

Comparative Analysis of AI Regulatory Frameworks in Malaysia and Singapore

Lu Yan^{1*} , Tie Fatt Hee² 

¹Faculty of Law, Universiti Malaya, 50603 Kuala Lumpur, Malaysia.
Email: luyan.sara@hotmail.com

²Faculty of Law, Universiti Malaya, 50603 Kuala Lumpur, Malaysia.
Email: tiefh@um.edu.my

CORRESPONDING

AUTHOR (*):

Lu Yan
(luyan.sara@hotmail.com)

KEYWORDS:

Artificial intelligence
Regulatory Frameworks
AI Ethics
Southeast Asia

CITATION:

Lu, Y., & Tie, F. H. (2025). Comparative Analysis of AI Regulatory Frameworks in Malaysia and Singapore. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 10(8), e003489. <https://doi.org/10.47405/mjssh.v10i8.3489>

ABSTRACT

The rapid growth of artificial intelligence (AI) technologies has led to diverse regulatory responses globally, especially in Southeast Asian nations, where both Singapore and Malaysia are key players in shaping AI governance. The present comparison examines the legal structures of two countries, emphasising the distinct methods they have taken to address the opportunities and challenges presented by AI. Singapore is recognized for its forward-thinking regulatory approach, focusing on fostering AI innovation while ensuring ethical standards, data privacy protection, and societal well-being. In contrast, Malaysia has adopted a more measured strategy, aiming to create a comprehensive national plan that integrates AI across various sectors while addressing the ethical and security concerns associated with its deployment. By employing doctrinal analysis and reviewing both primary documents and relevant literature, this research evaluates how effectively each regulatory approach supports AI deployment and manages challenges. The results indicate that Singapore has developed a relatively mature AI governance framework characterized by clear ethical guidelines, strong institutional coordination, and industry-driven compliance tools, Malaysia's approach remains at an earlier stage, marked by policy-driven initiatives and a need for clearer legal mandates and implementation mechanisms. Finally, this analysis improves understanding of how domestic regulatory frameworks influence the direction of AI growth in Southeast Asia, providing valuable insight for decision-makers and critical actors.

Contribution/Originality: This study contributes to AI regulation literature by comparing governance approaches in Malaysia and Singapore. Using doctrinal analysis, it evaluates legal effectiveness and shows how institutional structures and policy priorities shape distinct regulatory models in these two Southeast Asian jurisdictions.

1. Introduction

The fast growth of artificial intelligence (AI) has revolutionised industries and economies globally, providing both opportunities and constraints, particularly in the Southeast Asian region. Machine learning, natural language processing, and predictive analytics are some of the technologies that allow machines to imitate the intellect of humans (Zhang et al., 2021). As AI evolves, the need for effective governance systems has grown significantly. This study analyzes and compares the regulatory models governing AI in the contexts of Malaysia and Singapore, two countries that have taken different approaches in managing the ethical, legal, and social issues of AI innovation and application. Singapore has been at the forefront of AI regulation with emphasis on policies driven by innovation with firm controls over data privacy and ethical AI standards. Malaysia, on the other hand, has gone ahead with a more conservative strategy, integrating AI into national development plans as well as counteracting security risks and ethical concerns. This two countries' regulatory frameworks are shaped by their economic goals, governance approaches, and policy priorities, influencing the application of AI throughout multiple industry sectors. It is crucial for stakeholders, including policymakers, businesses, and researchers, to familiarize themselves with these frameworks because they explore the fast-changing AI field within the area.

Malaysia's approach to AI regulation is guided by national policies aimed at fostering innovation while ensuring ethical governance and data security. The *Malaysia National AI Roadmap (2021-2025)* and the *Malaysia Digital Economy Blueprint (MyDIGITAL)* outline the nation's strategy in developing AI, emphasizing responsible AI adoption across industries. The Malaysia's government has prioritized AI integration in key sectors, for example, banking, medical care, and industrial, although addressing concerns about privacy of data and transparency of algorithms. To support AI governance, Malaysia has launched measures to educate companies and policymakers on ethical AI practices, reflecting a commitment to balancing technological advancement with societal well-being. However, challenges remain, particularly in bridging regulatory gaps, ensuring interoperability with global AI governance frameworks, and strengthening enforcement mechanisms to mitigate risks associated with bias, security vulnerabilities, and misuse of AI technologies.

Singapore has emerged as a pioneering leader in AI regulation, establishing a balanced approach that harmonizes technological advancement with ethical considerations and public welfare. The Model AI Governance Framework, developed by the Infocomm Media Development Authority (IMDA) and the Personal Data Protection Commission (PDPC), provides guidance for the accountable application of AI, promoting transparency, fairness, and responsibility in machine-learning decision-making systems. (Allen et al., 2025). This forward-thinking approach has established Singapore as a regional centre for AI research and adoption, drawing international tech companies and start-ups seeking a well-regulated environment for AI-driven innovation. The Singapore government actively collaborates with industry stakeholders to refine AI policies, ensuring that they adhere to global standards while resolving issues such as discrimination, confidentiality of data, and cybersecurity. Through the creation of a dynamic yet controlled AI ecosystem, Singapore is able to foster economic growth while maintaining public trust in the responsible use of AI.

