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AI GOVERNANCE IN MALAYSIA

RISKS, CHALLENGES AND PATHWAYS FORWARD

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ABBREVIATIONS

4IR	:	Fourth Industrial Revolution
12MP	:	12th Malaysia Plan
AI	:	Artificial Intelligence
AIAAIC	:	AI, Algorithmic and Automation Incidents and Controversies
AIGA	:	AI Governance Alliance
AIGE	:	AI Governance and Ethics
AIIG	:	Artificial Intelligence Impact and Governance
AI-Rmap	:	National AI Roadmap
APIs	:	Application Programming Interfaces
ASCN	:	ASEAN Smart Cities Network
ASEAN	:	Association of Southeast Asian Nations
BHEUU	:	Legal Affairs Division (Bahagian Hal Ehwal Undang-Undang)
CSO	:	Civil Society Organisation
EU	:	European Union
EU AI Act	:	European Union Artificial Intelligence Act
GPAI	:	Global Partnership on Artificial Intelligence
HPC	:	High-performance Computing
IaaS	:	Infrastructure as a Service
IEC	:	International Electronical Commission
IEEE	:	Institute of Electrical and Electronics Engineers
ISO	:	International Organisation for Standardisation
JDN	:	National Digital Department (Jabatan Digital Negara)
JKK	:	Technical Working Groups (Jawatankuasa Kerja)
JPA	:	Public Service Department (Jabatan Perkhidmatan Awam)
JPDP	:	Personal Data Protection Commissioner Office (Jabatan Perlindungan Data Peribadi)
JSM	:	Department of Standards Malaysia (Jabatan Standard Malaysia)
JTC	:	Joint Technical Committee
KD	:	Ministry of Digital (Kementerian Digital)
K-KOMM	:	Ministry of Communications (Kementerian Komunikasi)
KRI	:	Khazanah Research Institute
LKIM	:	Fisheries Development Authority of Malaysia (Lembaga Kemajuan Ikan Malaysia)
LLMs	:	Large Language Models
MAIC	:	Malaysia AI Consortium
MCMC	:	Malaysian Communications and Multimedia Commission (Suruhanjaya Komunikasi dan Multimedia Malaysia)
MD	:	Malaysia Digital
MDEC	:	Malaysia Digital Economy Corporation
MED4IRN	:	National Digital Economy and 4IR Council (Majlis Ekonomi Digital dan Revolusi Industri Ke-4)

ABBREVIATIONS

MITI	:	Ministry of Investment, Trade and Industry (Kementerian Pelaburan, Perdagangan dan Industri)
ML	:	Machine Learning
MNCs	:	Multinational Corporations
MOE	:	Ministry of Education (Kementerian Pendidikan Malaysia)
MOF	:	Ministry of Finance (Kementerian Kewangan)
MOH	:	Ministry of Health (Kementerian Kesihatan Malaysia)
MOHE	:	Ministry of Higher Education (Kementerian Pendidikan Tinggi)
MOSTI	:	Ministry of Science, Technology and Innovation (Kementerian Sains, Teknologi dan Inovasi)
MSMEs	:	Micro, Small and Medium Enterprises
MY AI NEXUS	:	Malaysia AI Nexus
MyNSR	:	Malaysia National Skills Registry
NACSA	:	National Cyber Security Agency
NAIO	:	National AI Office
NBAIC	:	National Blockchain and AI Committee
NCII	:	National Critical Information Infrastructure
NGO	:	Non-governmental Organisation
NIMP	:	New Industrial Master Plan
NTIS	:	National Technology and Innovation Sandbox
OECD	:	Organisation for Economic Cooperation and Development
OSA	:	Official Secrets Act
PDPA	:	Personal Data Protection Act
UK	:	United Kingdom
UKM	:	Universiti Kebangsaan Malaysia
UM	:	Universiti Malaya
UNESCO	:	United Nations Educational, Scientific and Cultural Organisation
UPM	:	Universiti Putra Malaysia
USM	:	Universiti Sains Malaysia
UTM	:	Universiti Teknologi Malaysia
WKB 2030	:	Shared Prosperity Vision 2030 (Wawasan Kemakmuran Bersama 2030)

EXECUTIVE SUMMARY

The development and use of Artificial Intelligence (AI) are expanding rapidly at a global scale, bringing forth both promises of benefits and concerns about adverse impacts on society. Governments striving to be ahead of the curve are compelled to build policies and regulatory frameworks at an urgent pace, to direct AI technologies towards positive outcomes and to mitigate risks as they arise.

Malaysia has responded to these trends admirably with multiple stakeholders diving into the fray, spearheading initiatives to drive AI development, adoption and use. The area of AI governance has also seen increasing activity, with the release of national-level guidelines and the establishment of a National AI Office (NAIO). The government has also indicated strong political will to advocate for AI safety in Southeast Asia and drive the participation of the region in international rules-setting for AI.

To advance the discourse on AI governance in Malaysia, this report gathers the perspectives of local AI policy stakeholders to answer some key questions on AI risks, governance challenges and feasible pathways forward. We offer a snapshot of the current landscape, a conceptual framework of AI risks and an indication of present gaps and challenges in technology governance. A set of policy recommendations is also provided, in line with the government's direction at the national level while recognising international pressures and trends.

Types of AI risks

We offer **a typology to conceptualise AI risks,** which draws from extensive stakeholder discussions. We found three main types of AI risks, including (1) risks of being left behind in technology adoption, (2) risks of unsafe AI and unintended consequences, and (3) risks of malicious use of AI. The debate between technology regulation and allowing unfettered innovation stems from the tension between prioritising different types of risk categories.

We also **distinguish between risks directly linked to AI and those tied with the lack of AI readiness**, which will exacerbate AI risks. Thinking in terms of AI readiness will anchor policymakers' attention to tangible policy actions, such as bridging existing gaps in governance, capacity, education and resources, instead of speculating about uncertain risks in the future.

Challenges in governing AI

We have identified five key challenges to AI governance in Malaysia.

First, there is a **lack of collaboration and coordination among agencies,** with fragmented efforts limiting cross-sector collaboration and alignment.

Second, **insufficient state capacity** hampers effective governance, with shortages of skilled professionals and a lack of frameworks that integrate technical, legal and ethical dimensions.

Third, **building an effective regulatory environment** is challenging, as traditional mechanisms struggle to address AI's unique complexities and to effectively translate policies into enforceable legislation.

Fourth, **balancing regulation with innovation is needed,** as excessive regulation may stifle growth, while insufficient oversight risks the unethical use of AI.

Finally, the fifth challenge involves **issues beyond Malaysia's control**, emphasising the need for a supply chain approach to governance. Additionally, robust mental models are important to ensure AI-related issues can be clearly grasped, and proper solutions can be identified.

Feasible pathways forward

To strengthen Malaysia's AI governance, we recommend to:

1. **Focus on national coordination of existing initiatives and actors**, ensuring that information flows efficiently within the AI governance ecosystem so that joint action can be coordinated.
2. **Participate in international collaboration and global governance**, which involves establishing and developing Malaysia's position on debates of global governance, and engaging strategically in international rules-setting and other global discussions.
3. **Establish an agile and fit-for-purpose regulatory framework for AI** by considering a whole spectrum of regulatory mechanisms alongside legislation, including using softer approaches emphasising flexibility. While Malaysia matures in its AI adoption, consistent efforts should be invested in boosting public and private sector readiness for AI governance and regulation.
4. **Strengthen data governance frameworks that build trust and safeguards** – Malaysia's existing data governance frameworks need to be fortified for AI-related risk scenarios. Strong and trustworthy common principles for data sharing are needed to build better technology for the local context.
5. **Cultivate understanding of AI impacts and how to manage them** among experts and laypeople. There is a need to connect experts across different disciplines and localities, and strengthen expertise on AI governance. Consumer and civic education is the next step after AI literacy campaigns, and more conversations among non-experts need to be facilitated to promote critical thinking and collect diverse perspectives on technology adoption.
6. **Support research and oversight on AI impacts** by having independent oversight on adverse effects of AI, and collecting data on AI-related harms and high-risk use of AI by the state and large corporations. Systematic tracking of AI adoption by small and medium enterprises will help inform industrial development.

These recommendations are interconnected, and the successful implementation of each will have a multiplying effect on the others. Adequate resources will be needed to fund and coordinate the initiatives towards effective AI governance, but with careful orchestration these investments will pave the way towards a safer and more inclusive AI-enabled future.

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CHAPTER 1

INTRODUCTION

1.1 Overview

From its beginnings in the 1950s, artificial intelligence[1] (AI) has gone through cycles of booms and busts. The runaway success of ChatGPT in 2022 thrust the world into a full-blown AI summer, with billions of investments pumped into the industry globally[2] in anticipation of significant returns. A report by McKinsey estimates that generative AI alone could add the equivalent of $2.6 trillion to $4.4 trillion annually to the global economy[3]. In non-monetary terms, great hopes have also been pinned on AI advancing the sustainable development agenda, such as alleviating poverty and improving public health.

At the same time, following the rapid diffusion of AI globally, especially through applications available over the internet[4], policy discussions on the impacts of AI and how to govern the technology have also intensified. From an initial proliferation of values-based ethical principles, policymakers are shifting to the mode of considering regulatory frameworks to translate principles into practice. Pacing themselves to the speed of technological advancement, governments worldwide have the unenviable task of striking a balance between allowing free innovation and safeguarding against AI's negative impacts.

The Malaysian government has been responsive to these global trends and has accelerated its AI initiatives, from setting strategy to courting tech-related foreign direct investments[5]. Efforts towards AI governance[6] have also expanded, such as with the establishment of the National Blockchain and AI Committee (NBAIC) and its Technical Working Group 1 which works on legal and ethical frameworks, and the recent launch of the AI Governance and Ethics (AIGE) Guidelines and the establishment of the National AI Office (NAIO).

Against a backdrop of rapid global and local developments within the AI scene, KRI recognises the need for nuanced consideration of AI's transformative effects rooted in perspectives within Malaysia's local context. Through extensive engagements, this study draws from the insights of key AI policy stakeholders in the country to explore the perceived impacts of AI, uncover governance challenges and explore feasible pathways forward.

