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RESEARCH ARTICLE

PROTECTING MALAYSIA'S TECHNOLOGICAL AUTONOMY: INNOVATIVE GOVERNANCE FRAMEWORKS TO COUNTER DIGITAL HEGEMONIES

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ABSTRACT

This research examines how technological imperialism manifests within Malaysia's digital ecosystem and develops contextual regulatory frameworks to strengthen national cyber self-determination. The emerging pattern of digital dominance—wherein powerful Northern technology corporations exercise control over Malaysian data resources, network infrastructure, and virtual platforms—presents multifaceted challenges to the nation's economic development, social cohesion, cultural identity, and democratic governance. Through qualitative methodologies combining conceptual examinations, practical case investigations, and comparative regulatory analysis, the research identifies several manifestations of technological dominance in Malaysia: market control by international tech enterprises, surveillance-based business models, innovation constraints, and cultural homogenization within networked environments. The existing governance structures, including the Personal Information Protection Act 2010, Communications and Multimedia Act 1998, and Competition Act 2010, demonstrate significant limitations in addressing these emerging challenges. Drawing insights from regulatory approaches implemented by India, Indonesia, and other emerging economies, this research proposes comprehensive reform pathways encompassing enhanced information protection frameworks, strategic market interventions, domestic innovation support systems, digital literacy advancement, and regional collaborative mechanisms. By implementing context-specific and forward-looking governance approaches, Malaysia can strengthen its technological self-determination while fostering an inclusive digital ecosystem that aligns with national priorities and citizen welfare.

1. INTRODUCTION

1.1. The Challenge of Technological Dependence for Emerging Economies

The phenomenon of cyber hegemony—wherein corporations from advanced economies establish control mechanisms over information assets, technical infrastructure, and digital plat-

forms—represents a growing concern for emerging economies like Malaysia. Contemporary digital studies scholars have documented this pattern extensively (Couldry & Mejias, 2020; Thatcher et al., 2016). This modern expression of power imbalance extends beyond purely technical domains, reinforcing asymmetrical relationships in economic systems, societal structures, and cultural expressions, thereby challenging national technological autonomy, developmental independence, and collective identity formation processes within non-Western states.

Malaysia's digital payment landscape illustrates this dynamic, with international solutions like Apple Pay and PayPal competing against regional alternatives such as GrabPay and ShopeePay. Despite impressive sectoral growth—15.3% expansion to MYR 44.6 billion in 2023 (GlobalData, 2024)—the substantial footprint of multinational tech corporations across Malaysia's digital infrastructure raises fundamental questions about technological self-determination and inclusive development aligned with national priorities.

1.2. Research Objectives and Methodological Approach

This investigation aims to accomplish several interconnected objectives: 1.Identify and analyze the diverse manifestations and multi-dimensional implications of technological domination within Malaysia's digital ecosystem. 2. Assess the effectiveness and limitations of Malaysia's current governance frameworks in addressing these emerging challenges. 3. Extract valuable insights from regulatory innovations implemented by other emerging economies. 4. Develop contextually appropriate governance recommendations to enhance Malaysia's technological self-determination.

The investigative framework employs qualitative approaches that integrate conceptual analysis grounded in critical perspectives on technological power relationships (Couldry & Mejias, 2020; Thatcher et al., 2016), practical examinations of dominant international technology enterprises operating in Malaysia, and comparative assessment of governance responses implemented in India (Liu, 2018) and Indonesia (Butarbutar, 2020). This integrated methodology aims to develop nuanced understanding of Malaysia's situation and inform context-sensitive policy recommendations.

2. MALAYSIA'S DIGITAL ECOSYSTEM: DEVELOPMENT PATTERNS AND STRUCTURAL CHALLENGES

2.1. Evolution of Malaysia's Digital Economy

Malaysia has undertaken significant initiatives to advance its digital ecosystem, with government authorities actively promoting technological transformation as a cornerstone of economic development. The Malaysia Digital Economy Blueprint establishes ambitious targets, including increasing the digital economy's GDP contribution to 22.6% by 2025 and generating 500,000 new positions in technology sectors by 2030 (Malaysia Digital Economy Corporation, 2021).

2.1.1. Strategic Digital Transformation Initiatives

Malaysia's digital transformation strategy manifests through practical policies across multiple sectors. The government has established specialized digital economy zones offering tax incentives and infrastructure support for technology companies, while promoting indigenous innovation through public-private partnerships (Ismail & Masud, 2020). Notably, rather than simply importing technology, Malaysia emphasizes developing self-sufficient research capabilities, a principle clearly articulated in the Malaysia Digital Economy Blueprint.