The comparison of Malaysia and Singapore finds significant disparities in their AI governance style, shaped by their own economic priorities, principles of regulation, and policy paradigms. Singapore's AI governance style is widely regarded as the best practice norm, centred on policy-driven innovation, good ethical practices, and data protection, while Malaysia has taken a more tentative approach to integrating AI into national development planning and countering security risks and ethics concerns. How effectively these regulatory schemes work in fostering AI adoption and regulating risks connected to it will be instrumental in shaping Southeast Asia's AI ecosystem. As the frontiers of AI technologies are still advancing, sustained debate and exchange between policymakers, industry participants, and scholars will be important in rendering governance systems effective, adaptable, and accommodating of best practices globally (Sistla, 2024).

1.1. Research Objectives

This study conducts a comparative analysis of Singapore's and Malaysia's AI governance frameworks from the perspective of regional AI governance, with the aim of identifying institutional advantages and regulatory gaps that may inform the development of coherent, interoperable, and value-based governance models across ASEAN. By examining how both countries balance innovation, ethical safeguards, and regulatory clarity, the research seeks to contribute to the broader objective of fostering regional alignment and collective capacity-building in governing emerging technologies.

2. Literature Review

The comparative examination of Singaporean and Malaysian AI governance regimes is indicative of a regulatory space guided by different national priorities and policy preferences. Singapore has adopted a pro-innovation, industry-led model of governance, characterized by voluntary norms, sectoral rules, and government-private sector stakeholder engagement (Allen et al., 2025). As much as this model establishes a business-friendly environment and attracts AI investment, researchers have accused it of lacking any legally binding AI regulations, which can limit the enforcement mechanisms and public accountability (Pande & Taeihagh, 2023). The AI Verify programme, launched in 2023, is an effort to create standard AI testing and auditing tools, but its voluntary nature raises questions about whether industry self-regulation can go far enough in mitigating AI-associated risks (Lim & Chng, 2024). Singapore's sectoral regulatory model, exemplified by the application of the Singapore's *Personal Data Protection Act (PDPA) 2012* to AI-related data use, has faced criticism for its limited attention to AI-specific ethical challenges such as algorithmic bias, automated decision-making, and transparency (Allen et al., 2025). While Singapore's AI governance framework is often cited as a regional model, its reliance on soft law measures and industry-driven governance underscores the ongoing debate about whether a more codified regulatory regime is needed to ensure long-term AI accountability and public trust.

Malaysia's AI governance approach is in its early stages, relying on national strategies and sectoral policies rather than a specialized legal framework (Hossain et al., 2024). While initiatives like the *National AI Roadmap (2021-2025)* and the MyDIGITAL promote AI adoption, scholars highlight regulatory gaps in enforcement and accountability (Yusof et al., 2023). The proposed AI law, which introduces the "Seven Responsible AI Principles", aims to align governance with national values, yet concerns remain over its

legal enforceability and practical implementation (Hossain et al., 2024). Additionally, Malaysia's dependence on existing laws, such as the *Malaysia Personal Data Protection Act (PDPA) 2010*, fails to comprehensively address AI-specific issues, including bias, algorithmic transparency, and liability (Yusof et al., 2023). Besides, a recent study explores the impact of AI on work ethics within Malaysian regulatory bodies, emphasizing the need for ethical governance and transparency in AI deployment (Bin Ismail & Mei Ling, 2024). However, while the research effectively highlights challenges such as confidentiality of data, bias in algorithms, and dynamics at work, it lacks a clear policy analysis on how existing Malaysian regulations, such as the Malaysia's *PDPA (2010)*, address these ethical concerns. While Malaysia's evolving framework reflects a commitment to responsible AI, its soft-law approach raises questions about whether a more structured regulatory framework is needed to ensure AI accountability and public trust.

Despite the differences in AI governance approaches between Singapore and Malaysia, common themes emerge in their strategies. Both countries recognise AI's potential for promoting industrial innovation and economic growth, but they also raise worries regarding ethical use, data privacy, and public confidence. Scholars increasingly advocate for regulatory frameworks that strike a balance between fostering technological innovation and protecting user interests, with particular attention to the role of regional collaboration in shaping effective AI governance.