[1] According to OECD, an AI system is "a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment."
[2] Glasner (2024)
[3] Chui et al. (2023)
[4] To name a few specific applications: such as Midjourney for image generation, Cleo for personal finance management, Youper for mental health care, etc.
[5] Bernama (2024d)
[6] See definition in Chapter 2

The report advances the discourse on AI governance in Malaysia in the following ways:

- Firstly, we offer a comprehensive snapshot of the current AI governance landscape, with a particular focus on government agencies involved and notable AI initiatives.
- Secondly, we provide a conceptual framework of AI risks taking into account the local context of Malaysia, synthesised from concerns raised by stakeholders across a wide range of micro to macro level impacts brought about by AI.
- Thirdly, we highlight AI governance gaps and challenges, from perspectives within and outside the government.
- Lastly, we deliver practical recommendations in line with the government's direction for AI governance at a national level while recognising and adjusting to international pressures and trends.

The study contributes to the expanding body of literature on AI policy and governance in Malaysia, which has looked at AI ethics[7], legal frameworks[8] and policy[9]. Its perspectives may also be useful for other countries of Southeast Asia or the Global Majority/South that are seeking to make sense of AI governance at a national level, beyond framing and concerns that come from the Global North[10].

1.2 About the study

This report seeks to answer the following research questions:

- How are AI risks perceived by key government agencies and other stakeholders involved in AI governance in Malaysia?
- What are the challenges of governing AI within the context of Malaysia?
- What are the strategic and feasible pathways forward in AI policy and advocacy, from local and international perspectives?

To answer these questions, we conducted 21 in-depth interviews with experts from the public sector, industry, academia as well as civil society, from mid-March to early August 2024. Figure 1.1 shows a breakdown of the respondents by stakeholder group and Appendix A provides the complete list, excluding one respondent who preferred to remain anonymous. We made all efforts to ensure a diverse set of participants, including working level and high-level government officials, practitioners from the industry, as well as academics and civil society actors who are observing AI and AI governance closely.

[7] Among others, Singh (2023); PIKOM (2024)
[8] Among others, Nor Ashikin Mohamed Yusof et al. (2023); Mohammad Belayet Hossain, Mahadi Hasan Miraz, and Ya'u (2024); Kamaruddin et al. (2023)
[9] Among others, Tan (2022); Farlina Said and Farah Nabilah (2024)
[10] Among others, Arun (2020); Gurumurthy and Chami (2019); Noor and Manantan (2022); EngageMedia (2021)

Figure 1.1: Breakdown of interviews by stakeholder group

Source: KRI's analysis and compilation
Note: NGO = Non-governmental organisation; CSO = Civil society organisation

As an extension of the data collection process, we ran an AI Impact and Governance (AIIG) roundtable attended by 36 key stakeholders within the AI policy landscape at the end of August 2024 to discuss and corroborate the initial findings. From these discussions, we drew insights that we supplemented with further desk research.

Further details on the methodology can be found in Appendix A.

1.3 The structure of the report

Chapter 1 of the report provides an overview of the study conducted, emphasising the core objectives and research questions the study aims to address.

Chapter 2 sets the context for Malaysia's AI governance framework by exploring Malaysia's current standing in AI governance, highlighting key stakeholders within Malaysia's AI ecosystem and official policies and initiatives.

Chapter 3 summarises stakeholder perspectives on AI risks and offers a typology that helps conceptualise the types of AI risks and readiness issues that Malaysia faces.

Chapter 4 discusses the challenges in developing a cohesive and effective AI governance framework for Malaysia.

Chapter 5 outlines several policy considerations and proposes actionable recommendations to strengthen Malaysia's AI governance.

Chapter 6 concludes by reiterating the need to boost preparedness, strike a balance between regulation and innovation, and develop governance mechanisms appropriate for local context.

CHAPTER

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CHAPTER 2

THE AI GOVERNANCE LANDSCAPE IN MALAYSIA

This chapter provides an overview of the AI governance landscape in Malaysia, which naturally leans towards governmental efforts, even though non-state actors have also supported it with their own initiatives. To frame the discussion, we refer to AI governance as "making decisions and exercising authority in order to guide the behaviour of individuals and organisations"[11] on the development and diffusion of AI technologies.

As part of its digital transformation, Malaysia has invested considerable effort into advancing the AI ecosystem. This has borne fruit to a certain extent. As of 2023, Malaysia is ranked 23rd out of 193 countries in the Government AI Readiness Index published by Oxford Insights[12], up from 29th in 2022. The country is placed second within Southeast Asia after Singapore (which ranks 2nd worldwide) and 6th in East Asia. A breakdown of the scoring indicates that we did better in the government (score: 79.99/100) and data & infrastructure (72.00/100) pillars, compared to the technology sector pillar (54.13/100)[13].

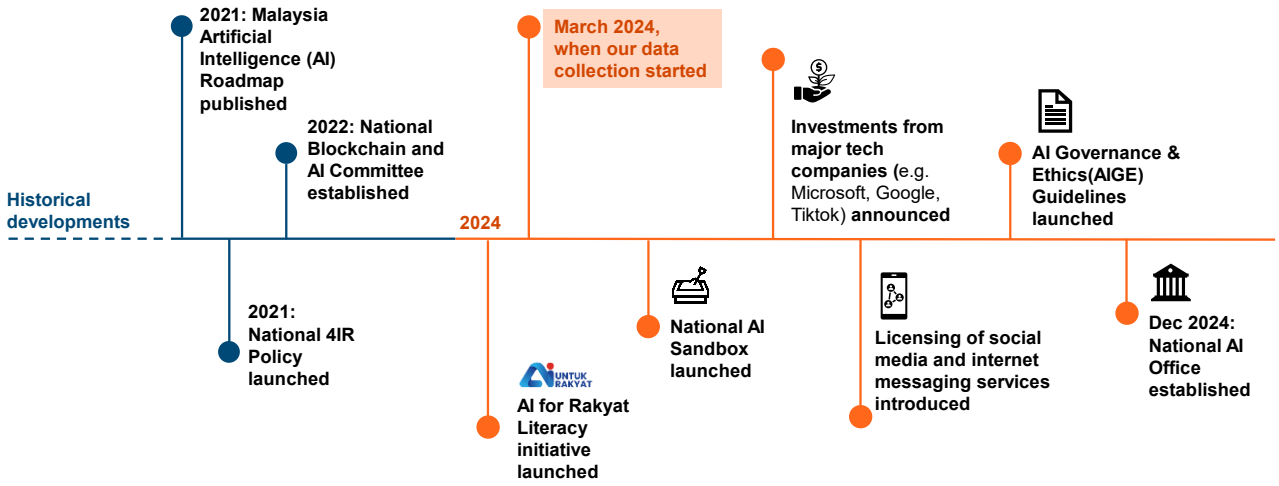
The push towards AI adoption needs to be accompanied by governance measures to ensure that the technology is built and used in a beneficial and safe manner, bringing positive outcomes and minimising negative impacts. AI governance is therefore an important component in the pursuit of meaningful technology adoption.

It is worth mentioning at the onset that this is a fast-developing area, as activities in AI governance try to keep pace with the rapid advancement of technology. While earlier efforts on AI strategy unfolded in the manner of years, a clear sense of urgency to act emerged in 2023 amidst the generative AI boom that promised a significant boost in productivity with rising unease about potential risks on the side (see Chapter 3). In 2024, releases of increasingly powerful AI models provided no reprieve to policymakers trying to make sense of the use and limitations of the technology in order to govern it.

As such, there were various developments in AI governance in Malaysia which happened during the writing of this report. As indicated in Figure 2.1, at the commencement of our data collection in March 2024, a number of developments had not happened, such as the **announcements of a National AI Sandbox and a National AI Office (NAIO)**. We therefore emphasise that we are capturing one moment in time, mainly through the stakeholder perspectives within the data collection period of March to August 2024 and desk research up until the publication in December 2024.

[11] WEF (2019)
[12] Oxford Insights (2023)
[13] To elaborate, the government pillar covers vision, governance and ethics, digital capacity and adaptability of government; the technology sector pillar covers maturity (e.g. number of unicorns), innovation capacity and human capital of the tech sector; and the data and infrastructure pillar covers infrastructure, data availability and data representativeness.

Figure 2.1: Rapid developments in Malaysia's AI governance



Source: KRI illustration
Note: Timeline not to scale.

2.1 The policy and regulatory landscape at a national level

There are two main policy documents that lay out Malaysia's national AI strategy[14]. The National AI Roadmap (2021–2025), also known as the AI-Rmap, was published in March 2021 by the Ministry of Science, Technology and Innovation (MOSTI). In July 2021, the National Fourth Industrial Revolution (4IR) Policy was released by the Ministry of Economy[15], covering AI as one of its five foundational 4IR technologies and emphasising that the significance of the technology is comparable to the "electricity" that powers the Fourth Industrial Revolution[16].

Both documents spell out the government's interest in harnessing AI for economic and social development whilst emphasising the importance of safeguarding against risks. For example, the AI-Rmap states that its mission is to "create a thriving national AI ecosystem that allows everyone (government, business and people) to capitalise on the benefits of AI in a secured and safe manner for economic prosperity and social well-being"[17]. Similarly, the National 4IR Policy aims to support the overarching developmental policies such as the 12th Malaysia Plan and the Shared Prosperity Vision 2030 (*Wawasan Kemakmuran Bersama 2030*, or WKB 2030) and drive the growth of Malaysia's digital economy alongside its sister policy, the Malaysia Digital Economy Blueprint. The policy further acknowledges the need to provide guidelines to address potential risks arising from 4IR technologies and ensure that Malaysian values and culture will be preserved.

AI governance is intimately connected to a wider landscape of data and digital governance[18], which has also seen a flurry of activities in the past year. The parliament passed amendments to the Personal Data Protection Act (PDPA) 2010 that relaxed cross-border data transfer rules[19], and the Cybersecurity Act 2024 was gazetted to strengthen Malaysia's cyber defences, especially when it

[14] There is also a National AI Framework, which to our knowledge has not been released to the public.
[15] Formerly the Economic Planning Unit under the Prime Minister's Department
[16] EPU (2021)
[17] MOSTI (2021)
[18] Tan (2024a)
[19] Gong (2024a)

comes to national critical information infrastructure (NCII)[20]. Other initiatives include the Data Sharing Act to allow data sharing across government agencies[21,22], and the Online Safety Act and amendments to the Penal Code and Criminal Procedure Code to tackle online safety issues such as cyberbullying, scams and sexual crimes against children[23].

