobile Economy Asia Pacific reports, International Data Corporation Thailand smartphone market reports, National Statistical Office digital economy surveys, Thailand Development Research Institute policy

analyses, and market data from Statista. These provide empirical data on adoption rates, sectoral capabilities, infrastructure investment, and market structure.

4. **Supplementary materials**, including company disclosures and corporate communications (e.g., SCB10X's documentation, Grab's platform reports, DEPA agency publications), peer-reviewed academic publications, and technology journalism from outlets with established editorial standards (e.g., *Bangkok Post*, *The Nation*, *Telecom Review Asia*), which contextualize policy and industry developments and support triangulation of findings.

The study employs thematic analysis following Braun and Clarke's (2006) framework. Documents were analyzed inductively, with initial codes iteratively refined into broader themes and interpreted through institutional theory and DOI. Cross-cutting themes were identified where similar phenomena appeared across multiple sources and analytical dimensions. These themes were then synthesized into three interrelated dimensions—policy, innovation, and inclusion—capturing, respectively, (1) governance mechanisms, (2) technological capabilities, and (3) adoption dynamics. Building on this framework, AI imaginaries are incorporated into the discussion to further synthesize findings across these dimensions and explain the misalignment between Thailand's policy ambitions and broader development outcomes. Before turning to this analysis, the next section provides an overview of how AI has been developed and envisioned in Thailand.

Imagining AI in Thailand

Thailand's digital trajectory has been shaped by successive state-led visions of technological modernization, evolving from early infrastructure investment into a distinctly mobile-first culture. This has, in turn, given rise to an increasingly dominant super app ecosystem, where platforms such as LINE and Grab embed machine intelligence into everyday practices of payments, communication, and personalized services (Steinberg, 2020). These practices both reflect and reinforce a broader state-led vision of AI-enabled transformation, articulated in the National AI Strategy and Action Plan (2022–2027), which states, "Thailand has an effective ecosystem to promote AI development and application to enhance the economy and quality of life within 2027" (AI Thailand, 2022a, Vision section, para. 1). Here, AI is positioned as the core engine of national innovation, inclusion, and sustainability.

Thailand's AI imaginary carries distinctive characteristics that set it apart from both Western and other Asian counterparts. A central tension lies between rapid technological adoption and constrained technological autonomy. Despite high levels of AI diffusion, Thailand remains significantly dependent on foreign hyperscale cloud infrastructure and international platform ecosystems. This dependence has generated institutional concerns over technological sovereignty, reflected in policy initiatives aimed at strengthening domestic AI capabilities, such as the development of Thai-language large language models (LLMs) and the National AI Strategy's explicit mandate to develop domestic AI infrastructure, including high-performance computing capacity and a national AI service platform (AI Thailand, 2022b).

Equally distinctive is the mode of diffusion: Rather than market-led adoption, Thailand relies heavily on authority-driven mandates that achieve rapid scale, but frequently produce compliance without

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meaningful capability, where citizens adopt technologies out of necessity instead of productive engagement (Phansatarn, 2021). At the same time, Thailand's AI imaginary is shaped by a distinctive cultural synthesis with few direct parallels in neighboring countries. The integration of machine intelligence into traditional social and spiritual practices—including AI-enabled personalization in religious and astrological tourism—reflects a vision of technological development that extends beyond technoeconomic modernization. Instead, AI becomes embedded within broader cultural identities and social values, illustrating how sociotechnical imaginaries are formed through the interaction between technological innovation and cultural context.

The analysis that follows traces how these three dimensions interact to produce Thailand's AI imaginary and where it breaks down. The central argument is that high diffusion, but constrained autonomy; policy ambition exceeding institutional capacity; and connectivity without meaningful inclusion are not three separate problems, but manifestations of a single structural condition: authority-driven diffusion operating within a mimetically constructed policy environment that performs inclusive, sovereign AI development, while the conditions needed to realize it remain underdeveloped. Policy, innovation, and inclusion are thus examined not as isolated domains, but as interconnected analytical steps through which this gap between imaginary and reality is produced and sustained.