Effective governance of AI requires collaborative efforts across borders and greater alignment of regulatory standards among nations, especially in the fast-changing technological environment of Southeast Asia. Existing literature indicates that a collaborative effort between Malaysia and Singapore could strengthen the effectiveness of AI governance and foster the creation of regionally consistent regulatory standards. (Hossain et al., 2024). Singapore's pro-innovation, industry-led AI governance model serves as a benchmark, while Malaysia's developing legal framework, influenced by national values and ethical principles, highlights the need for context-specific regulatory solutions (Yusof et al., 2023). The *ASEAN Guide on AI Governance and Ethics*, modelled in part on Singapore's AI principles, demonstrates the potential for regional cooperation in AI policy, facilitating the exchange of best practices and regulatory experiences (Allen et al., 2025). Considering the worldwide scale of AI adoption, legislative differences between jurisdictions could provide challenges in cross-border data flows, AI ethics enforcement, and liability frameworks, underscoring the necessity of greater ASEAN-led policy coordination.

The evolving dynamics of AI governance in Southeast Asia raise similar questions regarding the impact of technological advancements on legal frameworks. The integration of AI-driven regulatory tools, such as automated compliance monitoring and risk assessment systems, presents opportunities for enhancing transparency, accountability, and ethical oversight in AI applications (Hossain et al., 2024). As highlighted in the literature, Singapore's AI Verify initiative exemplifies how AI-based verification frameworks can facilitate self-regulation and ethical AI deployment, reducing risks associated with bias, privacy violations, and opaque decision-making processes (Allen et al., 2025). However, Malaysia's regulatory approach, which is still evolving, underscores the challenges of implementing AI governance without a dedicated legal framework, raising concerns about enforcement gaps and ethical risks (Yusof et al., 2023). The evolving nature of AI technologies underscores the urgency for

regulatory bodies in both nations to proactively adapt to emerging developments, adapting governance models to leverage AI's potential while mitigating associated risks.

3. Methods

This study utilizes wide-ranging qualitative legal research through the method of doctrinal analysis, which is the most suitable for the analysis of Malaysia and Singapore's AI governing structures. Doctrinal analysis is an acknowledged method of legal research that involves two major processes: identifying correct sources of law and interpreting and analyzing such material (Byrne & Olsen, 2024). This approach allows for a critical review of legal provisions, regulatory policies, and AI governance norms, particularly against the context of Singapore's AI Verify program and Malaysia's evolving AI legal system. Given that Malaysia lacks a specific law on AI, unlike Singapore's industry-led, soft-law model, doctrinal analysis provides an organized means of critically examining these models of regulation and their effects on AI ethics, accountability, and enforcement (Allen et al., 2025). In its qualitative form, quantitative data analysis or numerical judgments are not part of the process. The methodology rather interprets the nuances of meaning embedded in legal texts and policy rules, and thus is most appropriate for the present research undertaking. The absence of quantitative data adds strength to the emphasis of this study on contextual and legal interpretative processes rather than on the measurement of reality.

To achieve its research aims, this study utilizes a combination of primary data and secondary literature. The principal source materials for this analysis are key statutory instruments and official regulatory documents, and national AI strategies that directly govern AI governance in Malaysia and Singapore. In particular, this research will focus on the key legal and policy texts indicated below: the *Malaysia National AI Roadmap (2021-2025)*, the *MyDIGITAL*, the *Malaysia's PDPA (2010)*, and *Singapore's Model AI Governance Framework* (Yusof et al., 2023). The fundamental legal and policy background required to comprehend the AI regulatory environment in these jurisdictions is provided by these documents. Alongside primary materials, this study will engage with secondary literature to deepen the analysis and substantiate its claims. The study will reference academic publications, legal periodicals, and official government documents as part of its secondary materials, and AI policy research papers that provide insights into the interpretation and application of AI governance frameworks (Allen et al., 2025). This combined method ensures that research is well-guided by legislation law as well as academic argument, enabling comprehensive analysis of Malaysia and Singapore AI regulation.

Besides, this study seeks to enhance current knowledge of AI regulation by examining and comparing the legal frameworks adopted in Malaysia and Singapore. While Singapore adopts a pro-innovation, industry-led model with voluntary compliance frameworks, Malaysia is still developing its AI regulatory landscape, incorporating national values and ethical considerations into its governance model (Yusof et al., 2023). The results of this study aim to benefit legal academics and AI professionals, while also offering practical insights for policymakers addressing the regulatory challenges posed by accelerating technological change and the push for harmonized legal approaches in Southeast Asia (Allen et al., 2025).

4. Results

4.1. Characteristics of Artificial Intelligence

The AI is a collection of technologies based on computers that allow machines to carry out functions that normally require human thinking (Thakur et al., 2023). These include understanding language, recognizing patterns, learning from data, and making decisions (Organisation for Economic Co-operation and Development, 2024). AI has the capacity to learn from fresh data and gradually enhance its performance. Because of this, AI has been widely used in many fields, including medical diagnosis, financial services, public services, and national defence (World Economic Forum, 2021). As AI systems become more involved in everyday decisions, issues related to responsibility, fairness, and data protection have become more important. These challenges show that AI is not only a technical matter, but also one that requires clear legal rules and ethical guidelines (Floridi et al., 2018).