2.2 Key government stakeholders and AI governance structures

Who are those tasked to oversee and implement activities connected to AI? Table 2.1 provides an overview of the ministries and agencies that have come up repeatedly in our interviews and are generally agreed upon among stakeholders to be the main actors within Malaysia's AI landscape.

The main ministries are the Ministry of Science, Technology and Innovation (MOSTI), Ministry of Digital (KD) and Ministry of Communications (K-KOMM), which share the duties of ensuring that Malaysia has the right resources, infrastructure and governance frameworks to adopt AI responsibly.

Some of the key agencies covering AI also report to these ministries. For instance, MIMOS Berhad under MOSTI focuses on research and development, and the Malaysian Communications and Multimedia Commission (MCMC) under K-KOMM is Malaysia's regulator in the field of communications, covering digital infrastructure and online content. Meanwhile, KD oversees an array of agencies looking at building the ecosystem (Malaysia Digital Economy Corporation (MDEC) and MyDigital), protecting data (Personal Data Protection Commissioner Office (JPDP)), ensuring cybersecurity (CyberSecurity Malaysia) and spearheading public sector adoption (National Digital Department (JDN)).

Other government agencies that are often mentioned include the Department of Standards Malaysia (JSM) and SIRIM Berhad for standards-setting, and National Cyber Security Agency (NACSA) looks at cybersecurity from a national security point of view. It was also generally agreed that sectoral applications and initiatives would fall under the purview of sectoral ministries and regulators, such as AI in healthcare under the Ministry of Health (MOH) or education and talent development under Ministry of Education (MOE) and Ministry of Human Resources (KESUMA).

[20] See NACSA (2024), where national critical information infrastructure means a computer or computer system which the disruption to or destruction of the computer or computer system would have a detrimental impact on the delivery of any service essential to the security, defence, foreign relations, economy, public health, public safety or public order of Malaysia, or on the ability of the Federal Government or any of the State Governments to carry out its functions effectively.
[21] Bernama (2024b)
[22] Gong (2024a)
[23] Bernama (2024e)

Table 2.1: Key government agencies in Malaysia's AI ecosystem (non-exhaustive)

Segment	Key Government Agencies
Main ministries	Ministry of Communication (K-KOMM)
	Ministry of Digital (KD)
	Ministry of Science, Technology and Innovation (MOSTI)
Main agencies	CyberSecurity Malaysia
	Department of Personal Data Protection (JPDP)
	Department of Standards Malaysia (JSM)
	Malaysian Communications and Multimedia Commission (MCMC)
	Malaysia Digital Economic Corporation (MDEC)
	MIMOS
	MyDigital Corporation
	National Cybersecurity Agency (NACSA)
	National Digital Department (JDN)
	SIRIM
Sectoral players	Bank Negara Malaysia (BNM)
	Ministry of Education (MOE)
	Ministry of Health (MOH)
	Ministry of Human Resources (KESUMA)
	Ministry of Investment, Trade and Industry (MITI)
	Securities Commission Malaysia (SC)

Source: KRI's compilation from interviews
Note: The National AI Office (NAIO) had not been established during our data collection period, and therefore is not included in the table.

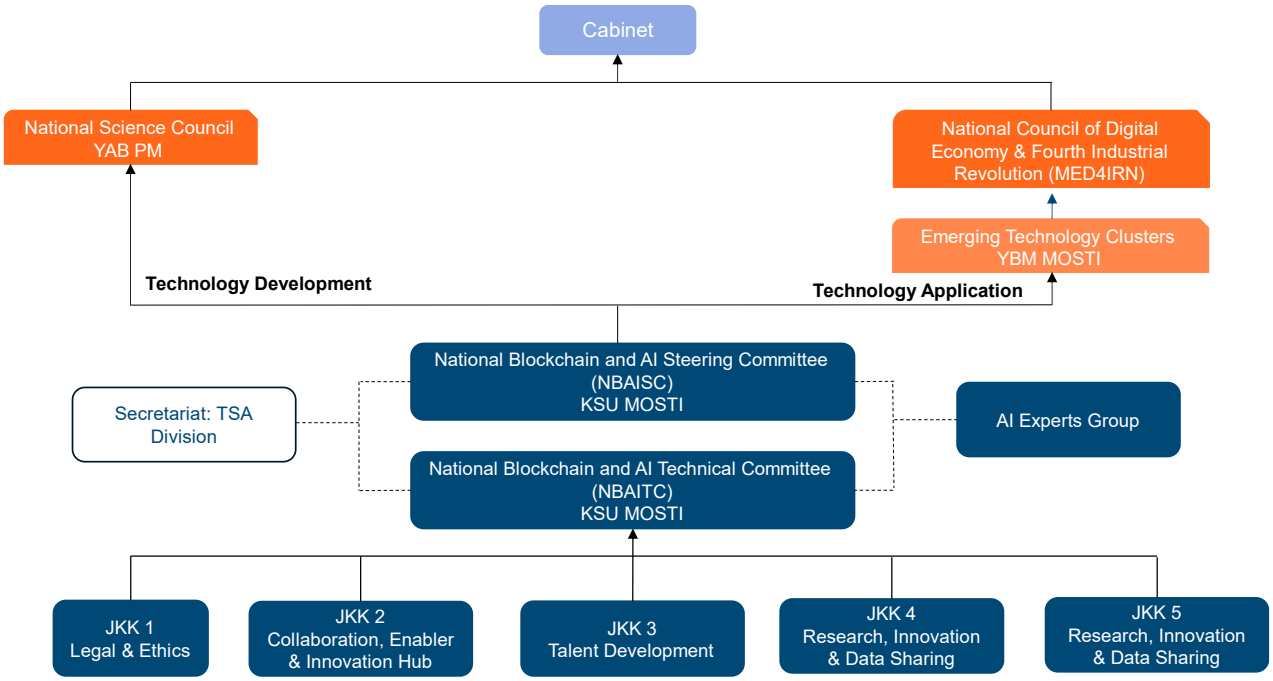
Given the number of agencies involved, there have also been some efforts in organising and coordinating among the stakeholders. In 2022, the National Blockchain and AI Committee (NBAIC) was formed following the launch of the AI-Rmap and four other roadmaps focusing on blockchain and other technologies[24].

The governance structure of the NBAIC is depicted in Figure 2.2. Five technical working groups (*Jawatankuasa Kerja*, or JKK) were established, including: (1) Legal & Ethics, (2) Collaboration, Enabler & Innovation Hub, (3) Talent Development, (4) Research, Innovation & Data Sharing, and (5) Acculturation & Communication. These technical working groups report to the Technical Committee, which in turn reports to the Steering Committee. The chain of reporting ends at the Cabinet, through the National Science Council and the National Council of Digital Economy & Fourth Industrial Revolution (MED4IRN).

All the JKKs comprise stakeholders from the government, private sector, academia and civil society. JKK1 (Legal & Ethics) is where most discussions on AI governance happen.

[24] The five roadmaps are: "Electricity and Electronics Roadmap: Technology Development 2021-2030", "National Blockchain Technology Roadmap 2021-2025", "Artificial Intelligence Roadmap 2021-2025", "National Advanced Materials Roadmap 2021-2030" and "National Robotics Roadmap 2021-2030".

Figure 2.2: Structure of the National Blockchain and AI Committee (NBAIC)



Source: MOSTI (2024)

Given AI's increasing importance, there was a need for a coordinating body to manage AI-related efforts more closely and efficiently. The cabinet approval of NAIO under KD with a budget allocation of RM10 million demonstrates the political will to consolidate and streamline AI initiatives. Launched in December 2024, NAIO has the mandate as the focal point to advance Malaysia's AI agenda[25]. For the initial period of its operation, NAIO is incubated under MyDigital.

NAIO's five key functions were outlined during the launch, including the following:

1. Strategise and coordinate AI development
2. Centralise resources for efficiency
3. Standardise protocols and best practices
4. Establish and enforce AI regulations
5. Promote AI innovation through collaboration

NAIO also announced seven key deliverables, as listed and elaborated in Table 2.2.

[25] Ministry of Digital (2024a)

Table 2.2 Seven key deliverables of NAIO

Deliverables of National AI Office	Elaboration
AI Technology Action Plan 2026-2030	Strategic Roadmap to enhance Malaysia's competitiveness and foreign investor confidence
AI adoption regulatory framework	Regulatory framework to promote ethical and sustainable AI adoption
Acceleration of AI technology adaptation	Promoting widespread AI adoption in main sectors of Malaysia
AI code of ethics	Ensuring the responsible and ethical usage of AI throughout the entire management value chain
AI impact study for government	Assessing the impacts of AI on the Government
National AI Trend Report	Market overview on AI trend maturity in selected sectors
Datasets related to AI technology	Data to develop and implement tailored initiatives for target groups

Source: NAIO (n.d.)

As previously mentioned, AI governance in Malaysia is a fast-developing area. After hosting the AIIG roundtable in August 2024, KRI shared the study's initial findings with the Interim NAIO. Several of the concerns and recommendations that were highlighted align with the functions and deliverables of NAIO announced in December 2024. The focus on coordination and collaboration is key, and deliverables such as the AI adoption regulatory framework and the AI impact study for the government will be key drivers of AI adoption and governance in the country.

2.3 Notable AI initiatives

As is alluded within Section 2.2, the AI governance ecosystem is vibrant with contributors from many quarters of the government. The private sector also played an important role in shaping Malaysia's AI landscape by driving innovation and adoption across different industries.

This section highlights notable initiatives and developments that have defined the trajectory of AI in Malaysia to provide further context and lay the groundwork for discussions to follow. These efforts span multiple domains, including government-driven programmes, private-sector innovations and multi-stakeholder collaborative projects.

Within Malaysia, AI is seen as a field with high growth potential. According to a report titled "The Economic Impact of Generative AI: The Future of Work in Malaysia" by MyDigital Corporation and the Malaysia Centre for the Fourth Industrial Revolution, generative AI could unlock approximately USD113.4 billion in untapped productive capacity[26]. Beyond productivity, AI technologies offer opportunities to optimise resource allocation, drive innovation and support data-driven policymaking, all of which are key components for achieving Malaysia's aspirations under the 12th Malaysia Plan (12MP) and the New Industrial Master Plan (NIMP) 2023[27]. Both 12MP and NIMP have underpinned technology adoption and innovation as key enablers in advancing and transforming the

[26] Aman (2023)
[27] Ibid.

industry, thereby fostering economic growth. Additionally, NIMP also underscored specific strategy to spur technology innovation by harnessing the opportunities and strength of data analytics and AI.