Dimension 1: Policy

Policy constitutes the institutional architecture through which AI development is directed, regulated, and legitimized, shaping strategic priorities, governance structures, and regulatory mechanisms. In Thailand, this architecture reflects a strongly policy-driven model of digital transformation, characterized by ambitious national strategies, expanding regulatory instruments, and ongoing institutional ecosystem building. However, while policy provides clear strategic direction, it is constrained by fragmented governance, limited enforcement capacity, and uneven implementation across institutional levels. As a result, Thailand's policy environment functions both as a driver of technological adoption and as a source of institutional constraint. In this study's policy-innovation-inclusion framework, policy thus represents the mechanism through which AI imaginaries are translated into formal strategies and governance structures, making it central to assessing whether Thailand's digital ambitions are matched by the institutional capacity to realize them.

Strategic Direction and Institutional Steering

Thailand's AI governance reflects strong state-led steering of digital transformation through comprehensive national strategies and institutional coordination mechanisms. The National AI Strategy and Action Plan (2022–2027), jointly overseen by the Ministry of Higher Education, Science, Research, and Innovation (MHESI) and the Ministry of Digital Economy and Society (MDES), represents the country's most comprehensive attempt to guide AI development (AI Thailand, n.d.). In the 2023 fiscal year, approximately USD 216 million was allocated across 68 government departments to strengthen data infrastructure and support AI-related training initiatives. This strategy operates alongside the Digital Economy Promotion Master Plan Phase 2 (2023–2027), which positions AI as a cornerstone of Thailand's economic

modernization, and aligns with the broader Thailand 4.0 agenda aimed at transforming the country into an innovation-driven economy while reducing social inequality.

These policy frameworks exert strong coercive institutional forces by encouraging organizational AI adoption through funding mechanisms, regulatory requirements, and performance metrics tied to national development goals. They also demonstrate the state's attempt to construct a comprehensive innovation ecosystem through institutional expansion. Agencies such as MDES, DEPA, NIA, NBTC, National Electronics and Computer Technology Center (NECTEC), National Science and Technology Development Agency (NSTDA), ETDA, and Big Data Institute (BDI) collectively support digital infrastructure development, start-up incubation, and skills training (DEPA, 2017). DEPA's initiatives, including start-up accelerator programs, smart city development, and national digital skills training, reflect an ecosystem-building approach designed to stimulate technological adoption and economic competitiveness (DEPA, 2026).

Beyond these institutional functions, the frameworks also perform important communicative work. The Thailand 4.0 agenda is publicly framed as transforming the country from a producer of commodities to a producer of innovations, while the National AI Strategy positions AI as central to building a competitive, inclusive, and sustainable digital economy. The recurring deployment of terms such as "smart city," "human-centered development," and "AI-enabled ecosystem" constructs a national narrative of modernization that justifies state-led AI adoption and presents inclusion as a built-in feature of the vision, rather than as a challenge requiring structural intervention. This framing shapes how legitimacy is claimed and how gaps between policy ambition and implementation are managed.

However, this institutional expansion also produces governance fragmentation. The involvement of multiple agencies generates coordination challenges, policy redundancy, and difficulties in transferring policy objectives across levels of government (World Bank Group, 2025). While the creation of new institutions signals adaptive governance, the dispersed nature of Thailand's digital governance architecture complicates implementation and weakens institutional coherence. This fragmentation is particularly consequential for the AI imaginary: When responsibility for digital transformation is dispersed across multiple agencies without coherent coordination, the credibility of Thailand's unified national AI vision is undermined from within its own institutional architecture.

Institutional Capacity and Implementation Constraints

Despite sophisticated strategic design, implementation gaps persist across Thailand's AI governance system. Existing policy frameworks articulate ambitious transformation goals, yet institutional capacity remains uneven across national and local levels. Research indicates that Thailand has established AI ethics guidelines, but lacks comprehensive legislative frameworks and enforcement mechanisms to operationalize them (Labanieh et al., 2024). Similarly, smart city initiatives often emphasize technological infrastructure while struggling to translate national visions into concrete implementation at provincial and municipal levels (Naprathansuk, 2017).

The discrepancy between announced initiatives and operational outcomes illustrates the limits of policy capacity. While 30 smart cities have been formally designated, resource allocation, technical

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expertise, and coordination mechanisms remain insufficient for systematic implementation. Consequently, policy operates primarily as a signaling mechanism that communicates national commitment to digital transformation, but its practical implementation remains constrained by limited organizational resources, personnel capacity, and coordination infrastructure. In this sense, state-led legitimacy substitutes for participatory capability building—the imaginary is performed through policy announcements and institutional designations rather than realized through the distributed capacities that genuine transformation would require.