Specifically, AI exhibits four main characteristics that distinguish it from earlier digital technologies and give rise to new governance concerns. The first is autonomy, referring to the ability of AI systems to operate and make decisions without constant human input, which challenges existing frameworks of accountability (Kulaklıoğlu, 2024). The second is adaptive learning, meaning that many AI systems can improve their performance over time by identifying patterns in large datasets, rather than relying solely on fixed instructions (Lhafra & Abdoun, 2023). The third is wide applicability, as AI technologies are increasingly used in diverse sectors such as health, finance, education, and public administration, thus amplifying their social and economic influence (Robles & Mallinson, 2025). The fourth is limited transparency, since the decision-making processes of many AI systems, especially those based on complex algorithms, are difficult to interpret, even by developers or regulators (Larsson et al., 2023). This lack of clarity creates barriers to oversight and public trust. Therefore, these features explain why the development and use of AI must be accompanied by carefully designed governance mechanisms that address technical risks, legal uncertainty, and ethical concerns.

4.2. Comparative Analysis of AI Regulatory Frameworks

As Southeast Asian states respond to the growing significance of AI, Malaysia and Singapore have emerged as notable case studies with distinct governance approaches. To understand the structural differences between the two, this analysis focuses on four interrelated dimensions: legal foundation, policy instruments, governance model, and implementation capacity. These dimensions help to explain how each country balances the promotion of innovation with the need for accountability and public trust. While both countries recognize AI as a national priority, their institutional responses reflect different regulatory philosophies and capacities, shaped by legal infrastructure, strategic orientation, and administrative readiness.

Malaysia's approach to AI governance is primarily policy-driven and lacks binding legal instruments. The government has introduced key strategic documents, such as the *National Artificial Intelligence Roadmap 2021-2025* and the *MyDIGITAL Blueprint*, which outline Malaysia's vision for AI deployment in sectors like healthcare, agriculture, and public services (Economic Planning Unit, 2021). However, these tools function as non-binding policy frameworks rather than enforceable regulations. There is currently no

dedicated AI law, and AI-related risks are addressed indirectly through general data protection guidelines, such as the Malaysia's *PDPA (2010)*, which remains limited in scope and enforcement. In terms of governance model, Malaysia emphasizes cross-ministerial collaboration and public-private partnerships but lacks an independent regulatory authority for AI. Implementation capacity is also constrained by limited technical infrastructure and regulatory expertise, making the transition from planning to execution uneven. In summary, Malaysia's governance model is facilitative and vision-oriented but remains at an early stage in terms of legal institutionalization.

Singapore presents a more developed and institutionally integrated model of AI governance. Its legal foundation includes the Singapore's *PDPA (2012)*, which provides enforceable data use rules applicable to AI systems. Additionally, the *Model AI Governance Framework*, first issued in 2019 and updated in 2020, offers detailed principles for trustworthy AI, including transparency, fairness, and human oversight ([Infocomm Media Development Authority \[IMDA\] & Personal Data Protection Commission \[PDPC\], 2020](#)). To move from principle to practice, Singapore has introduced AI Verify, a technical testing and assessment framework that allows companies to demonstrate compliance with responsible AI standards ([Allen et al., 2025](#)). This reflects a government-led approach that promotes innovation in partnership with industry actors, while gradually incorporating accountability measures into corporate conduct and regulatory frameworks. In terms of implementation, Singapore benefits from strong institutional coordination and dedicated agencies such as the Smart Nation and Digital Government Office, which oversee cross-sectoral digital governance. Compared to Malaysia, Singapore's AI governance is more enforceable, operational, and aligned with international standards.

4.3. Legal and Policy Gaps in AI Regulation

As AI becomes more deeply integrated into public policy, commerce, and daily life, the governance responses of individual states are increasingly shaped by their legal systems, institutional structures, and political priorities. In Southeast Asia, Malaysia and Singapore present two distinct yet comparable models of AI governance. To examine their key differences and regulatory gaps, this analysis focuses on two structural dimensions: (1) enforceability, which concerns the extent to which AI-related principles and policies are supported by binding legal instruments and effective oversight mechanisms; and (2) regulatory scope, which examines whether AI governance is pursued through comprehensive legislative reform or through sector-specific adaptations within existing laws. These two dimensions shed light on how each country balances innovation goals with legal accountability in the age of algorithmic decision-making.

A shared challenge in both Malaysia and Singapore is the limited enforceability of AI-specific governance. Although both countries have developed policy frameworks and ethical principles to guide AI development, these instruments largely fall under the category of soft law, lacking binding legal force. In Malaysia, the *National AI Roadmap* and *MyDIGITAL Blueprint* emphasize responsible AI but do not provide clear enforcement tools or regulatory authority ([Economic Planning Unit, 2021](#)). The *Singapore's Model AI Governance Framework* offers more detailed guidance, but it too operates on a voluntary basis ([IMDA & PDPC, 2020](#)). In actual implementation, the use of non-binding frameworks in both Malaysia and Singapore means that when AI systems cause harm, especially in cases involving unclear or automated decision-making, there

are few effective legal mechanisms to hold developers or users accountable. While Singapore compensates for this with stronger data protection enforcement under the Singapore's *PDPA (2012)*, its AI-specific norms remain largely advisory. Malaysia, by contrast, lacks both enforceable AI rules and a robust data protection regime, leaving significant governance gaps in areas such as algorithmic discrimination, transparency, and remedy.