2.3.1. Firms-related

MDEC has successfully **onboarded 140 AI solution providers in the Malaysia Digital (MD) Ecosystem**, which collectively generated RM1 billion in revenue as of July 2024[28]. The top three sectors driving this growth are digital health, digital city and agriculture[29]. These advancements will potentially reshape Malaysia's business landscape, enhancing productivity not only for micro, small and medium enterprises (MSMEs) but also for larger corporations.

A key firm-related initiative is the launch of the **National AI Sandbox** under MOSTI in April 2024. This programme, spearheaded by the National Technology and Innovation Sandbox (NTIS) in collaboration with NVIDIA[30], serves as a platform for startups, innovators and spin-off companies to test and refine AI solutions in a controlled environment. The AI Sandbox aims to support up to 900 AI startups by 2026 and develop over 13,000 new AI talents, expected to contribute to a targeted 10% economic growth and RM1 billion in revenue by 2030[31].

2.3.2. Regulatory and sectoral guidance

In addition to the initiatives highlighted, regulatory frameworks are evolving to support AI governance in Malaysia. The **AI Governance and Ethics (AIGE) Guidelines**, launched by MOSTI in September 2024, provide guidance for end users, policymakers, as well as developers and technology providers[32]. While not legally binding, the guidelines aim to serve as a reference for industries, with the potential for future legislation. MOSTI's efforts align with ongoing work by other agencies, such as MCMC, which is developing **sector-specific codes of practice**.

MDEC and JDN are also jointly developing **guidelines for AI use in the public sector** set to be released in 2025, following a study by JDN in collaboration with MDEC and University Putra Malaysia (UPM) assessing readiness and adoption of emerging technologies (including AI) in the public sector[33]. This development is in line with the Public Sector Digitalisation Strategic Plan 2021-2025 (*Pelan Strategik Pendigitalan Sektor Awam 2021-2025*)[34], which shows Malaysia's commitment to advancing public sector digitalisation, with JDN as the agency responsible for driving these efforts. Additionally, KD oversees regulations such as the **Data Sharing Bill,** which governs data sharing across public sector agencies[35].

2.3.3. Public awareness and human capital

As regulatory frameworks and industry support initiatives progress, it is equally important to prioritise initiatives aimed at raising public awareness and developing human capital. The **AI for Rakyat** initiative, co-run by MyDigital Corporation and Intel, is a high-profile campaign aimed at improving AI literacy. Launched in January 2024, it reached 1 million Malaysians by June 2024,

[28] Bernama (2024a)
[29] Ibid.
[30] NVIDIA is a leading global technology company that pioneered the invention of the graphics processing unit (GPU). NVIDIA also drives advancements in AI, high-performance computing (HPC), gaming, creative design, autonomous vehicles and robotics.
[31] Tan (2024)
[32] The Star (2024)
[33] PMO (2023)
[34] MAMPU (2021)
[35] Ibid.

surpassing its one-year target[36]. This self-learning online programme helps build digital and AI knowledge, with strong involvement from the public sector, including the Public Service Department (JPA) and MOE[37].

On the talent development front, Malaysia is actively addressing the workforce challenges brought about by the rapid integration of AI and related technological advancements. A study by Talent Corp and the Ministry of Human Resources, which examines the **impacts of AI, Digital and Green Economy trends on the Malaysian workforce**, highlights a transformative shift in employment across key sectors, including information and communications, pharmaceutical manufacturing, aerospace, and electrical and electronics[38]. The study pointed out the need to equip the workforce with relevant skills to navigate this dynamic landscape, aligning Malaysia with global advancements in technological innovation and economic sustainability. A key initiative stemming from this effort is the **Malaysia National Skills Registry (MyNSR)**, which is a platform that provides detailed insights into industry trends, job roles, necessary skills and training opportunities to prepare workers for the demands of a technology-driven economy[39].

The launch of the **Malaysia Artificial Intelligence Nexus (MY AI NEXUS) 2024,** a partnership between the Ministry of Higher Education (MOHE) and Universiti Teknologi Malaysia (UTM), marked a significant step towards positioning Malaysia as a leader in AI development. A central component of this initiative is the establishment of the **Faculty of Artificial Intelligence (FAI) at UTM**[40]. In addition, the **AI Talent Roadmap for Malaysia (2024 – 2030)** and the **Malaysia AI Consortium (MAIC)** were introduced to develop skilled professionals in the AI sector, addressing the current talent shortage. The MAIC, in particular, seeks to bring together key stakeholders from academia, industry and government to promote knowledge exchange and capacity building, driving progress in the AI field while tackling the talent gap[41].

The 2025 Budget further reinforces Malaysia's dedication to AI talent and research by assigning specific focus areas to universities: Universiti Malaya (UM) will advance AI in medical applications to combat diseases like cancer, while UPM will explore quantum computing to address cybersecurity threats. Meanwhile, Universiti Sains Malaysia (USM) focuses on AI for semiconductors, and Universiti Kebangsaan Malaysia (UKM) will lead AI-driven language translation to promote Malay as a language of knowledge[42].

2.3.4. Participation in international governance of AI

Malaysia is also making strides in participating in the international governance of AI. For example, Malaysia is one of the 42 participating countries of the **ISO/IEC Joint Technical Committee (JTC) 1 Steering Committee (SC) 42** on AI, which focuses on setting international technical standards for AI development and use. Malaysia adopts these international standards for local use through the National Mirror Committee, ensuring alignment with global best practices and facilitating seamless integration of AI technologies into various sectors.

[36] Bernama (2024c)
[37] Ibid.
[38] Talent Corp and Ministry of Human Resources (2024)
[39] Ibid.
[40] Palansamy (2024)
[41] Ibid.
[42] MOF (2024)

Domestically, efforts such as the **IEEE CertifAIEd™ Assessor Training Program**[43], organised by SIRIM in collaboration with Verdas AI, further complements Malaysia's international commitments. By equipping participants with the expertise to address ethical challenges in AI applications, the program fosters alignment with global ethical standards by covering topics such as transparency, privacy, accountability and algorithmic bias.

Regionally, Malaysia actively engages in ASEAN-level initiatives, such as the **ASEAN Working Group on AI Governance** and the **ASEAN Smart Cities Network (ASCN)**. With the announcement of the **ASEAN AI Safety Network** in the 2025 Budget, Malaysia has signalled its ambition to lead efforts in promoting AI safety across the region. As Malaysia assumes the ASEAN chairmanship in 2025, it is strategically placed to lead regional governance initiatives that promote AI safety and responsible development.

On the global stage, Malaysia has participated in the convenings of the **Global Partnership on Artificial Intelligence (GPAI)** and the **World Economic Forum's Global AI Governance Alliance (AIGA)**.[44] These forums provide opportunities to influence AI governance frameworks rooted in human rights, inclusion, diversity, innovation and economic growth. Malaysia has also contributed to discussions on **UNESCO's *Recommendation on the Ethics of AI***[45,46] and co-developed the **World Economic Forum's AI Governance Briefing Paper** series[47], demonstrating our thought leadership in ethical AI development.

[43] IEEE (2024)
[44] From stakeholder interviews
[45] UNESCO (2021)
[46] From stakeholder interviews
[47] WEF (2024)

CHAPTER

03

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CHAPTER 3

AI RISKS

In this report, we define AI risks as potential adverse effects that AI systems pose to human societies. AI systems have potential applications across many different fields. Their development and deployment involve intricate processes and a wide range of stakeholders, which introduce significant complexity and uncertainty. The risks associated with AI are particularly challenging because they can cut across economic sectors; the nature and magnitude of impacts are difficult to predict and depend heavily on the context. As a result, it is difficult to comprehensively anticipate and manage the potential risks of AI.

AI systems invariably incur social costs. These costs could be immense and unaccounted for[48], such as the significant carbon footprint of AI systems and energy use that reaches up to the electricity demand of a small country[49]. Wide usage of personal data to train Machine Learning (ML) models can also lead to privacy violations by potentially exposing people to unwanted surveillance and automated decisions[50]. Meanwhile, the ungoverned AI use can give rise to social implications that can be difficult to control.

A better understanding of AI risks allows us to anticipate them and equip ourselves with suitable strategies to tackle their impact.

3.1 A typology of AI risks

A key challenge in AI governance is effectively managing AI risks. The first step in risk management is understanding the risks, which typically involves identifying and systematically classifying risks according to some scope and measure of magnitude. In this chapter, we summarise a pool of perspectives on AI risks from a diverse set of stakeholders and offer a typology that helps conceptualise the types of AI risks and readiness issues that Malaysia faces.

Typologies are useful heuristics that allow a systematic basis for comparison[51]. Categorisation of risks is not an arbitrary exercise; in fact, other jurisdictions following a risk-based approach have legal requirements for risk categorisation. For example, the European Union AI Act have employed "the use of a systematised framework of risk classification to categorise type and degree of risk" posed by AI systems[52].

A system to identify and classify risks that suits the specific circumstances and needs of a jurisdiction is important. As developing economies grapple with issues of promoting AI adoption and potential consequences on their societies, an appropriate approach to risk management is key.

[48] Fiesler (2023)
[49] de Vries (2023); Calma (2023)
[50] Arns et al. (2023)
[51] Smith (2002)
[52] The EU AI Act takes a "proportional risk-based approach" by differentiating legal obligations on system providers proportional to the levels of risk that the AI system poses (OECD, 2023). This involves categorising types of AI systems by risk level. Regulations based on this approach set out legal requirements for system providers to conduct risk and impact assessments on their systems as well as obligations to manage risks according to the metric (Novelli et al., 2024).

3.1.1. A list of risks

Using open-ended interviews, we sought to elicit a laundry list of risks perceived by local stakeholders representing the public sector, the private sector, academia and non-governmental organisations. The stakeholders raised a multitude of risks relevant to AI design, development and deployment. The types of risks range from accidental risks and harms arising from innate technological limitations to wider structural risks such as competition and job displacement due to AI.

The interview responses were analysed and coded as "risk themes" that broadly capture risks in qualitatively similar categories. The word cloud in Figure 3.1 shows risk themes identified from the interview responses, with the size of the words corresponding to the relative frequency of mentions. The complete list of risk themes can be found in Appendix A. In the next section, we systematically describe the risks, classifying them by their shared characteristics.