The government has established digital innovation hubs in Kuala Lumpur and Johor, providing physical spaces and technical resources for local enterprises (Said, 2022). These centers facilitate not only technological exchange but serve as incubation platforms for addressing local challenges. For instance, localized payment solutions designed for Malaysia's multilingual environment were developed within these hubs and now serve small merchants in rural communities.

Digital inclusivity remains a priority in Malaysia's strategy. Government collaborations with telecommunications providers aim to narrow the urban-rural digital divide (Tiong et al., 2022). According to recent surveys, rural internet access reached 87.3% in 2023, compared to 95.8% in urban areas—showing a smaller difference than in previous years, though persistent regional imbalances remain in investment distribution, with East Malaysian states showing significantly slower digital infrastructure development compared to Peninsular Malaysia (Ayob et al., 2022).

Additionally, Malaysia's digital transformation approach emphasizes protecting and promoting indigenous cultural values. Government-supported digital content platforms prioritize local languages and cultural expressions to counterbalance the homogenizing influences of foreign platforms (Kiat et al., 2024). This integration of cultural awareness with technological advancement demonstrates Malaysia's determination to maintain national identity throughout its digitalization journey.

2.1.2. Performance Indicators and Comparative Position

Malaysia's digital marketplace demonstrates substantial momentum, with e-commerce projected to approach MYR 80 billion by 2028, maintaining approximately 12% compound annual growth (GlobalData, 2024). The sector exhibited strong performance during 2023, expanding by approximately one-sixth to reach nearly MYR 45 billion. Government investments in technological infrastructure remain substantial, with nationwide 5G implementation targeted for completion by 2025 (Malaysian Communications and Multimedia Commission, 2021). These developments position Malaysia as an emerging digital economy leader within Southeast Asia.

When compared with regional counterparts, Malaysia's digital ecosystem shows competitive strengths. Regarding e-commerce scale, Malaysia ranks third regionally behind Indonesia and Thailand (GlobalData, 2024), representing a significant market presence of approximately MYR 45 billion in 2023. Malaysia's e-commerce growth trajectory of nearly 15% during 2023, with projected expansion of about 13% in 2024(GlobalData, 2024), demonstrates strong regional momentum. Malaysia also exhibits strong performance in connectivity infrastructure, with internet access rates and fixed connection speeds exceeding regional averages (Malaysian Communications

and Multimedia Commission, 2021; SpeedTest, 2024). Nevertheless, Singapore maintains advantages regarding advanced infrastructure deployment and connectivity quality.

2.2. Market Structure and Competitive Dynamics

2.2.1. Influence of International Technology Enterprises

Despite Malaysia's growing digital ecosystem, international technology corporations maintain significant market influence. Recent projections indicate Facebook will reach approximately 25.3 million Malaysian users during 2024 (Siddharta, 2024). while Google commands over 98.5% of search engine utilization (StatCounter, 2024). These enterprises leverage substantial resources and technological capabilities to shape local digital consumption patterns and public discourse.

2.2.2. Operational Patterns of Major Platforms

The market position of international technology enterprises in Malaysia's digital ecosystem can be illustrated through examining Facebook, Google, and Grab.

Facebook's Malaysian operations have generated considerable debate, particularly regarding information privacy and content oversight. During 2020, the platform faced criticism concerning its approach to problematic speech and misinformation, especially regarding politically and ethnically sensitive topics (Said, 2022). Despite these concerns, Facebook remains Malaysia's predominant social platform, with a user base comprising nearly three-quarters of Malaysia's population (Siddharta, 2024).

Google has confronted allegations of market power misuse in Malaysia. In 2021, the Malaysia Competition Commission (MyCC) initiated an investigation into Google's advertising practices following complaints from local enterprises that the corporation was leveraging its dominant position to disadvantage smaller competitors (Ong & Lee, 2024). The investigation's outcome could significantly impact the future structure of Malaysia's digital advertising marketplace.

Grab, a Singapore-based mobility and delivery platform, has also faced scrutiny in Malaysia regarding market concentration and effects on local enterprises. Critics have alleged predatory pricing strategies, exclusive commercial arrangements, and problematic commission structures that disadvantage local service providers (Kiat et al., 2024). The MyCC's 2021 imposition of an RM86.8 million penalty on Grab for anticompetitive practices highlights the challenges of effectively regulating digital platforms (Malaysia Competition Commission, 2021).

2.3. Implications of Technological Dependency for Malaysian Society

2.3.1. Economic, Social and Governance Dimensions

The dominant position of international technology enterprises in Malaysia's digital marketplace carries significant implications for the nation's economic trajectory, social organization, and governance systems. From an economic perspective, these corporations' market influence can constrain local innovation ecosystems and entrepreneurial development, as emerging ventures struggle to compete with the resources and reach of multinational entities (Ismail & Masud, 2020).