A further divergence lies in how the two countries structure AI governance within their broader legal systems. Singapore's AI governance combines non-binding frameworks, like the *Model AI Governance Framework*, with existing sectoral laws such as the Singapore's *PDPA (2012)*, to regulate AI-related data processing and privacy risks. The government has also issued targeted guidelines for sectors like finance and healthcare, thus building a layered regulatory environment that supports responsible AI without the need for a single AI statute (IMDA & PDPC, 2020). This model promotes flexibility and consistency with industry needs, while leveraging existing enforcement mechanisms. In contrast, Malaysia's approach remains fragmented and underdeveloped, with AI governance scattered across various digital economy strategies and lacking legal consolidation. The absence of a unifying regulatory framework weakens coordination among agencies and limits oversight of emerging risks, especially in high-impact sectors such as automated public services or algorithmic credit scoring. Without integrating AI governance into enforceable legal structures, Malaysia risks falling behind in ensuring that AI technologies are used responsibly and equitably.

4.4. Ethical and Societal Implications of AI Governance

Effective regulation of AI depends not only on long-term planning but also on how well countries address important concerns such as transparency, data protection, and public confidence. First, while both Malaysia and Singapore have incorporated ethical principles into their AI frameworks, algorithmic transparency and accountability remain limited in practice. Malaysia's National AI Roadmap emphasizes values such as inclusiveness and fairness but does not clearly explain how to make decision-making systems more understandable or how to deal with possible bias (Malaysia Digital Economy Corporation, 2021). The *Singapore's Model AI Governance Framework* encourages openness and human oversight, but leaves most decisions about how to apply these principles to private companies (IMDA & PDPC, 2020).

Second, data privacy and information security are not equally protected in the two countries. The Malaysia's *PDPA (2010)*, originally introduced in 2010, has undergone proposed amendments in 2024 aimed at strengthening enforcement powers, introducing data breach notification requirements, and expanding the scope of applicability (Sugiantari et al., 2025). However, the revised law still does not fully cover public sector data processing, and practical enforcement challenges remain. Singapore, on the other hand, has introduced a system called AI Verify, which allows organizations to check whether their automated systems meet certain ethical and technical standards. Although the use of this tool is voluntary, it has already been adopted in practice and supports businesses in strengthening their risk management and compliance with recommended standards (IMDA & PDPC, 2020).

Third, public trust has become a critical factor in the acceptance of automated systems, particularly in areas such as public administration and financial services. In both Malaysia and Singapore, the degree of public confidence in such technologies is closely

ties to the presence of clear rules and effective enforcement. Research indicates that when automated decision-making is subject to transparent oversight and supported by legal accountability, public trust increases accordingly ([Southeast Asia Public Policy Institute, 2024](#)). Conversely, a lack of legal safeguards or unclear responsibilities often leads to public hesitation, especially where AI is used in high-risk scenarios such as social welfare, law enforcement, or banking ([United Nations Educational, Scientific and Cultural Organization, 2022](#)). These findings suggest that beyond technical reliability, the long-term success of AI implementation depends on governance systems that provide clarity, ensure fairness, and offer meaningful redress mechanisms.

4.5. Regional and Global Implications for AI Regulation

As AI becomes more deeply embedded in public and private systems, individual countries are not only responding to regulatory challenges domestically but are also shaping broader regional and global governance discourses. In Southeast Asia, Singapore and Malaysia have emerged as influential case studies, not because of their market size, but due to their policy initiatives, normative contributions, and engagement with multilateral platforms. Given the absence of binding regional instruments or global treaties on AI, national regulatory models often serve as prototypes, signalling normative preferences and offering practical tools for cross-border policy reference ([Organisation for Economic Co-operation and Development, 2022](#); [United Nations Educational, Scientific and Cultural Organization, 2022](#)). The regulatory approaches adopted by countries like Singapore and Malaysia are especially influential in regional and international initiatives such as the *ASEAN Guide on AI Governance and Ethics* and the *Global Partnership on AI (GPAI)*, where national practices contribute to the development of non-binding principles and encourage technical cooperation on responsible AI ([Association of Southeast Asian Nations, 2024](#); [Chinen, 2023](#)).