Figure 3.1: Word cloud of risk themes

Source: KRI's visualisation

3.2 Three types of AI risks

The typology we propose differentiates between

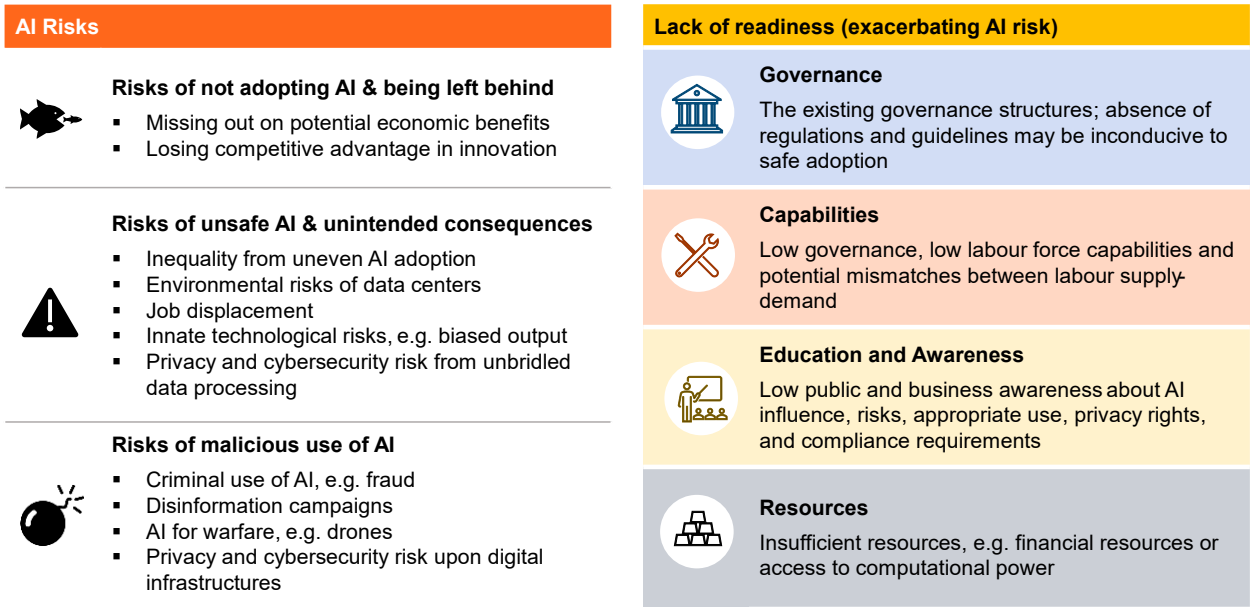
1. risks directly associated with AI or **AI risks**; and
2. the lack of readiness to cope with AI risks.

Supplementing existing literature with stakeholder interviews, this study identified and classified **AI risks** into three categories: (1) the risks of being left behind, (2) the risks of unsafe AI and unintended consequences and (3) the risks of malicious use of AI. These three categories will be further discussed in the following subsections.

Our typology contributes by differentiating between risk and readiness. From the conversations on AI risks with stakeholders, it became apparent that some concerns are associated with the **lack of readiness** to cope with the transition to being an AI-integrated society. These are not AI risks per se but end up compounding problems as they occur. In other words, AI risks can be exacerbated without corresponding readiness to support safe adoption. A clear differentiation between risk and readiness issues allows more targeted measures, as discussed in Section 3.3.

Figure 3.2 summarises non-exhaustive examples of risks under each category.

Figure 3.2: Typology of AI risks and readiness



Source: KRI compilation based on analysis

Apart from separating issues of risk and readiness, our typology also provides conceptual classifications that incorporate risks beyond the prevailing perspective on AI risks, described by Zwetsloot and Dafoe as the "accident-misuse dichotomy" [53].

The "accident-misuse dichotomy" refers to the framework of understanding AI harms as either 1) arising from AI behaving in unintended ways or 2) a result of inappropriate or unethical use. Accident risks involve either failures of AI systems in executing the system goal or unexpected

[53] Zwetsloot and Dafoe (2019)

outcomes caused by system limitations. On the other hand, misuse risks entail the "improper or malicious design, development, and deployment of AI systems"[54]. These risks are linked to unethical use, such as criminal uses of AI in fraud, weaponisation and so on.

Zwetsloot and Dafoe go on to point out that this perspective "obscures how technologies, including AI, often create risk by shaping the environment and incentives (the 'structure' of a situation) in subtle ways"[55]. Structural risks can be complex, shaped indirectly by technology's interaction with the broader environment[56]. Our typology incorporates these risks as part of the "unintended consequences" of AI.

Our typology also highlights the Global South perspective on AI risks, i.e., the perception of AI risks from a developing country context. It differs from previous typologies that take AI adoption as a given and primarily view AI risks in terms of technical failures and/or malicious applications. While technology adoption is an important pathway for development, it cannot be taken for granted because it requires significant investment amidst a developing country's competing priorities. Our typology calls attention to the complex interactions of AI with its socio-technical contexts[57], including the risks of low AI adoption.

3.2.1. Risks of not adopting AI and being left behind

AI technologies have great potential to benefit society. From raising economic productivity, to expanding scientific inquiry, and to improvements in human health and living conditions—the use of AI can contribute significantly to human development.

The vast capacity of AI in processing data allows advancements in diverse areas. For example, AI-driven Big Data predictive analytics in healthcare enhance disease diagnostics, treatment selection and clinical laboratory testing, raising health outcomes for communities[58]. In urban planning, AI also supports smart city projects, optimising energy use, waste management and traffic flows, thus improving the quality of living in urban areas[59]. AI may also raise the efficiency of public services by automating routine tasks, improving service efficiency and enhancing decision-making capabilities[60].

Data and AI-driven automation can help businesses optimise their operations by improving productivity and returns to scale[61]. Economy-wide integration of AI is poised to increase productivity, boost growth and potentially lift incomes[62]. Evidence has shown positive effects of AI on firms' total factor productivity[63].

However, AI can also widen the divide between adopters and non-adopters[64]. As AI promises massive advantages, the opportunity costs of lack of adoption may be steep. Developing countries risk missing out on the benefits of AI if their public and private sectors dither in AI adoption, stalling the benefits

[54] United Nations (2024)
[55] Zwetsloot and Dafoe (2019)
[56] Ibid.
[57] Ibid.
[58] Alowais et al. (2023)
[59] Lin (2018)
[60] Berryhill et al. (2019)
[61] Iansiti and Lakhani (2020)
[62] Cazzaniga et al. (2024)
[63] Wang, Sun, and Xu (2023)
[64] Gans (2022)

for their population that could otherwise be realised. The risk of "being left behind" can be critical for countries moving up the development ladder.

Apart from opportunity costs in AI-related benefits, economic losses are also a source of concern. In developing economies, traditional firms risk being outstripped by newer, digitally-competent businesses competing in the same market. In the context of global trade, countries which lag in ensuring AI innovation and adoption in their industries could be outcompeted in the international market.

3.2.2. Risks of unsafe AI and unintended consequences

The second category—"risks of unsafe AI and unintended consequences"—encapsulates two types of risks. First, accidental risks that are "unintended and harmful behaviours that may emerge from poor design of real-world AI systems."[65]. Second, structural risks that arise from the environment or context in which AI systems operate and interact with[66].

Accidental risks

Accidental risks are an unexpected diversion from the system's intended goals and can manifest in two primary ways. First, technical failure that causes misbehaviour in the AI system[67]. As AI systems are now deployed in areas such as driverless vehicles, AI-enabled drones, healthcare and security systems, technical failures to meet system objectives can be a critical risk to human safety.

Second, accidental risks can be the result of poor design, resulting in algorithmic bias, hallucinations and AI security risks. Poor design can include training a model with insufficient or poor-quality data. Even if the data is sufficient and representative of society, the data may carry with it existing biases of society that are transferred to the AI system.

Frontier AI models like Large Language Models (LLMs) are widely used in Malaysia but are typically developed in other countries. These models are trained on foreign datasets and designed in a normative context foreign to Malaysia. Our interviewees highlighted the need to use training data that better represents Malaysia's demographic makeup and locally sourced expertise in AI development.

Structural risks

The second form of unintended consequences has more to do with how AI reshapes and perpetuates risks that already exist. As a technology, AI changes political and economic relationships, how people appropriate natural resources, and how members of society interact with each other[68]. AI deployment without systemic considerations can lead to indirect effects on human labour, environmental sustainability and inequality, affecting human rights and causing security risks.

Mitigating these risks can be challenging because they cannot be traced to a single source along the AI system pipeline from design to deployment. For example, widespread integration of surveillance and AI systems in digital spaces can lead to the erosion of personal privacy. As digital platforms amass highly sensitive user data to produce accurate analytics, companies are incentivised to maximise data

[65] Amodei et al. (2016)
[66] Zwetsloot and Dafoe (2019)
[67] Pittaras and McGregor (2022)
[68] Zwetsloot and Dafoe (2019)

collection. While there are regulations on data, there are also limits to the effectiveness of regulating data practices related to AI. This is especially true when public awareness about individual rights to privacy is low. Moreover, the power to determine terms of data transfer is concentrated in a few platform providers.

To take another example, heavy automation in economic activities can displace human labour, leading to unemployment. Technological unemployment, while not a direct goal of AI systems, can be an indirect result of decisions made by businesses competing through cost-cutting automation. The introduction of AI automation into competitive environments can lead to structural changes in economic and labour relationships, entrenching inequalities.

Widely accessible AI services, such as generative language models, are also prone to naïve, uncritical use. As our interviewees noted, overreliance on AI to source information or make decisions without appropriate human oversight can sometimes lead to unintended adverse effects (as described earlier).

The risks posed by AI misuse will be challenging to control. Not only can the types of harm emerging from AI misuse be varied, but the scale, sophistication and speed at which harm is exacted with the use of AI far surpasses traditional detection and control mechanisms[69].

3.2.3. Risks of malicious use of AI

The last category of risks of "malicious use of AI" includes the malicious design, development and use of AI, involving direct human decisions that constitute malicious intent. Some of the risks are criminal in nature, such as the use of AI for cyberattacks, carrying out fraudulent activities and the deployment of AI in lethal autonomous weapons and drones. Other risks are not technically criminal but may be of questionable ethics, for example, the use of AI to produce and spread disinformation and deepfakes, tamper with democratic processes and so on.