This potentially concentrates economic benefits and widens inequality gaps, as digital economy benefits predominantly flow to international investors and shareholders.

The social implications merit equal consideration. Research by Kiat and colleagues (2024) demonstrates how pervasive international digital platforms are reshaping cultural values among Malaysian youth, who increasingly encounter Western content and consumption ideologies. This cultural standardization threatens Malaysia's distinctive heritage and identity preservation amid globalization pressures.

From a governance perspective, international technology corporations' growing influence raises fundamental questions about Malaysia's capacity to exercise technological self-determination. As these entities gain increasing control over digital infrastructure and information flows, they potentially shape public opinion, influence policy directions, and affect democratic processes (Hairi & Safar, 2024). This has sparked concerns regarding diminished national autonomy and emerging forms of technological dependency.

2.3.2. Challenges to National Self-Determination

The threats to Malaysia's technological autonomy manifest through multiple interconnected pathways. A primary concern involves reduced control over information flows and digital infrastructure. As international corporations expand their market presence, they access extensive personal and commercial data about Malaysian citizens and businesses (Hassan, 2012).This information enables consumer profiling, targeted advertising, and behavioral influence, often without explicit consent or awareness from affected individuals (Ismail, 2011).

Additionally, dependency on international digital infrastructure—including cloud computing and data storage—creates potential vulnerabilities that could undermine Malaysia's technological resilience (Tiong et al., 2022). During geopolitical tensions or commercial disputes, external entities could potentially restrict access to essential digital services, disrupting Malaysia's economic and social functioning.

2.4. Current Governance Framework Assessment

2.4.1. Personal Information Protection Act 2010

Malaysia's primary legislation addressing information protection is the Personal Data Protection Act 2010 (PDPA). This framework establishes legal requirements governing how businesses and organizations collect, utilize, and share personal information in Malaysia. However, legal experts and civil society organizations have identified several significant limitations (Hassan, 2012; N. Ismail, 2011).

A key limitation involves the legislation's restricted scope. The Act applies exclusively to personal information processed within commercial transactions, leaving substantial information processing activities outside regulatory oversight (N. Ismail, 2011). Furthermore, the PDPA excludes government agencies and statutory bodies—among the largest information collectors in the country—from its provisions(Hassan, 2012).

The PDPA also demonstrates weak enforcement mechanisms. The legislation lacks provisions for an independent data protection authority with substantive investigative and enforcement powers(Hassan, 2012). Instead, enforcement responsibilities rest with the Personal Data Protection Commissioner, who faces resource constraints that limit effective monitoring and enforcement capacity (N. Ismail, 2011).

Furthermore, the Act predates the widespread adoption of artificial intelligence, biometric technologies, and automated decision systems, creating significant regulatory blind spots. The legislation lacks clear provisions addressing algorithmic transparency, data portability, and the right to explanation for automated decisions—increasingly important elements of modern data protection frameworks (N. Ismail, 2011).

2.4.2. Communications and Multimedia Act 1998

The Communications and Multimedia Act 1998 (CMA) establishes the regulatory framework for Malaysia's communications and multimedia industries, including provisions addressing licensing requirements, content standards, and consumer protections.

Critics have highlighted the CMA's excessively broad and ambiguous provisions, which potentially restrict expression freedoms and enable content censorship (Hairi & Safar, 2024). The Act's content regulation provisions have been employed to block websites and remove online materials deemed "offensive" or "harmful" by authorities, sometimes without procedural safeguards or judicial review(Hairi & Safar, 2024).

Moreover, the CMA inadequately addresses the challenges of regulating digital platforms and online intermediaries that increasingly dominate Malaysia's digital ecosystem (Ong & Lee, 2024). The Act's licensing and content provisions primarily target traditional telecommunications and broadcasting services, failing to address the complex business models and network effects characteristic of digital platforms.

Regulatory authorities face significant challenges in effectively monitoring and enforcing regulations across increasingly complex digital environments. Despite recent capacity building initiatives, regulators struggle to address emerging challenges such as algorithmic content amplification, automated content moderation, and cross-border service provision (N. A. Ismail & Masud, 2020).

2.4.3. Malaysia Competition Act 2010

The Malaysia Competition Act 2010 (CA) provides the legislative framework for promoting market competition and preventing anticompetitive practices. The Act prohibits anticompetitive agreements and dominant position abuses, establishing the Malaysia Competition Commission (MyCC) to enforce these provisions.

However, the CA demonstrates significant limitations in addressing digital marketplace challenges (Ong & Lee, 2024). The legislation's substantive provisions employ traditional market definition and market power concepts that inadequately capture the network effects, data-driven business models, and multi-sided characteristics of digital platforms (Ong & Lee, 2024).