Singapore's AI governance model, built on the *Model AI Governance Framework*, AI Verify, and powerful data protection laws, has attracted international attention as a balanced and exportable approach to trustworthy AI. Though non-binding, the Model Framework has been cited by the OECD, World Economic Forum, and GPAI as a practical example of industry-government collaboration on ethical AI ([IMDA & PDPC, 2020](#); [World Economic Forum, 2021](#)). Singapore has also played a leading role in drafting the *ASEAN Guide on AI Governance and Ethics*, embedding its governance values, such as human oversight, explainability, and transparency, into regional consensus ([Ho, 2024](#)). Through such initiatives, Singapore's model exerts normative influence by promoting standards that are technically actionable yet economically feasible for developing economies. Furthermore, its participation in global forums positions Singapore as a norm entrepreneur capable of bridging Global North regulatory ideals and Southeast Asian development realities.

While Malaysia's AI governance is less institutionalized, its policy-driven and developmental approach contributes to the global discussion on how emerging economies can manage AI risks while promoting innovation. Through the *National AI Roadmap* and *MyDIGITAL Blueprint*, Malaysia frames AI as a tool for inclusive growth, capacity building, and regional digital equity ([Economic Planning Unit, 2021](#); [Malaysia Digital Economy Corporation, 2021](#)). These priorities introduce an alternative to enforcement-heavy models such as the EU AI Act or China's algorithmic controls. In regional forums, Malaysia has supported ASEAN's efforts to adopt flexible, principle-based frameworks, thereby reinforcing a non-prescriptive governance culture that

reflects the capacity constraints and diversity of ASEAN member states. Although Malaysia does not currently export regulatory tools, it contributes discursive influence by legitimizing gradual, adaptive, and policy-oriented models of AI governance, which are increasingly relevant to developing nations participating in global AI governance debates.

4.6. Recommendations for Strengthening AI Governance

Singapore can strengthen its AI governance by converting key elements of its voluntary frameworks into binding regulations. For example, provisions from the *Model AI Governance Framework and AI Verify* regarding transparency, human oversight, and risk management could be codified into sector-specific obligations under the *Personal Data Protection Act* or new subsidiary legislation. In sectors with higher levels of public sensitivity, including education, labour management, welfare distribution, biometric surveillance, and automated mobility systems, organizations should be subject to formal impact evaluations, documentation of decision-making processes, and periodic oversight by independent bodies. Such measures are necessary to ensure transparency and build trust in the use of emerging technologies. Legally enforceable standards of this kind have been shown to improve compliance and public confidence in automated systems (Chng, 2025; IMDA & PDPC, 2020).

Malaysia's strategic roadmaps offer valuable direction but lack the force of law. To address this gap, Malaysia should enact a standalone AI Act that defines risk categories, mandates transparency requirements, and establishes clear liability rules for harm caused by algorithms. The European Union's risk-based approach to AI regulation offers a useful reference point for Malaysia's future legislative efforts. A tiered governance model, as introduced in the EU AI Act, assigns different levels of legal obligations depending on the potential risk posed by the application (Slavković, 2024). This structure could guide Malaysia in designing a regulatory system that imposes stricter requirements on high-risk uses, such as biometric surveillance, automated welfare decisions, or employment screening, while adopting a more flexible approach for low-risk or everyday AI tools. Embedding complaint procedures and judicial review rights would also ensure that individuals affected by AI decisions have meaningful avenues for redress (Hudson, 2024).

Given their close economic cooperation and common role in ASEAN, Malaysia and Singapore have the potential to align their legal and policy frameworks to ensure consistency in how emerging technologies are regulated. Establishing a bilateral AI sandbox or mutual recognition arrangement would allow startups and multinationals to test innovative AI services across both jurisdictions under a common set of enforceable safeguards. This approach would build on the *ASEAN Guide on AI Governance and Ethics* by aligning national rules on data governance, algorithmic accountability, and consumer protection (Association of Southeast Asian Nations, 2024). Regulatory authorities in Malaysia and Singapore, together with the ASEAN Secretariat, could coordinate enforcement actions and implement joint capacity-building initiatives to harmonize practices, reduce compliance costs, and strengthen the region's collective voice in global AI standard-setting forums.

5. Conclusion

Two different regulatory approaches, influenced by varying institutional capacities and policy agendas, are shown by a comparison of AI governance in Malaysia and Singapore. Singapore has emerged as a regional leader through its structured framework that combines data protection laws with soft-law instruments such as *the Model AI Governance Framework and AI Verify*. These tools reflect a proactive effort to encourage innovation while promoting ethical and transparent AI deployment. However, the non-binding nature of these tools limits their legal enforceability, especially in areas where the use of automated technologies can influence access to services, regulatory decisions, or the exercise of legal rights. In contrast, Malaysia's approach remains policy-driven and legally fragmented. While national strategies like the *National AI Roadmap* and the *MyDIGITAL Blueprint* reflect the government's commitment to digital transformation, the absence of a dedicated AI law results in regulatory ambiguity and weak institutional oversight. This gap affects the implementation of accountability measures, public trust, and the alignment of AI systems with international standards. To address these challenges, Singapore could enhance its leadership role by embedding core governance principles, such as transparency and risk management, into binding legislation, thereby ensuring consistent compliance. Malaysia, on the other hand, would benefit from adopting a risk-based legislative framework modelled on global best practices, such as the EU AI Act, to define regulatory obligations, safeguard rights, and enhance sectoral accountability. The study indicates that enhanced regulatory coordination between the two nations, especially in establishing unified standards for key sectors like AI, could significantly advance ASEAN's regional integration agenda. By leveraging complementary strengths and aligning institutional approaches, both countries may develop a more inclusive and secure model of intelligent governance that simultaneously promotes innovation and safeguards against societal risks.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgement

I sincerely thank my supervisors for his guidance.