The crucial risk of malicious AI use lies in its capacity to scale and democratise security harms that used to be costly and inaccessible, making these harms much more challenging to contain. The enhanced capabilities of AI to carry out cybersecurity attacks at scale, for instance, can amplify security risks on critical information infrastructure with more efficiency and much less cost. Offensives using AI to generate cybersecurity exploits and autonomous malware are known examples of AI cybersecurity threats[70]. Meanwhile, AI also allows the automated mass production of high-quality, individually targeted disinformation, thanks to a combination of generative and predictive capabilities[71]. Therefore, although legal means to address these harms already exist in parts of the world, enforcement capabilities may not match the scale at which AI enables them to be spread.

Aside from issues of hazardous AI use in the civilian sector, military use of AI such as in autonomous weapons systems in warfare also pose dangers of physical security. Use of AI in autonomous weaponry raises ethical and legal issues, as well as significant violations of human rights[72].

[69] Anderljung and Hazell (2023)
[70] Girhepuje, Verma, and Raina (2024)
[71] Loth, Kappes, and Pahl (2024)
[72] UNIDIR (2017)

3.3 Lack of readiness

The use of AI can introduce a broad range of risks. The lack of readiness can lead to the lack of meaningful adoption, and the inability to manage unintended consequences or curtail malicious activities associated with AI. We identified four areas where readiness is paramount: (1) governance, (2) capabilities, (3) education and (4) resources.

3.3.1. Governance

Governance refers to the rules and processes that coordinate behaviour of individuals and organisations (see Chapter 2). Appropriate governance enables safe development and deployment of AI systems. During our interviews, stakeholders raised concerns over the lack of consistent rules and guidelines both nationally and internationally as well as the absence of clear policies and procedures for local firms regarding AI system deployments.

At present, the global AI governance architecture is in disarray. Regulations or compliance mechanisms are jurisdictionally bounded. For example, an AI system provider deploying in the EU is governed by EU rules, and if deploying in a different jurisdiction would be governed by the rules of that jurisdiction. While some regulations are sector specific, some are sector agnostic and apply across sectors. Companies operating internationally must meet an array of compliance requirements, which are tied to political, legislative shifts within each jurisdiction.

In Malaysia, despite the existence of the National Data Sharing Policy, current national governance structures are inconducive to information sharing among the public and private sectors. A vacuum in both government and corporate governance leads to risks of unethical, unsafe AI development and use. Insufficiently regulated environments also risk perverse competition practices driven by AI[73].

3.3.2. Capabilities

Greater capabilities are needed to prepare all segments of the society for AI integration, especially in the areas of workforce skillsets and governance abilities.

As AI-driven automation may displace some jobs while creating others, workers with appropriately diverse skills are needed to wield the technologies effectively. It is imperative that the national skills training system manages the impact of AI deployment in the workplace and ensures that human and AI capabilities complement each other[74]. The employment outcome of a skilled workforce depends on policies that help grow important industries locally. When labour and industrial policies are not aligned, it can negatively affect both areas.

Aside from labour, capabilities in governance are also important. Stakeholders have pointed out the need for expertise not only in technology, but in other areas such as social sciences to facilitate good governance. Moreover, firms need to bolster their compliance capabilities. Export-oriented firms facing the international market are especially at risk of losing market access and competitive advantage due to non-compliance with international AI standards. The capabilities to navigate the wide variety of compliance requirements will be crucial for these businesses.

[73] Lokshin and Hammer (2019); Mulligan and Godsiff (2023)
[74] Gmyrek, Berg, and Bescond (2023)

3.3.3. Public education and awareness

The third area of readiness is public education and awareness. Education is an integral part of the effort to improve awareness of ethical AI use. The education system also plays a role in developing key digital skills and capabilities of a domestic talent pool. This will be essential to prepare the local workforce for the AI-integrated economy so that Malaysia can reap the benefits of AI and drive innovation.

Currently, there is low public awareness of the influence and risks of AI[75], as well as the individual rights related to AI such as privacy rights. Most small businesses are also likely to be unaware of the compliance needs of their products and services involving AI[76]. Low literacy of individual rights and digital risks exposes the public to potential exploitation by malicious actors. Our stakeholders also noted that holistic education is needed to train digitally ready talent, including upskilling and reskilling efforts, which will allow the workforce to adjust to the potential labour effects of AI, such as job displacement.

3.3.4. Resources

Lastly, bolstering readiness in governance, capabilities and education will require resources. Inadequate resource allocation can result in poor risk management, which reduces the ability to solve AI-related problems. Financial resources are needed in many areas to bolster AI adoption as well as research and development in the technology.

Above all, driving AI innovation and adoption also requires a wide range of infrastructure, hardware and computational resources such as data storage facilities, high-performance computing (HPC) systems and networking devices to support it. This is especially important for the digital sector, where rapid advancements demand scalable technology, skilled talent and robust data systems. In building the infrastructure for AI integration, local Infrastructure as a Service (IaaS) providers and data centre operators will need more resources to better compete with foreign corporations.

[75] From stakeholder interviews.
[76] From stakeholder interviews.

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CHAPTER

04

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CHAPTER 4

CHALLENGES IN AI GOVERNANCE

While AI presents opportunities for innovation and economic growth, it also introduces complexities that demand careful oversight and coordination. Effective governance is crucial to harness AI's potential while mitigating its risks. However, Malaysia's efforts to establish a robust AI governance framework face several key challenges rooted in the structure of responsible agencies, limited capacity and insufficient understanding of how to design regulatory frameworks tailored to AI's characteristics and risks. This chapter explores five critical challenges in AI governance that need to be addressed for Malaysia to move forward.

4.1 Lack of coordination and collaboration across agencies

One of the primary challenges of AI governance that has been consistently agreed upon among stakeholders across all sectors from our interviews is the lack of coordination and collaboration among various agencies. Until late 2024, there was an absence of a central authority to streamline processes and ensure that all sectors were aligned towards a common objective. Recognising this gap, KD established the National AI Office (NAIO), as discussed in Section 2.2, to serve as the focal point for AI-related matters.

In Malaysia, numerous ministries, agencies and sector-specific entities have roles or interests related to AI, as illustrated in Table 2.1 in Section 2.2. While each of these organisations may engage in AI-related activities or initiatives, they often prioritise their institutional objectives and lack a cohesive framework to guide their efforts.

One interviewee provided an example of the lack of coordination and collaboration in the context of AI's application in fisheries. They explained how technology could be harnessed to identify fish types and estimate population densities within specific bodies of water, enabling organisations like the Fisheries Development Authority of Malaysia (*Lembaga Kemajuan Ikan Malaysia,* or LKIM) to guide fishermen to resource-abundant areas. However, this project currently operates in isolation, confined to a single local context. Expanding such data-sharing initiatives to other regions, such as Sabah and Sarawak, could enhance their benefits and promote a more integrated approach to fisheries management.

Another issue is the lack of active participation in existing consultative processes. The lack of clearly defined consultation pathways complicates stakeholders' and the public's ability to identify appropriate contacts for AI-related inquiries, which may further impede collaboration and progress in the field and slow down the identification of risk factors.

Additionally, there is a misalignment between the overarching AI regulatory frameworks and sector-specific regulations. As one interviewee noted, cross-sector collaboration is essential because without understanding the needs of other sectors, each cannot respond effectively[77]. This collaboration is needed to build trust, foster mutual understanding and allow sectors to develop AI frameworks that address intersecting needs more comprehensively.

[77] For example, in agriculture, collaboration with technology developers will help to transform areas such as crop monitoring and yield optimisation. However, agricultural professionals should understand how AI systems function – for example, AI-driven pest detection – to ensure accuracy and ethical use. At the same time, AI developers also need to understand agricultural practices, crop cycles and the need for clear and explainable AI recommendations, such as why specific treatments or actions are suggested.

4.2 Insufficient state capacity in AI governance

State capacity refers to the government's capability to successfully execute its policies and achieve its objectives, which is vital for effective governance[78]. Our interview findings indicate that adequate state capacity across various disciplines, such as technical, legal and social sciences, will positively influence effective governance and the use of AI.

In terms of technical capacity, there is a notable shortage of professionals skilled in areas such as quality control, AI system assessments and investigative work when issues arise. This shortage of tech talent is not unique to Malaysia, but is a global issue, as the demand for AI-related roles has significantly outpaced supply in recent years[79]. Reskilling and upskilling the existing workforce have been some potential solutions, particularly within relevant agencies and enforcement bodies. Strengthening the capabilities of these institutions will better equip them to oversee AI development and respond to AI-related challenges more effectively.

Compounding the issue of talent shortage is the issue of the outflow of skilled professionals to countries that offer more competitive salaries. Malaysia lags behind neighbouring countries such as Singapore, where tech professionals often earn three to four times more for comparable roles, from junior to senior levels[80]. This wage disparity makes it difficult for Malaysia to retain talent, further exacerbating the shortage of skilled AI professionals in both the public and private sectors.

A further challenge lies in developing comprehensive frameworks encompassing the legal, regulatory and ethical dimensions of AI use. This requires experts not only in law and technology but also in fields like economics and philosophy to create frameworks that truly serve Malaysia's unique needs. The country needs competent professionals who can address these multifaceted aspects of AI governance, creating a foundation that supports both responsible growth and proper adherence to national priorities.

4.3 Difficulties in building an effective regulatory environment

Establishing an effective regulatory environment poses its own challenges, as traditional enforcement mechanisms are often ill-equipped to manage the unique complexities posed by AI technologies. AI systems operate in ways that differ fundamentally from conventional technologies, as they involve autonomous decision-making, machine learning algorithms and data-driven processes[81].

As these technologies evolve, enforcement becomes increasingly difficult due to the limited understanding of the underlying systems, which complicates efforts to assign responsibility and determine appropriate penalties or sanctions when AI systems cause harm or violate regulations.

The rapid pace of technological advancement highlights another issue: the lack of continuous monitoring and evaluation of AI applications. Without regular oversight and periodic reassessment, decision makers will not be able to ensure that AI systems remain compliant with ethical standards

[78] Herre and Arriagada (2023)
[79] Chui et al. (2022)
[80] NodeFlair (2024)
[81] Zaidan and Ibrahim (2024)

and legal requirements as they evolve. Continuous monitoring mechanisms are necessary to detect emerging risks, prevent potential harm and ensure that AI systems operate responsibly and transparently.