The Act primarily emphasizes ex-post enforcement approaches, focusing on investigations and penalties for anticompetitive conduct after harm has occurred. This reactive approach may insufficiently address the structural challenges of digital platform markets, which potentially require ex-ante regulatory interventions to promote competition and prevent dominance abuses (Ong & Lee, 2024).

Furthermore, the CA provides limited tools for addressing data-related competition issues, including data-based exclusionary practices, leveraging of data advantages across markets, and algorithmic collusion. These gaps potentially constrain regulators' ability to address novel forms of anticompetitive behavior in data-driven markets (Ong & Lee, 2024).

In summary, while Malaysia's digital economy presents significant development opportunities, the country faces challenges stemming from international technology corporations' influence and current regulatory limitations. Addressing these challenges requires comprehensive governance reforms and initiatives to enhance domestic innovation capabilities.

3. HOW TECHNOLOGICAL IMPERIALISM MANIFESTS IN MALAYSIA

3.1. Market Control and Economic Power Imbalance

3.1.1. Concentration Practices and Market Distortions

The commanding position of international technology corporations in Malaysia's digital marketplace has fostered concentration practices and market distortions that undermine fair competition and constrain local innovation. These enterprises leverage their extensive resources, technological expertise, and network effects to establish dominant positions across key sectors including e-commerce, mobility services, and digital advertising (N. A. Ismail & Masud, 2020). Tactics including exclusive commercial arrangements and aggressive pricing strategies are deployed to eliminate local competitors, enabling foreign technology enterprises to dictate market conditions once dominance is secured (Ong & Lee, 2024).

The e-commerce sector demonstrates significant concentration dynamics. Despite having numerous active platforms, the top three international players control approximately 75% of Malaysia's e-commerce transaction volume(GlobalData, 2024). These dominant platforms increasingly function as essential infrastructure for Malaysian businesses seeking to participate in the digital economy, creating potential vulnerability to platform policies and algorithmic changes.

The digital advertising ecosystem shows similar concentration patterns. Google and Meta collectively capture over 82% of Malaysia's digital advertising expenditure, controlling critical infrastructure for online visibility and customer acquisition (Siddharta, 2024). This advertising duopoly potentially constrains local media sustainability and reduces advertising revenue available to Malaysian content creators and publishers.

3.1.2. Grab's Influence on Malaysia's Transportation Ecosystem

Grab's entry into Malaysia has transformed the traditional transportation sector, particularly affecting conventional taxi services that struggle to match the platform's pricing and convenience (Kiat et al., 2024). However, Grab's market position has raised concerns regarding impacts on

local drivers and small enterprises. The company has faced allegations regarding predatory pricing strategies, exclusive arrangements, and problematic commission structures that disadvantage local service providers(Ayob et al., 2022; Kiat et al., 2024). The MyCC's substantial RM86.8 million penalty imposed on Grab for anti-competitive practices highlights the challenges of effectively regulating digital platforms and protecting local interests (Malaysia Competition Commission, 2021).

3.2. Commercial Surveillance and Data Extractivism

3.2.1. Malaysian User Data Exploitation Patterns

Malaysia experiences data extractivism as a significant dimension of technological imperialism within its borders. Foreign digital enterprises systematically gather extensive personal information and behavioral patterns from Malaysian citizens. This collection frequently occurs with minimal explicit authorization and insufficient disclosure regarding usage intentions (Hassan, 2012). Subsequently, these corporations transform such information repositories into commercial assets through consumer profiling techniques, precision marketing mechanisms, and algorithmic influence systems—processes that predominantly advance corporate financial objectives rather than Malaysian national interests (N. Ismail, 2011). The inadequate enforcement of information protection frameworks in Malaysia facilitates this exploitation, as the Personal Data Protection Act 2010 lacks a robust, independent authority capable of holding international technology corporations accountable (Hassan, 2012).

3.2.2. Facebook's Information Gathering Practices in Malaysia

Facebook's information gathering practices in Malaysia exemplify the risks associated with international corporations' data exploitation. With a user base comprising nearly three-quarters of Malaysia's population (Siddharta, 2024). Facebook amasses extensive personal information, raising significant privacy concerns. The Cambridge Analytica controversy—where millions of users' information was improperly shared with third parties for political profiling and influence operations (Said, 2022)—underscores how data exploitation potentially undermines democratic processes and individual autonomy. The Department of Personal Data Protection's (JPDP) ongoing investigation into Facebook's information practices in Malaysia (Jabatan Perlindungan Data Peribadi, 2020) highlights the challenges of enforcing data protection requirements against influential international technology corporations.