Funding

This study received no funding.

Conflict of Interest

The authors reported no conflicts of interest for this work and declare that there is no potential conflict of interest with respect to the research, authorship, or publication of this article.

References

- Allen, J. G., Loo, J., & Campoverde, J. L. L. (2025). Governing intelligence: Singapore's evolving AI governance framework. *Cambridge Forum on AI: Law and Governance*, 1, e12, Article e12. <https://doi.org/10.1017/cfl.2024.12>
- Association of Southeast Asian Nations. (2024). *ASEAN Guide on AI Governance and Ethics*. Association of Southeast Asian Nations. <https://asean.org/wp-content/uploads/2024/02/ASEAN-Guide-on-AI-Governance-and-Ethics_beautified_201223_v2.pdf> assessed on 5 July 2025.
- Byrne, W. H., & Olsen, H. P. (2024). Doctrinal Legal Science: A Science of Its Own? *Canadian Journal of Law & Jurisprudence*, 37(2), 343-367. <https://doi.org/10.1017/cjlj.2024.16>
- Bin Ismail, M. A., & Goh, M. L. (2024). Evaluating the Impact of Artificial Intelligence on Work Ethics within Malaysian Regulatory Bodies. *Pakistan Journal of Life and Social Sciences*, 22(2), 7383-7388. <https://doi.org/10.57239/PJLSS-2024-22.2.00557>
- Chinen, M. (2023). Chapter 7: AI and international organizations. In Chinen, M (Ed.), *The International Governance of Artificial Intelligence* (pp. 203-232). Edward Elgar Publishing. <https://doi.org/10.4337/9781800379220.00014>
- Chng, D. G (2025, July 1). *Global AI Governance Law and Policy: Singapore*. International Association of Privacy Professionals. < <https://iapp.org/resources/article/global-ai-governance-singapore/>> assessed on 5 July 2025.
- Economic Planning Unit. (2021). *Malaysia Digital Economy Blueprint (MyDIGITAL)*. Economic Planning Unit.<<https://ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf>>assessed on 5 July 2025.
- Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., Luetge, C., Madelin, R., Pagallo, U., Rossi, F., Schafer, B., Valcke, P., & Vayena, E. (2018). AI4People—An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations. *Minds and Machines*, 28(4), 689-707. <https://doi.org/10.1007/s11023-018-9482-5>
- Ho, M. Y. (2024, February 26). *Singapore has also played a leading role in drafting the ASEAN Guide on AI Governance and Ethics*, KONRAD ADENAUER STIFTUNG.< <https://www.kas.de/en/web/politikdialog-asien/digital-asia/detail/-/content/singapore-s-national-strategy-in-the-global-race-for-ai>>assessed on 5 July 2025.
- Hossain, M. B., Miraz, M. H., & Abba Ya'u. (2024). FROM LEGALITY TO RESPONSIBILITY: CHARTING THE COURSE FOR AI REGULATION IN MALAYSIA. *IJUM Law Journal*, 32(1), 397-429. <https://doi.org/10.31436/iiumlj.v32i1.927>
- Hudson, V. M. (2024). Standing Up a Regulatory Ecosystem for Governing AI Decision-making: Principles and Components. In J. B. Bullock, Y. C. Chen, J. Himmelreich, V. M. Hudson, A. Korinek, M. M. Young, & B. Zhang (Eds.), *The Oxford Handbook of AI Governance* (pp.276–298). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780197579329.013.17>
- Infocomm Media Development Authority & Personal Data Protection Commission. (2020). *Model artificial intelligence governance framework* (2nd ed.). Infocomm Media Development Authority & Personal Data Protection Commission. <<https://www.pdpc.gov.sg/-/media/files/pdpc/pdf-files/resource-for-organisation/ai/sgmodelaigovframework2.pdf>>assessed on 5 July 2025.
- Kulaklıoğlu, D. (2024). Ethical AI in Autonomous Systems and Decision-making. *Human Computer Interaction*, 8(1), 87. <https://doi.org/10.62802/jb2ptt89>