Translating policies into enforceable legislation adds yet another layer of complexity. While drafting guidelines or policies is relatively less complex, moving them through parliamentary processes to enact binding laws with enforceable penalties is far more challenging. Our interview findings also highlight the need for clearer legislative measures, where punitive boundaries—such as fines for non-compliance—are defined not just as deterrents but as safeguards[82].

Another important component of the regulatory environment raised by a few interviewees is consumer protection, especially as AI becomes more prominent in decision-making processes. A notable concern that was mentioned regarding the regulatory environment is the lack of effective mechanisms [83] for collective redress in cases where AI systems create biased outcomes. AI technologies can inadvertently introduce or perpetuate biases, particularly in sensitive areas like employment and financial services. For example, if an AI algorithm disproportionately denies loans based on certain income levels or assets, it can systematically disadvantage specific groups.

In the absence of an alternative dispute resolution system—like a specialised AI ombudsman[84]—consumers have few accessible options to address grievances arising from AI-induced discrimination or data breaches. For instance, in financial services, a Financial Ombudsman exists to mediate disputes outside the court system. If a similar mechanism were established for AI, affected parties could seek recourse without bearing the high costs and lengthy timelines associated with court proceedings.

4.4 Balancing between innovation and regulation

The need to balance innovation with regulation is another key consideration in shaping effective AI governance. Regulating AI involves balancing the dual nature of fostering innovation and mitigating risks, including bias, privacy violations and misuse[85], as detailed in Chapter 3. Policymakers will have to grapple with questions of scope, enforcement and adaptability, as the rapid pace of technological advancements often outstrips the ability of legal frameworks to keep up[86]. Moreover, competing interests between global tech corporations, governments and civil society further complicate efforts to establish universally accepted standards[87].

Striking this balance is particularly relevant to Malaysia, where overregulation could suppress innovation, potentially making Malaysia less attractive to AI investors compared to countries with

[82] Deterrents are measures to discourage improper behaviour by imposing penalties for non-compliance (e.g. fines), while safeguards are proactive measures aimed to minimize risks and ensure adherence to best practices.
[83] The lack of effective mechanisms in this context means that a legal recourse is currently not accessible or too expensive for affected individuals.
[84] An ombudsman acts on behalf of a higher authority within an organisation to receive, investigate and resolve complaints raised by members of the organisation or the public. Beyond handling complaints, an ombudsman mediates and resolves conflicts, offering an alternative to court proceedings.
[85] Gilbert and Gilbert (2024)
[86] Walter (2024)
[87] Taeihagh (2021)

more adaptable policies[88]. Stakeholders from our interviews expressed concerns that excessive regulation might "handcuff" industries, restricting their ability to innovate and grow.

They also emphasised the need for regulation to serve as an enabler of development, fostering both economic growth and technological progress. At the same time, insufficient oversight could result in insufficient safeguards, creating an environment where AI operates without adequate accountability.

Globally, countries have adopted varied approaches to balancing AI regulation and innovation. For example, in China, the government has streamlined legal procedures to fast-track AI development, as seen with the rapid approval of 14 large AI models in 2024. Simultaneously, they have introduced regulations such as the "Temporary Measures on the Regulation of Generative AI Services" to ensure that AI-related developments align with the state's political and social values[89]. Despite concerns that such regulations might hinder innovation, China's AI industry continues to thrive with notable advancements such as Baidu's Ernie Bot and Tencent's Minimax[90]. Based on China's approach, balancing supportive policies with necessary oversight may be useful in promoting innovation and safeguarding ethical AI use.

As Table 4.1 outlines, approaches to AI governance may vary, not only in their scope (horizontal versus vertical) but also in their level of enforceability, ranging from soft standards to hard laws.

Table 4.1: Approaches to AI governance

Dimension	Type	Description	Examples/Characteristics
Scope of Regulations	Horizontal regulation	Provides general principles that apply across all AI applications, regardless of the sector.	Frameworks like the EU AI Act exemplify this approach, which establishes overarching rules to govern AI systems[91].
	Vertical regulation	Tailors guidelines to specific applications or industries, such as healthcare or finance[92].	Allows for a more nuanced response to sector-specific risks and opportunities.
Level of Enforceability	Soft standards	Voluntary guidelines, best practices or codes of conduct that are not legally binding but aim to influence behaviour through normative means[93].	Flexible and adaptable; less prescriptive; suited for rapidly changing environments.
	Hard laws	Legally binding regulations are enacted by legislative bodies and enforced by government authorities[94].	Offers legal clarity and enforceability but tends to be more rigid and less adaptable to rapid technological advancements.

[88] Zheng (2024)
[89] Kwarteng (2024)
[90] Ibid.
[91] O'Shaughnessy and Sheehan (2023)
[92] Ibid.
[93] Buczynski et al. (2022)
[94] Ibid.

Regulatory frameworks need to be tailored to address specific gaps and contextual needs, rather than taking a one-size-fits-all approach. AI regulation should set minimum standards without being overly broad, ensuring that policies reflect unique standards and perceptions relevant to the Malaysian context. High-risk sectors like transportation and healthcare require more targeted regulation due to their potential for significant societal impact. Targeted, sector-specific regulation will allow for a more practical and responsive governance model, addressing the unique demands of AI applications across different fields.

Box 4.1 explores global approaches to AI regulation, complemented by insights from local stakeholders to highlight the diverse perspectives on governance.

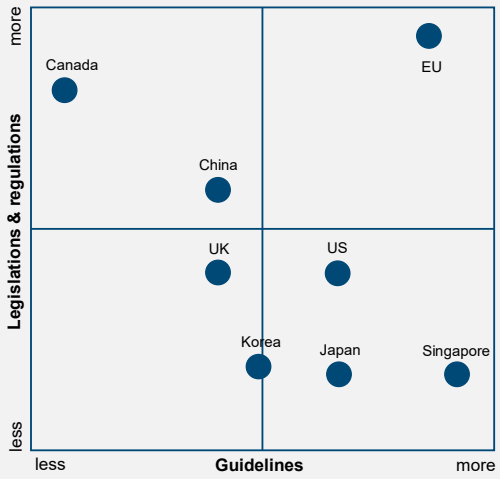
Box 4.1: Global and Local Approaches of AI Regulation

Global Context: Risk-Based Approaches to AI Regulation

Globally, policymakers are increasingly adopting a risk-based approach to AI governance, tailoring compliance obligations to the risks posed by specific AI-related activities[95]. For example, the EU's AI Act and Canada's AI and Data Act categorise AI systems based on their risk profiles, with the strictest requirements applied to high-risk systems[96].

However, the adoption of this approach varies by country. While the EU and Canada strongly emphasise risk-based regulation, other countries such as Singapore, Japan and South Korea, focus more on guidelines and flexible frameworks with less emphasis on strict regulatory enforcement.

Figure 4.1: Countries' Approaches to AI Governance



Source: Adapted from EY (2024)

As illustrated in Figure 4.1, this diversity in approaches can be mapped based on reliance on legislations and regulations versus guidelines[97]. The EU, for instance, is positioned in the upper-right quadrant, signifying a strong emphasis on both binding laws and comprehensive guidelines. Canada, on the other hand, favours strong legislation with low reliance on guidelines. Countries such as Singapore, Japan and the US emphasise detailed guidelines while using relatively fewer

[95] EY (2024)
[96] Ibid.
[97] Ibid.

binding regulations. Meanwhile, South Korea's approach leans towards flexibility, with less emphasis on either extreme. These variations reflect how different countries prioritise regulatory oversight and flexibility, seeking to balance innovation with the need to address specific AI-related risks.

AI Impact and Governance (AIIG) Roundtable Stakeholder Insights: Preferences for Soft and Sectoral Approaches

In the context of Malaysia, stakeholders from our AIIG Roundtable indicated a clear preference for soft standards over hard laws, with 25 out of 31 responses (81%) to our virtual poll favouring standards as the primary vehicle for AI governance[98]. This suggests a strong inclination towards flexible and adaptive regulatory measures.

Similarly, there was a preference for sector-specific (vertical) regulation over generalised (horizontal) approaches, where 23 out of 30 stakeholders polled (77%) supported vertical regulation. This finding emphasised the importance of framing governance frameworks to the unique demands of sectors, such as healthcare and finance, where societal impacts are more significant[99].

4.5 Issues beyond Malaysia's control

The final challenge we gathered from our interviews on building effective AI governance relates to factors beyond Malaysia's immediate control. One key issue is the networked nature of AI, where many application programming interfaces (APIs), datasets and technological components originate from abroad. This interconnectedness demands a supply chain approach to governance, rather than focusing on individual companies alone. Many AI systems rely on foreign cloud services, machine learning frameworks and APIs that may be subject to the regulations and policies of the countries where they are developed. These dependencies can introduce risks, particularly if changes are made by international technology providers or if restrictions are imposed on the export of certain technologies.

Building on this, the cross-border flow of data may raise legal and regulatory concerns. When data is stored or processed across borders, legal conflicts can arise due to differing privacy standards and regulations, increasing both the risk of unauthorised access and the potential for data misuse. This adds layers of uncertainty, especially when sensitive information is at stake.

Moreover, robust mental models[100]—or simplified conceptual frameworks—are needed to help all stakeholders better grasp the intricate issues at hand and identify clear solutions. Without clear mental models, addressing AI-related issues and conveying solutions becomes more complex, often leading to misunderstandings and ineffective problem-solving. For example, the lack of a standard definition of AI may lead to stakeholders interpreting the term differently, which could hinder effective communication and policymaking.

[98] Tan (2024b)
[99] Ibid.
[100] Mental models refer to the ability to understand how a system, concept or phenomenon works. They are formed through the interpretation of one's experiences, knowledge and expectations. This will then influence how one perceives, reasons and solves problems.

Developing shared mental models could improve understanding across multiple actors, such as policymakers, developers and regulators, for them to tackle complex AI-related issues more effectively. For instance, fostering a common understanding of concepts such as algorithmic bias could lead to more targeted policies.

Finally, effectively adopting AI requires more than an understanding of new technologies; it demands a transformation of existing processes and mindsets across all stakeholders. This cultural shift will pave the way for embracing AI's potential responsibly and sustainably.