Regulatory Instruments and Governance Mechanisms

Thailand's regulatory framework further demonstrates the state's effort to govern AI development through legal and institutional mechanisms that balance innovation promotion with risk management. The PDPA, enacted in 2019 and fully enforced in 2022, establishes comprehensive data governance principles including consent requirements, purpose limitation, data minimization, and individual rights such as access and erasure (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2024). The law closely mirrors the European Union's GDPR, reflecting Thailand's adoption of international regulatory models to enhance regulatory legitimacy and provide legal certainty for global firms.

Platform governance has also expanded through the DPS Decree (2022), which imposes reporting obligations, transparency requirements, and operational standards for large digital platforms such as LINE, Grab, Shopee, and Lazada (ETDA, 2022). Subsequent regulatory measures have designated ride-hailing platforms as high-impact services requiring identity verification, GPS tracking, and transparent pricing mechanisms, demonstrating regulatory adaptation to emerging platform risks (Chitranukroh et al., 2025).

In parallel, regulatory experimentation occurs through sandbox mechanisms designed to support innovation while maintaining oversight. The BOT's fintech sandbox enables testing of AI-enabled financial services such as alternative credit scoring and fraud detection systems, illustrating an adaptive regulatory approach that seeks to balance technological development and consumer protection.

Regulatory Fragmentation and Enforcement Limitations

Notwithstanding regulatory expansion, enforcement capacity remains a critical constraint on policy effectiveness. Fragmented regulatory authority produces overlapping jurisdictional requirements that increase compliance complexity. For example, ride-hailing platforms must simultaneously satisfy transparency requirements under the DPS framework and licensing regulations imposed by the Department of Land Transport, creating administrative burdens that disproportionately affect smaller market entrants (Chitranukroh et al., 2025). Larger firms are better positioned to absorb compliance costs, reinforcing market concentration.

Enforcement limitations further undermine regulatory effectiveness. The PDPA relies primarily on complaint-based enforcement, with the first major fine issued several years after full implementation (Chitranukroh et al., 2024), indicating gradual enforcement rather than proactive, systematic monitoring. Similarly, DPS Decree requirements for algorithmic transparency (Tongkaew & Kunthum, 2023) lack clear

metrics or independent auditing processes, leaving platforms substantial discretion in disclosure depth. Without adequate enforcement resources and technical expertise within regulatory agencies, sophisticated regulations risk becoming symbolic compliance exercises rather than effective governance mechanisms.

Overall, Thailand's AI policy environment demonstrates a dual character. On one hand, strong strategic direction, regulatory expansion, and institutional ecosystem building position policy as a central driver of digital transformation. On the other hand, fragmented governance structures, uneven implementation capacity, and limited enforcement mechanisms constrain the effectiveness of these initiatives. Policy therefore shapes Thailand's AI trajectory by simultaneously enabling technological adoption and reproducing structural governance limitations that influence innovation outcomes and societal inclusion. This misalignment is produced by a distinctively Thai configuration of institutional forces: Coercive mandates drive rapid regulatory expansion, while mimetic isomorphism substitutes international legitimacy for domestic enforcement capacity. The result is a policy environment that performs Thailand's AI imaginary credibly on the global stage while leaving the institutional infrastructure needed to realize it underdeveloped—constraining what innovation can deliver and predetermining where inclusion will fall short.

Dimension 2: Innovation

Innovation serves as the engine of digital transformation, translating policy ambitions into material capabilities and economic outcomes. In Thailand, the innovation ecosystem is characterized by rapid AI diffusion, with growing commercial adoption across sectors, yet constrained by limited deep-tech capacity and dependence on foreign technological foundations. This produces a trajectory of high diffusion, but low autonomy: Consumer-facing applications scale quickly, while foundational capabilities remain underdeveloped, reinforcing technological dependency and limiting long-term innovation sovereignty. Viewed through AI imaginaries, the innovation ecosystem is the arena where national visions are tested in practice. In Thailand, the gap between the imaginary—sovereign, competitive, human-centered AI—and actual outcomes reveals whether this vision is being realized or merely performed.