- Larsson, S., Haresamudram, K., Högberg, C., Lao, Y., Nyström, A., & Söderlund, K. (2023). Four facets of AI transparency. In Lindgren, S. (Ed.), *Handbook of critical studies of artificial intelligence* (pp. 445-455). Edward Elgar Publishing. <https://doi.org/10.4337/9781803928562.0004>
- Lhafra, F. Z., & Abdoun, O. (2023). Towards an adaptive learning process using artificial intelligence technologies. In Motahhir, S.& Bossoufi, B. (Eds.), *Digital technologies and applications: ICDTA 2023* (Lecture Notes in Networks and Systems, Vol. 668, (pp. 27-36).Springer. https://doi.org/10.1007/978-3-031-29857-8_3
- Lim, S. S., & Chng, G. (2024). Verifying AI: will Singapore's experiment with AI governance set the benchmark? *Communication Research and Practice*, 10(3), 297-306. <https://doi.org/10.1080/22041451.2024.2346416>
- Malaysia Digital Economy Corporation. (2021). *National Artificial Intelligence Roadmap 2021-2025*. Malaysia Digital Economy Corporation. <<https://mastic.mosti.gov.my/publication/artificial-intelligence-roadmap-2021-2025/>> assessed on 5 July 2025.
- Organisation for Economic Co-operation and Development. (2022). *OECD Framework for the Classification of AI systems*. OECD Publishing. <[https://doi.org/10.1787/cb6d9eca-en](https://doi.org/https://doi.org/10.1787/cb6d9eca-en)> assessed on 5 July 2025.
- Organisation for Economic Co-operation and Development. (2024). *OECD Principles on Artificial Intelligence*. Organisation for Economic Co-operation and Development. <<https://www.oecd.org/en/topics/sub-issues/ai-principles.html>> assessed on 5 July 2025.
- Pande, D., & Taeihagh, A. (2023). Navigating the governance challenges of disruptive technologies: insights from regulation of autonomous systems in Singapore. *Journal of Economic Policy Reform*, 26(3), 298-319. <https://doi.org/10.1080/17487870.2023.2197599>
- Robles, P., & Mallinson, D. J. (2025). Artificial intelligence technology, public trust, and effective governance. *Review of Policy Research*, 42(1), 11-28. <https://doi.org/10.1111/ropr.12555>
- Southeast Asia Public Policy Institute. (2024). *Policy State of Play: Artificial Intelligence in Southeast Asia*. Southeast Asia Public Policy Institute. <<https://seapublicpolicy.org/wp-content/uploads/2024/08/SEAPPI-AI-Policy-State-of-Play-August-2024.pdf>> assessed on 5 July 2025.
- Sugiantari, A. A. P. W., Wiryawan, W. G., Hengki, I. G. B., & Munir, A. B. (2025). Unfolding Data Protection Officer Regulation in Personal Data Protection: Evidence Malaysia. *Pakistan Journal of Life and Social Sciences*, 23(1), 792-800. <https://doi.org/10.57239/PJLSS-2025-23.1.0062>
- Sistla, S. (2024). AI with Integrity: The Necessity of Responsible AI Governance. *Journal of Artificial Intelligence & Cloud Computing*, 3(5), 1-3. [https://doi.org/10.47363/JAICC/2024\(3\)E180](https://doi.org/10.47363/JAICC/2024(3)E180)
- Slavković, V. (2024). *Legal Regulation of Artificial Intelligence*. Publishing Center RIOR.
- Thakur, K., Pathan, A.S. K., & Ismat, S. (2023). Artificial Intelligence Technology. In Thakur, K., Pathan, A. S. K., & Ismat, S.(Ed.), *Emerging ICT Technologies and Cybersecurity* (pp. 45-77). Springer, Cham. https://doi.org/10.1007/978-3-031-27765-8_2
- United Nations Educational, Scientific and Cultural Organization. (2022). *Recommendation on the Ethics of Artificial Intelligence*. United Nations Educational, Scientific and Cultural Organization. <<https://unesdoc.unesco.org/ark:/48223/pf0000381137>> assessed on 5 July 2025.

- World Economic Forum. (2021). *Global Technology Governance Report 2021: Harnessing Fourth Industrial Revolution Technologies in a COVID-19 World*. World Economic Forum. <https://www3.weforum.org/docs/WEF_Global_Technology_Governance_2020.pdf>assessed on 5 July 2025.
- Yusof, N. A. M., Saimy, I. S., Salleh, S. H., Hisham, A. B., Mustafa, W. A., & Alkafaji, H. (2023, November 14-15). Artificial intelligence law for Malaysia. In *Proceedings of the 2023 International Conference for Technological Engineering and its Applications in Sustainable Development (ICTEASD)*(pp. 52-57). IEEE. <https://doi.org/10.1109/ICTEASD57136.2023.10584852>
- Zhang, L., Pan, Y., Wu, X., & Skibniewski, M. J. (2021). Introduction to Artificial Intelligence. In Zhang, L., Pan, Y., Wu, X., & Skibniewski, M. J. (Ed.), *Artificial Intelligence in Construction Engineering and Management* (pp. 1-15). Springer Singapore. https://doi.org/10.1007/978-981-16-2842-9_1