3.3. Technological Reliance and Innovation Constraints

3.3.1. Dependency on International Platforms and Infrastructure

Malaysia's digital ecosystem demonstrates substantial reliance on international platforms and infrastructure, creating technological dependency relationships. Malaysian businesses and consumers increasingly depend on foreign platforms for e-commerce, digital payments, cloud computing, and data storage solutions (Ismail & Masud, 2020). This dependency creates vulnerabilities that potentially undermine Malaysia's technological self-determination and resilience, as critical digital functions remain under external control (Tiong et al., 2022).

Cloud infrastructure represents a particularly significant dependency domain. Despite government initiatives promoting local alternatives, international providers including Amazon Web Services, Microsoft Azure, and Google Cloud dominate Malaysia's cloud services market. These providers control critical infrastructure supporting Malaysian businesses and public services, creating potential vulnerabilities during geopolitical tensions or commercial disputes (Tiong et al., 2022).

Operating system dependency creates additional vulnerabilities. With Android and iOS collectively controlling 99.8% of Malaysia's mobile operating system market (StatCounter, 2024), Malaysian developers and users remain subject to platform governance decisions made in foreign jurisdictions. These dependencies potentially constrain Malaysia's technological autonomy and resilience, as critical digital functions remain under external control (Ismail & Masud, 2020).

3.3.2. Barriers to Indigenous Technology Development

Developing domestic technological capabilities represents a key challenge for Malaysia amid technological imperialism pressures. Despite government initiatives promoting digital innovation and entrepreneurship, such as the Malaysia Digital Economy Blueprint (Malaysia Digital Economy Corporation, 2021), the country demonstrates limitations across key metrics including research and development activities, patent registrations, and advanced technology exports (Ayob et al., 2022)

The country's research and development expenditure remains at approximately 1.04% of GDP—below the OECD average of 2.68% and regional leaders including Singapore (2.08%) and China (2.40%) (Ismail & Masud, 2020). Limited funding and support mechanisms for local technology ventures, combined with international technology corporations' market dominance, create substantial obstacles for Malaysian entrepreneurs seeking to develop and scale innovations (Ayob et al., 2022).

Additionally, Malaysia faces shortages in advanced digital competencies including programming, data analysis, and artificial intelligence—deficits that constrain the country's capacity to develop sophisticated digital solutions and compete effectively in global technology markets (Ayob et al., 2022). These skill gaps challenge Malaysia's ability to fully capitalize on digital opportunities while maintaining technological self-determination.

3.4. Cultural Identity Challenges in Networked Environments

3.4.1. Content Standardization and Algorithmic Influence

International technology platforms' dominant position within Malaysia's digital environment carries significant cultural implications, as Malaysian users increasingly encounter standardized global content that frequently diverges from local values, traditions, and identity frameworks (Kiat et al., 2024). The algorithmic systems these platforms employ for content curation and recommendation frequently favor Western cultural perspectives, marginalizing local content and viewpoints(Hairi & Safar, 2024).

Linguistic barriers represent a significant dimension of this dynamic. Research demonstrates how recommendation algorithms on major platforms systematically privilege English-language

content over material in Bahasa Malaysia, Tamil, and Chinese languages (Kiat et al., 2024). Analysis of YouTube recommendations found that English-language videos received significantly more algorithmic promotion than comparable Bahasa Malaysia content, even when accounting for audience size and engagement metrics. This algorithmic bias potentially accelerates linguistic homogenization and undermines Malaysia's multilingual heritage.

These algorithmic biases potentially amplify misinformation and divisive communications, exacerbating social tensions within Malaysia's diverse society(Hairi & Safar, 2024). The erosion of cultural self-determination in digital environments threatens Malaysia's capacity to maintain its distinctive cultural heritage and promote social cohesion amid globalization pressures (Kiat et al., 2024).

3.4.2. Google's Influence on Information Access Patterns

Google's dominant position as Malaysia's primary search provider, commanding approximately 98.5% market share (StatCounter, 2024), grants it substantial influence over how Malaysians access and consume online information. However, Google's search algorithms have faced criticism regarding potential bias and transparency limitations, as they frequently prioritize Western media sources over local content, particularly within developing regions (Hairi & Safar, 2024).

This algorithmic bias potentially creates distorted perspectives and limits exposure to diverse local voices and knowledge sources(Hairi & Safar, 2024). Furthermore, Google's advertising-based business model potentially incentivizes sensationalized and polarizing content, potentially accelerating misinformation spread and ideological polarization (Hairi & Safar, 2024). The Malaysian Communications and Multimedia Commission's warning to Google regarding inadequate removal of false and misleading content (Malaysian Communications and Multimedia Commission, 2021) highlights the challenges of regulating powerful international technology corporations and ensuring their compliance with local standards and cultural norms.