Technological Infrastructure and Digital Capacity

Thailand's digital infrastructure provides the enabling conditions for widespread AI deployment. With 95% 5G population coverage (GSMA, 2024a), mobile penetration exceeding 136% (Kemp, 2024), and national Internet access approaching universal levels (Sriyai, 2024), the country possesses one of the region's most extensive connectivity environments. Telecommunications expansion by major operators, supported by government spectrum allocation and regulatory incentives, has produced a highly networked digital environment that facilitates mobile-first AI services and data-intensive applications (Srinuan & Srinuan, 2021).

The expansion of low-earth orbit satellite connectivity further extends this infrastructure into geographically remote areas. Partnerships such as the Globalstar–Thaicom gateway and the NT–OneWeb satellite network enable broadband access where terrestrial deployment is economically impractical (Tortermvasana, 2025). These systems enable AI-powered applications in precision agriculture, remote

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health care, and emergency services—demonstrating how connectivity infrastructure decisions directly shape AI application possibilities.

Despite these strengths, Thailand lacks sovereign computing infrastructure necessary for independent AI development. Cloud computing capacity and data storage environments remain heavily reliant on foreign hyperscale providers. Major investments in domestic data center capacity are largely financed and operated by international firms, while global technology companies supply critical cloud and AI services (Setboonsarng, 2024, 2025). This dependence introduces vulnerabilities related to data sovereignty (sensitive information potentially accessible to foreign governments), supply chain resilience (sanctions or geopolitical tensions could disrupt access), and economic value capture (cloud computing expenditures flow to foreign companies) while limiting domestic control over core technological systems (von Scherenberg et al., 2024). Consequently, Thailand's infrastructure supports AI adoption, but does not fully enable technological independence.

Sectoral AI Development and Application

AI adoption in Thailand is concentrated in service-oriented sectors, where commercial incentives and regulatory pressures drive implementation. These are complemented by more emergent and institutionally constrained domains, such as health care and agriculture, together representing a spectrum of AI adoption trajectories—from commercially mature contexts (financial services, e-commerce) to more limited uptake—highlighting the broader tension between rapid diffusion and constrained domestic autonomy. The financial sector demonstrates the most advanced integration, particularly in biometric authentication, fraud detection, and risk management (BOT, 2023). Alternative credit scoring systems that use nontraditional data have expanded access to finance among previously excluded groups, including informal workers and small entrepreneurs (Tigges et al., 2024). However, these systems introduce new risks of algorithmic discrimination, as fairness safeguards remain weakly institutionalized (Areejitkasame, 2023). From a DOI perspective, high trialability and compatibility with existing mobile banking practices help explain the sector's rapid uptake, highlighting, by contrast, the limits of adoption in less compatible contexts.

Similarly, Thailand's e-commerce ecosystem is dominated by platform-based AI models that deploy recommender systems, behavioral targeting, and dynamic pricing algorithms to maximize engagement and consumption (Saelim & Kijsirikul, 2022). While these systems enhance commercial efficiency, they generate information asymmetries and behavioral vulnerabilities, particularly when combined with financial technologies such as buy-now-pay-later services that increase consumer indebtedness risks (Irawati et al., 2024). Innovation in this domain thus prioritizes market optimization over broader social outcomes.

In health care, AI development remains emergent, but uneven. Diagnostic tools such as AI-assisted radiology systems demonstrate promising technical capabilities and potential to address workforce shortages (Australian Associated Press, 2024). However, institutional barriers constrain broader adoption, including medical professionals' skepticism of AI reliability and liability, uncertainties about algorithm performance because of limited local validation data, and an absence of clear regulatory standards for AI medical device approval and postmarket surveillance (Pongtriang et al., 2023). Telemedicine and AI-based

mental health services show potential to expand access yet face persistent challenges related to trust, integration with existing health information systems, and governance (Benjakul et al., 2025).

The agricultural sector illustrates the limits of technological diffusion in contexts lacking complementary capabilities. Despite strong policy support for digital agriculture, smallholder uptake of AI tools remains limited due to high costs, technical complexity, and misalignment with local practices (Hirunyatrakul, 2025). Perceived benefits are often uncertain, weakening adoption incentives and demonstrating that access to technology does not automatically translate into meaningful use (Srivetbodee & Igel, 2021). This underscores the limits of agricultural leapfrogging when strategies neglect contextual enablers, challenging techno-optimistic assumptions that access alone ensures adoption. In DOI terms, low observability of relative advantage, high complexity, and poor compatibility with smallholder practices produce shallow authority-driven diffusion—registration without meaningful use—mirroring the compliance-without-capability pattern that policy mandates generate.

Local Innovation and Cultural Adaptation

Alongside commercial adoption, Thailand's innovation ecosystem includes efforts to develop culturally and linguistically adapted AI systems. Language model development is particularly significant, as it represents the country's most direct attempt at building foundational capabilities and thus a critical test of whether the sovereign AI imaginary is being realized or merely performed. Thai-language technologies, including locally developed LLMs and speech recognition systems, aim to address linguistic complexity and improve accessibility. For example, South Korea's KT has partnered with Thailand's Jasmine Group to develop Thai-specific LLM services (GSMA, 2024b). At the national level, NECTEC developed the *Pathumma LLM* to process Thai text, audio, and visual data for government and institutional use (NSTDA, 2025), while in the financial sector, SCB developed the *Typhoon LLM* to enhance customer service and internal analytics. These initiatives signal emerging domestic capabilities and efforts to reduce reliance on foreign language technologies while supporting more culturally relevant AI development.

However, such initiatives remain limited in scale relative to global AI development and do not substantially reduce Thailand's structural dependence on external technological ecosystems. Despite emerging domestic projects, Thailand's AI infrastructure continues to rely heavily on foreign hyperscale cloud providers and internationally financed data centers (Setboonsarng, 2024). Limited domestic investment in foundational AI research and computing capacity further constrains the development of globally competitive AI systems (Kawtrakul & Praneetpolgrang, 2014). While local innovation supports contextual adaptation, it has not yet fundamentally altered the country's reliance on external technological infrastructure.

Taken together, Thailand's innovation ecosystem is marked by rapid technological diffusion, but limited endogenous development capacity. While infrastructure expansion, sectoral uptake, and local adaptations support widespread AI deployment, the system remains structurally dependent on external platforms, foreign computational resources, and uneven domestic research capacity. These constraints limit the development of foundational capabilities and weaken innovation sovereignty, with innovation largely enabling technology adoption and service enhancement rather than sustained domestic production. This

https://doi.org/10.65476/qthxxk34

reflects a core misalignment between the policy ambition of sovereign, human-centered AI and an ecosystem built on infrastructure Thailand does not control. This gap is reinforced by an authority-driven diffusion model, in which mandated adoption accelerates uptake, but not capability, creating a divergence between speed and autonomy. For AI imaginaries scholarship, this illustrates how visible deployment can advance a national AI imaginary while undermining the conditions needed to sustain it—a tension that ultimately shapes who benefits from inclusion. At the same time, the normative legitimization of global AI systems, without sufficient local adaptive capacity, further unevenly distributes these benefits and constrains meaningful participation in AI-mediated systems.

Dimension 3: Inclusion

Inclusion represents the societal test of Thailand's AI imaginary, revealing whether technological advancement enables meaningful participation or reproduces existing inequalities. Rather than a connectivity deficit, Thailand faces a structural paradox: a highly connected, mobile-first, super app-mediated ecosystem where widespread access coexists with informal labor dependence, rural–urban capability gaps, age-based exclusion, and urban-centric platform designs that continue to limit equitable participation. Consequently, disparities in skills, usage, and meaningful engagement persist, often reinforced by AI systems themselves. Overcoming these barriers requires sustained capability building, locally relevant applications, and supportive institutional arrangements, all of which remain unevenly realized. At the same time, AI imaginaries reflected through policy narratives of smart living, digital equity, and human-centered AI risk presenting inclusion as achieved, obscuring the structural conditions that continue to produce exclusion.