The manifestations of technological imperialism in Malaysia thus encompass multiple dimensions, including economic exploitation, data extractivism, technological dependency, and cultural standardization. Addressing these challenges requires comprehensive approaches incorporating governance reforms and initiatives to promote indigenous innovation, skills development, and cultural diversity in digital environments.

4. COMPARATIVE GOVERNANCE APPROACHES FROM EMERGING ECONOMIES

4.1. India's Information Localization and E-commerce Governance

4.1.1. Personal Data Protection Framework and Key Provisions

India's Personal Data Protection Bill (PDPB), introduced in 2019, establishes comprehensive information protection mechanisms and regulates data processing activities across India (Liu, 2018). Key provisions include information localization requirements for sensitive personal data, substantial penalties for non-compliance, and establishment of a national data protection authority (Liu, 2018). The PDPB reflects India's determination to strengthen technological self-determination and protect citizens' information from international corporate exploitation. However, the

framework faces implementation challenges balancing information protection with data-driven innovation and international trade considerations, reflecting India's position as a developing economy with rapidly expanding digital sectors.

4.1.2. Foreign Investment Restrictions and Corporate Impacts

India has implemented foreign direct investment (FDI) restrictions within its e-commerce sector, prohibiting e-commerce platforms from selling products supplied by affiliated companies and from establishing exclusive arrangements with vendors (Liu, 2018). These restrictions aim to create equitable conditions for domestic e-commerce enterprises and prevent international technology corporations from dominating the market through predatory practices.

The FDI regulations have significantly affected operations of corporations like Amazon and Walmart-owned Flipkart, necessitating substantial restructuring of their business models and vendor relationships (Liu, 2018). While these restrictions' long-term implications for India's e-commerce environment remain evolving, they demonstrate India's commitment to prioritizing domestic interests over international investor demands.

India has also demonstrated proactive enforcement in digital markets, launching investigations into Google's Android licensing practices and Amazon's preferential treatment of affiliated sellers. The Competition Commission of India recently implemented specialized digital markets unit with enhanced expertise in platform competition and data-driven business models. This institutional innovation enhances regulatory capacity to address complex competition challenges in digital marketplaces (Liu, 2018).

4.2. Indonesia's Technological Self-Determination Initiatives

4.2.1. Electronic Systems Regulation (GR82) Framework

Indonesia's Government Regulation 82 (GR82) governing electronic systems and transactions, implemented in 2019, establishes various requirements for electronic system providers (ESPs), including international technology corporations operating within Indonesia (Butarbutar, 2020). Key provisions encompass data localization requirements, local presence mandates, content moderation obligations, and non-compliance penalties (Butarbutar, 2020). GR82 reflects Indonesia's determination to strengthen control over its digital infrastructure and information flows, ensuring international technology corporations respect domestic laws and values. However, the regulation raises concerns regarding potential digital trade barriers and innovation constraints, alongside questions about Indonesian authorities' enforcement capacity.

4.2.2. Taxation and Value Capture Approaches

Indonesia has implemented strategic tax reforms addressing digital platform activities, including introducing a digital services tax applying to foreign technology corporations generating revenue from Indonesian users. This approach ensures that value created within Indonesia's digital ecosystem contributes appropriately to public finances rather than exclusively benefiting foreign shareholders(Butarbutar, 2020).

4.2.3. Artificial Intelligence Strategy and Digital Economy Development

Indonesia launched its National Artificial Intelligence Strategy in August 2020, coordinated by the National Research and Innovation Agency (BRIN), with implementation planned through 2045(Butarbutar, 2020). The strategy prioritizes five key sectors: healthcare systems, government services, education, food security, and urban innovation. Through its AI and Cybersecurity Research Centre established in 2022, Indonesia aims to develop contextually appropriate AI applications while establishing regulatory frameworks for AI governance.

The strategy emphasizes building domestic innovation capacities across four domains: ethics and governance, infrastructure and information resources, talent development, and industrial research, reflecting Indonesia's commitment to technological self-reliance while ensuring culturally appropriate AI development (Butarbutar, 2020).

4.3. Regional Cooperation Mechanisms: ASEAN Digital Integration

ASEAN has increasingly recognized digital governance as a regional priority, developing collaborative mechanisms to address shared challenges while respecting member states' distinctive contexts. The ASEAN Digital Economy Framework Agreement, under development since 2023, establishes principles for regional digital integration while protecting member states' regulatory sovereignty (Butarbutar, 2020). The framework addresses cross-border data flows, digital trade facilitation, and platform governance through collaborative approaches that balance integration benefits with national policy autonomy.

The ASEAN Digital Data Governance Framework addresses personal data protection, cross-border data transfers, and digital identities through regionally coordinated approaches. The framework establishes minimum standards while allowing member states to implement additional protections reflecting their specific contexts (Liu, 2018).