Digital Access and Structural Divides

Despite Thailand's high levels of Internet and mobile penetration, digital inclusion remains uneven when assessed beyond connectivity metrics. While urban–rural gaps in Internet use appear relatively small (National Statistical Office, 2025), rural regions exhibit substantial qualitative disparities in connection quality, service availability, and users' capacity to translate access into meaningful socioeconomic benefits. Research on rural Thailand consistently finds lower availability of high-speed and reliable Internet, which constrains the effective use of bandwidth-intensive and latency-sensitive digital and AI-enabled services such as telemedicine, advanced e-commerce logistics, and digital public services (Shaengchart & Bhumpenpein, 2025). Evaluations of the Village Broadband Internet (Net Pracharat) Project similarly reveal patterns of access without capability, where infrastructure provision has not translated into meaningful developmental use due to limited digital literacy, scarcity of locally relevant content, and platform designs oriented toward urban consumer preferences (Phansatarn, 2021).

Age-based exclusion represents another significant dimension of Thailand's digital divide. While older adults increasingly access telecommunications services, their meaningful engagement with digital technologies remains constrained by limited digital literacy, restricted usage patterns, and low technical confidence (Padkerd, 2025). Studies show that elderly populations, particularly in rural areas, demonstrate lower participation in digital service platforms and online communication despite nominal connectivity (Phiwonil, 2016). Structural inequalities linked to education, income, and device ownership further limit

vulnerable elderly populations' ability to participate in AI-mediated services (Tipayalai et al., 2025). These findings demonstrate that access to infrastructure does not guarantee equitable participation in digital transformation.

Socioeconomic stratification further mediates digital inclusion outcomes. Nationwide evidence indicates that education level, employment status, and income significantly shape digital engagement, influencing not only access quality but also intensity and diversity of technology use (Pukdeewut & Setthasuravich, 2024). Higher educational attainment and formal employment correlate with broader access to digital resources and more utilitarian online engagement, while lower-income and informally employed populations remain disadvantaged (Sukphan et al., 2024). Analyses of Thailand's Programme for International Student Assessment data similarly show that socioeconomic status moderates digital competence and learning outcomes, suggesting that structural inequalities in education and income directly affect individuals' capacity to benefit from Information and Communication Technology (ICT) and AI-enabled services (Kc et al., 2025). These patterns indicate that digital transformation risks reinforcing existing social stratification rather than reducing inequality.

Inclusive Initiatives and Persistent Capability Gaps

Thailand has implemented large-scale initiatives to expand connectivity and digital capability, reflecting strong policy commitment to inclusive digital development. Programs such as the Village Broadband Internet (Net Pracharat) Project and the One Tambon One Digital Smart Living initiative aim to reduce structural divides through infrastructure provision, digital literacy training, and support for technology adoption in agriculture and rural economies (Phansatarn, 2021; Tortermvasana, 2024). These initiatives demonstrate recognition that inclusion requires both connectivity and capability building.

However, empirical evidence indicates that implementation remains heavily infrastructure-led, and connectivity expansion alone has not produced meaningful digital engagement. Rural users frequently face limited digital literacy, financial constraints in acquiring personal devices, and patterns of use concentrated on entertainment rather than productive activities, limiting the translation of connectivity into economic and social benefits (Intolo & Sahapattana, 2025). These outcomes highlight the importance of complementary institutional support, locally relevant content, and sustained skill development in enabling inclusive participation.

Thailand's mobile-centric digital ecosystem provides an alternative pathway to inclusion, enabling widespread engagement through smartphones and mobile platforms. High smartphone penetration has facilitated the adoption of mobile banking, digital payments, and government communication channels, contributing to financial inclusion and service accessibility (Chomchaviwan, 2023). Consumer-facing AI services, including mental health support applications and digital assistance tools, further illustrate the potential of AI to expand access to services and enhance personal well-being. Nevertheless, research indicates that the benefits of mobile and AI-enabled services remain uneven, with outcomes shaped by users' digital literacy, quality of access, and the cultural and linguistic relevance of platform design (Chongkolrattanaporn et al., 2025). Rather than eliminating structural inequalities, these technologies often reproduce existing educational and occupational disparities in digital participation.

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Altogether, Thailand's inclusion landscape reflects expanding digital access alongside persistent structural inequalities in capability and benefit distribution. Although infrastructure provision, mobile engagement, and targeted programs have extended access, structural disparities in education, income, and institutional support continue to mediate meaningful participation in AI-mediated systems. As a result, digital transformation expands connectivity and service reach without fundamentally redistributing technological capabilities or opportunities, leaving underlying inequalities largely intact. This outcome reflects persistent gaps between policy goals and innovation practices. Policies promote inclusion rhetorically, but often lack effective implementation, while technology spreads faster than the capabilities needed for meaningful participation. In Thailand, widespread smartphone and super app use creates the appearance of digital inclusion, yet structural inequalities continue to limit equitable access. Theoretically, this shows how AI imaginaries can frame equity as already progressing, reducing pressure for the institutional interventions needed to realize it.