The ASEAN Coordinating Committee on Electronic Commerce facilitates regional cooperation on digital platform governance, addressing issues including competition policy, consumer protection, and SME participation in digital marketplaces. This collaborative mechanism enables member states to share experiences, develop coordinated approaches, and address cross-border challenges that exceed national regulatory capacities (Butarbutar, 2020).

5. GOVERNANCE INNOVATION RECOMMENDATIONS FOR MALAYSIA

5.1. Enhancing Information Protection Frameworks

5.1.1. Personal Data Protection Act Modernization

Strengthening information protection frameworks, particularly the Personal Data Protection Act (PDPA) 2010, represents a critical priority for enhancing Malaysia's technological self-determination. The PDPA should be expanded to encompass broader categories of personal information and processing activities, including those conducted by public institutions and non-commercial entities (Hassan, 2012).

Individual rights regarding information access, correction, deletion, and processing objections should be significantly strengthened (Ismail, 2011). Additionally, stricter data security and breach notification requirements should be implemented, including mandatory reporting of information security incidents to authorities and affected individuals (Hassan, 2012).

The PDPA's scope should incorporate contemporary data governance challenges. New provisions addressing artificial intelligence, biometric technologies, and automated decision systems would help close significant regulatory gaps. Rights particularly relevant to algorithmic environments—including data portability, algorithmic transparency, and the right to explanation for automated decisions—should be incorporated to address emerging governance challenges (Ismail, 2011).

Establishing an independent, well-resourced data protection authority with robust enforcement powers—including investigative authority, financial penalties, and compliance orders—remains essential for effective PDPA implementation (Ismail, 2011).

5.1.2. Strategic Data Localization Implementation

Introducing targeted data localization requirements mandating that certain information categories—particularly those relating to critical infrastructure and sensitive sectors—be stored and processed within Malaysian territory could help ensure Malaysian citizens' information remains under national jurisdiction while promoting domestic data infrastructure development (Liu, 2018). However, such requirements demand careful design and implementation to avoid deterring international investment and innovation or increasing operational costs for local enterprises (Ayob et al., 2022).

Key implementation considerations include identifying information categories and sectors subject to localization requirements based on risk assessment of their criticality and sensitivity, establishing clear and predictable localization guidelines, ensuring consistency with Malaysia's international trade obligations and regional data governance frameworks, and fostering domestic data infrastructure development to support localization implementation (Liu, 2018; Tiong et al., 2022).

5.2. Addressing Digital Marketplace Concentration

Updating the Competition Act 2010 is essential for effectively addressing market concentration and anticompetitive practices in digital marketplaces, particularly regarding digital platforms and e-commerce. The Act should be amended to clarify market definition and market power concepts within digital platform contexts, considering factors such as network effects, data advantages, and multi-homing patterns (Ong & Lee, 2024).

New theories of harm and anticompetitive practices specific to digital platforms—including self-preferencing behaviors, data-based exclusionary conduct, and strategic acquisitions—should be incorporated (Ong & Lee, 2024). The Malaysia Competition Commission's investigative and enforcement capabilities should be enhanced, including market studies, interim measures, and structural remedies (Ong & Lee, 2024).

The Act should provide more robust tools for addressing data-related competition issues, including data-based exclusionary practices, leveraging of data advantages across markets, and algorithmic collusion. These updates would strengthen regulators' ability to address novel forms of anticompetitive behavior in data-driven markets (Ong & Lee, 2024).

Promoting international coordination in competition law enforcement against digital platforms, given their global reach and cross-border impacts, remains crucial (Ong & Lee, 2024).

5.3. Fostering Indigenous Innovation Ecosystems

5.3.1. Malaysian Technology Venture Support Programs

Promoting indigenous innovation and entrepreneurship through comprehensive support programs for Malaysian technology ventures is essential for developing a dynamic and competitive domestic technology ecosystem (Ayob et al., 2022). Key recommendations include establishing tax incentives and grants for research, development, and commercialization activities conducted by local technology ventures; providing access to affordable digital infrastructure and services including high-speed connectivity, cloud computing, and data analytics platforms; developing incubation and acceleration programs for local technology ventures in partnership with educational institutions, research centers, and industry associations; and promoting entrepreneurship education and skill development in areas such as digital marketing, business modeling, and intellectual property protection (Ayob et al., 2022).

5.3.2. Strategic Investment Funds for Critical Technologies

Establishing strategic investment funds targeting critical digital economy sectors, particularly those essential for national security and development, could provide long-term capital for local technology ventures and infrastructure projects while attracting international investment and expertise (Said, 2022). Key implementation considerations include defining fund objectives and investment criteria based on national priorities; ensuring governance transparency and accountability through independent oversight and public reporting; leveraging investments to promote technology transfer and capacity building through partnerships with international investors; and aligning investment strategies with Malaysia's international trade obligations and sustainable development frameworks (Said, 2022).