Conclusion

The preceding analysis demonstrates that Thailand's AI trajectory is shaped not by any single dimension, but by the alignment—or misalignment—among policy ambition, innovation capacity, and social inclusion. Examining these dimensions collectively reveals how Thailand's AI imaginary is simultaneously enabling rapid digital transformation while exposing structural tensions in the country's development model: where policy ambition exceeds innovation capacity, where innovation outpaces inclusive participation, and where equity goals remain only partially realized in practice. Viewed through the lens of AI imaginaries, these tensions are not merely operational failures, but reflect a deeper misalignment between the state's sociotechnical vision and the institutional, infrastructural, and social conditions through which it is enacted. As a result, Thailand's AI transition risks reinforcing existing inequalities unless greater coherence across these domains is achieved.

The Thai case advances several theoretical debates relevant to scholars of AI policy, technological development, and data politics in the Global South. For AI imaginaries scholarship, it demonstrates that imaginaries function not only as aspirational visions but also as legitimation devices—sustaining policy credibility even when the conditions necessary for their realization remain underdeveloped. In doing so, it extends Jasanoff and Kim's (2015) framework by showing how sociotechnical imaginaries can retain legitimacy despite persistent gaps between policy ambition and implementation capacity—a dynamic particularly consequential for middle-power nations, where state-led strategies must negotiate between global alignment and domestic capability constraints. For debates on technological sovereignty, the Thai case reframes sovereignty not as full technological independence—unattainable for most Global South nations—but as constrained negotiating capacity: the ability to adapt, selectively govern, and locally embed AI systems within an inherently interdependent global technological infrastructure. Finally, it extends diffusion scholarship by conceptualizing authority-driven diffusion as a structural condition, showing that when adoption is mandated rather than capability-built, high diffusion can generate a distinct form of technological dependency in which uptake metrics mask the absence of the foundational capacities required for meaningful AI participation.

Building on these insights, this study offers practical implications for more effective design, governance, and diffusion of AI in Thailand's mobile-first digital economy, where platform ecosystems, regulatory institutions, and sociocultural factors shape adoption outcomes. Moving from nominal access to meaningful engagement requires rethinking how technology is introduced to marginalized populations. Rather than technology-driven approaches—often marked by complexity and high upfront costs—interventions should prioritize user-centered design aligned with existing workflows, capabilities, and literacy levels. Such initiatives must demonstrate clear, observable benefits, ensuring digital tools deliver tangible value rather than remaining underutilized because of limited technical confidence. Ultimately, sustainable AI diffusion depends not only on technological advancement but also on institutional trust, localized design, and the alignment of platform incentives with inclusive and ethically grounded innovation pathways.

To resolve the misalignment between sovereign ambition and foreign infrastructure dependency, the National AI Committee (MHESI-MDES) must move beyond attracting investment toward technological reciprocity, prioritizing partnerships that trade market access for the codevelopment of domestic Internet Protocol and sovereign cloud capacity. While such a shift may reduce foreign direct investment in the short term, it would strengthen Thailand's long-term technological autonomy. At the same time, NBTC and MDES should move beyond headline coverage metrics and prioritize meaningful access, particularly among rural and elderly populations that remain only partial participants in the digital economy. This requires redirecting universal service funds toward digital literacy and capability building while sustaining algorithmic accountability through ETDA. Ultimately, these reforms entail a clear trade-off: accepting slower rates of adoption in favor of building the capabilities and digital equity necessary for sustainable and sovereign AI development.

Thailand's existing achievements suggest this is not an unattainable ambition: Domestically produced LLMs, regulatory sandboxes, and the national real-time digital payment system demonstrate that the institutional and innovative capacity for more equitable and sovereign AI development already exists, albeit unevenly mobilized. Without such shifts, Thailand's AI transformation risks remaining a performative trajectory—one that accelerates diffusion without autonomy, advances policy ambition without institutional capacity, and expands connectivity without achieving meaningful inclusion.

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