5.4. Advancing Digital Literacy and Public Awareness

5.4.1. Digital Rights Education Integration

Integrating digital rights education within educational curricula represents a critical initiative for advancing digital literacy and public awareness, particularly among young Malaysians who represent the most active and vulnerable digital technology users(Hairi & Safar, 2024). Key educational topics include privacy and data protection, including the risks and benefits of sharing personal information online; digital security practices, including preventing and reporting cyberbullying, online harassment, and digital abuse; media literacy skills, including critically evaluating online content and information sources; and digital citizenship principles, including responsible technology use and respecting others' rights online (Hairi & Safar, 2024).

Educational initiatives should be structured to address the specific needs of different age groups and demographic populations, recognizing varying digital access patterns and vulnerability factors. Teacher training programs should be developed to ensure educators possess the necessary knowledge and skills to effectively deliver digital rights education. Partnerships with civil society organizations and technology corporations could provide additional resources and expertise for educational program development and implementation.

5.4.2. Public Information Campaigns on Digital Rights

Campaigns should utilize diverse communication channels including traditional media, digital platforms, community outreach events, and public spaces to ensure comprehensive reach across demographic groups. Materials should be developed in multiple languages reflecting Malaysia's linguistic diversity, ensuring accessibility for different community segments. Incorporating local cultural references and contexts within campaign materials would enhance relevance and effectiveness across Malaysia's multicultural society.

5.5. Regional Collaborative Mechanisms

5.5.1. ASEAN Cooperation Enhancement

Strengthening Malaysia's participation in regional digital governance initiatives through ASEAN would enhance regulatory effectiveness while promoting regional digital integration. The ASEAN Digital Economy Framework Agreement provides opportunities for coordinated approaches to cross-border data flows, digital services regulation, and platform governance, potentially strengthening Malaysia's position when engaging with transnational technology corporations (Butarbutar, 2020).

Malaysia should actively contribute to the development of the ASEAN Data Protection Framework, promoting strong regional standards for personal information protection while enabling responsible cross-border data sharing. This regional coordination could enhance Malaysia's data protection effectiveness while facilitating regional digital integration.

5.5.2. Multilateral Engagement Strategies

Beyond ASEAN, Malaysia should engage strategically with broader multilateral governance initiatives addressing digital technologies. The UN Secretary-General's Roadmap for Digital Cooperation provides a framework for global digital governance that potentially strengthens developing nations' positions within international digital policy discussions (Ismail & Masud, 2020).

Malaysia could also participate actively in specialized multilateral forums addressing artificial intelligence governance, cybersecurity cooperation, and digital taxation, ensuring emerging international frameworks appropriately consider developing economies' perspectives and needs. This multi-layered engagement strategy could enhance Malaysia's technological self-determination while promoting constructive international cooperation.

6. CONCLUSION

This research has examined technological imperialism in Malaysia, analyzing its manifestations and impacts while proposing concrete governance innovations to strengthen the country's technological self-determination. The analysis demonstrates that technological imperialism presents significant challenges to Malaysia's economic development, social cohesion, and democratic governance, particularly through international technology corporations' control over digital infrastructure, information resources, and marketplaces (N. Ismail, 2011; N. A. Ismail & Masud, 2020; Kiat et al., 2024).

The research emphasizes that Malaysia requires comprehensive and forward-looking governance frameworks to effectively manage its digital ecosystem and society. These frameworks must adopt balanced approaches considering Malaysia's specific circumstances, values, and aspirations while respecting international obligations and partnerships. The proposed reform strategy encompasses several interconnected priorities: strengthening information protection frameworks, implementing regulations addressing market concentration, fostering indigenous innovation ecosystems, enhancing digital literacy programs, and developing strategic regional partnerships to address technological imperialism collectively.

Through this multidimensional approach, Malaysia can work toward establishing meaningful technological self-determination while fostering an inclusive and equitable digital ecosystem that advances national interests and protects citizens' rights in the digital age. As the country navigates complex policy choices, developing governance frameworks with distinctive Malaysian characteristics—reflecting the nation's multicultural heritage, development aspirations, and unique position within Southeast Asia's regional context—remains essential for sustainable digital sovereignty.

This pathway toward digital sovereignty with Malaysian characteristics offers potential lessons for other emerging economies navigating similar challenges, contributing to broader debates regarding technological self-determination and inclusive development in an increasingly platform-dominated global economy.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

COOPERATION STATEMENT

ZHAO HONGQIANG: Conceptualization, Writing - Original Draft.

ZHANG ZIYING: Data Analysis, Writing - Review & Editing.

CUI XIAOTIAN: Methodology, Final Approval.

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