CHAPTER

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CHAPTER 5

POLICY RECOMMENDATIONS

Despite the aforementioned challenges, there are concrete steps that Malaysia can take to navigate its AI governance pathway and position itself strategically in the global environment. In this chapter, we provide some policy considerations followed by recommendations for the path forward.

First and foremost, we acknowledge that there is little need for AI governance if there is no AI adoption. Concurrent with our research on best practices for AI governance are the government's efforts to encourage AI adoption. Experts we spoke with sought to promote AI adoption by (1) finding the most appropriate and beneficial types of AI for our local context, (2) making AI affordable and accessible to those with fewer resources at both firm and household levels, and (3) building public trust in AI[101]. We recognise the intention to increase AI adoption as a separate concern but focus our policy recommendations on improving AI governance.

Second, our research leads us to conclude that Malaysia should focus more on governing AI use and deployment and less on governing the development of AI models. As Malaysia is not primarily a developer of models at this time, AI risks for the nation have more to do with how and how much AI systems are used than how they are built and trained. While recognising the need for AI development standards to be met, the country's governance priorities should address risks more relevant to it.

Thirdly, a lack of AI readiness can exacerbate AI risks. As discussed earlier, stakeholder-identified risks such as data governance, cybersecurity and a lack of clear regulations and guidelines[102] can be amplified by a lack of AI readiness at both government and industry levels. The lack of readiness also impacts the extent to which AI is adopted in a meaningful way. Policies that focus not solely on governing AI but also on boosting AI readiness may mitigate these risks.

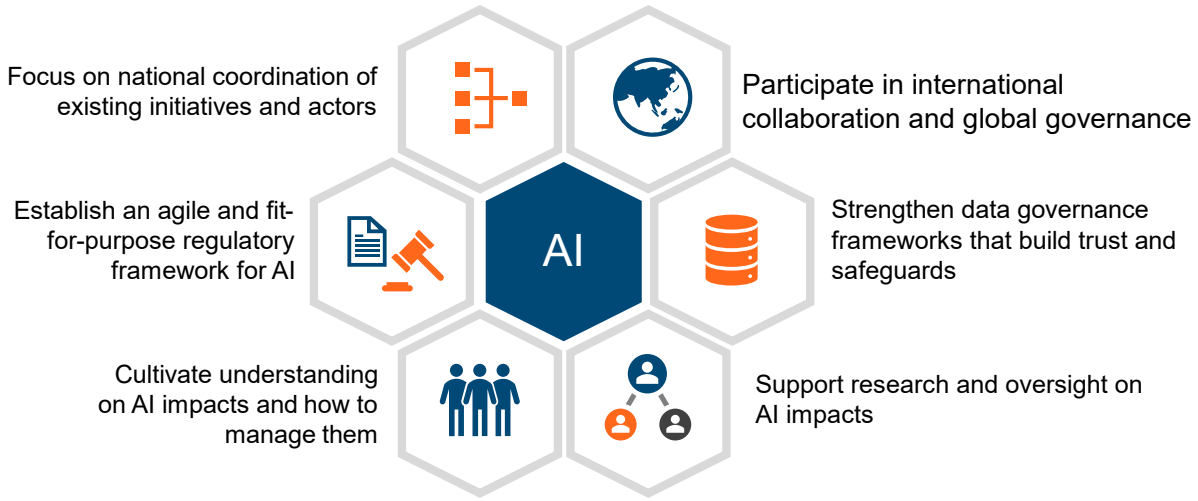
Fourthly, our recommendations focus on functions and not the implementing agency in most cases. While the new National AI Office has the mandate to address many of our recommendations[103], it has finite resources and will likely not be able to cover the entire spectrum of functions needed to support AI governance, across all critical sectors and stakeholder concerns. It is expected that efforts on AI governance will rely on all actors pulling their weight, and a central agency like NAIO might be most useful in linking initiatives and bridging gaps in coordination and knowledge.

Lastly, the policy recommendations below are interconnected and should be read as such. Successful implementation of each will have a multiplying effect on the others.

With that in mind, here are our six policy recommendations.

[101] From stakeholder interviews
[102] From stakeholder interviews
[103] Ministry of Digital (2024b)

Figure 5.1: Policy recommendations based on key findings from KRI stakeholder interviews



Source: KRI's visualisation

5.1 Focus on national coordination of existing initiatives and actors

As Malaysia moves into an AI era, the scope of technology governance needs to scale up with the scope of its impacts. A national body overseeing AI strategy and policy such as NAIO has an important role to play in developing a clear and unified strategy, while ensuring that different parts of the ecosystem work together to move the country forward as a whole.

From our research, we find that national coordination serves to fulfil two main purposes. The first is to **ensure that information flows efficiently** within the AI governance ecosystem, where there is clear communication of who is doing what and a feedback loop that enables timely detection of potential threats. This includes providing a single point of contact for collecting stakeholder perspectives and knowledge sharing, as well as disseminating practical and updated information such as event calendars, guidelines and available incentives and resources. To ensure coherence, the national coordinating body will also need to monitor and communicate emerging sectoral initiatives, such as new developments in regulating online safety within the communication and social media space, which touches upon algorithmic curation and platform transparency.

With the availability of information, the second step is to **coordinate joint action**, minimising overlapping work and wasted resources, while capitalising on the capabilities across the many agencies within the Malaysian AI landscape (See Chapter 2). As put by one of our respondents, interpersonal relationships form the foundation for effective partnerships and collaborations, even if the individuals represent organisations. The building of trusting and sustainable networks and relationships is therefore part of the coordination work that is needed.

The importance of the coordination function cannot be overstated, as it forms the backbone that connects and maximises the utility of the other recommendations to follow. Investment into coordination must also recognise that this is a long-term endeavour requiring sustainable effort that will bear fruit in the longer run.

5.2 Participate in international collaboration and global governance

Many experts we spoke with recognised the global nature of AI and how its governance cannot be done solely within national borders. Malaysia needs to engage at the international level to influence the governance of emerging technologies towards a direction that benefits it and be able to collaborate with other like-minded countries. As mentioned in Section 2.3, the country has already begun participating in various international initiatives.

We recommend viewing global governance participation in three main areas of work. **The first is to form Malaysia's position on debates regarding global governance** to inform the direction of advocacy at the international level to protect its national interests. Part of this will include determining the country's preferred approaches on matters of national concern and public interest, such as curbing AI-related risks of online harms[104] as well as the concentration of power of big tech companies. From an industry perspective, stakeholders generally agree that fragmented policy and legal frameworks at a global level will increase the cost of compliance and disadvantage smaller businesses, so harmonised standards will be most beneficial[105,106]. Others have mentioned the importance of ensuring that the benefits of AI technologies and data sharing do not neglect the interests of the Global Majority/South[107].

The second is to identify avenues of global governance participation and international rules setting. During our interviews, many experts emphasised the importance of "getting a seat at the table" at the global level. There are numerous fora that Malaysia can participate in, such as AI-specific spaces like the AI Safety Summits, or the mushrooming AI initiatives in broader international organisations. A useful resource in identifying these spaces is a mapping of the global AI governance landscape by Global Partners Digital, which covers fifty initiatives, their overviews and approaches to AI[108]. Our country experts should also monitor new areas of global cooperation such as those proposed by the UN's *Governing AI for Humanity* report[109], which includes the proposals for an international AI capacity development network and a global fund for AI.

Malaysia will also need to take note of legally binding mechanisms such as international treaties and multilateral and bilateral trade agreements as the requirements may shape or constrain its sovereign space to govern AI. Some of the contentious issues in this area include provisions for cross-border data flows, mandatory disclosure of source code and conditions for the local presence of multinational technology companies[110]. No less important are spaces for standards setting and development such as the International Organisation for Standardisation (ISO), as these will establish legitimate ground rules for the industry and determine the product specifications of AI technologies, even if they are technically voluntary[111].

The third is to engage strategically through these avenues. Participation in global governance can be expensive, as meetings and negotiations require much technical expertise and often happen

[104] Including but not limited to online scams, child safety online, the proliferation of disinformation, misinformation and hate speech, and online gender-based violence.
[105] From stakeholder interviews
[106] Noor and Manantan (2022)
[107] From stakeholder interviews
[108] Context on the mapping is available on the Global Partners Digital website, including the link to the spreadsheet.
[109] AI Advisory Body (UN) (2024)
[110] From stakeholder interviews
[111] Cihon (2019)

in various locations and time zones. Alliance-building with like-minded countries will help amplify Malaysia's voice through South-South or regional cooperation. Many have noted that Malaysia's ASEAN chairmanship in 2025 presents a great opportunity, but it is expected that regional cooperation will be a key theme in years to come. Malaysia will also chair the ASEAN AI Safety Network[112], which is a welcome first step in this journey. Besides aiming for influence, the country should also monitor and learn from international best practices. Regular knowledge sharing with international experts will serve to build capacity locally.

5.3 Establish an agile and fit-for-purpose regulatory framework for AI

As articulated by one of our interviewees, the key to an effective regulatory framework on AI is to "find the line between over-governing and under-governing". It is difficult to get a consensus on this elusive line, given the tension between allowing innovation and mitigating its disruptive effects. With the breadth of possible applications and associated risks, as well as uneven readiness levels, stakeholders understandably have different perspectives and appetites for risk. Some will gain and some will lose due to mass technology adoption.

Acknowledging this tension, our recommendations are geared towards forming an agile regulatory framework that will help minimise identified risks and have the flexibility for refinement and course correction. For this, we recommend **considering a whole spectrum of regulatory mechanisms alongside legislation to form a coherent regulatory framework**[113]. This framework would define parameters such as roles, responsibilities and guardrails using a combination of hard and soft regulations to achieve Malaysia's objectives of economic advancement and societal wellbeing, guided by national values. A graduated and evolving response compatible with Malaysia's stage of development and AI adoption would determine the balance between guidance and enforcement.

Many of our stakeholders emphasised the importance of softer standards and guidelines, as well as other assurance mechanisms such as third-party certification and self-assessment toolkits[114]. Some have also mentioned the importance of regulatory sandboxes, as the National AI Sandbox under the NTIS appears to provide a testing ground that emphasises commercial rather than regulatory purposes[115]. The setting up of alternative dispute resolution mechanisms such as an ombudsman will also provide a channel to address AI-related grievances outside the court.

When addressing the role of legislation in AI governance, it is important to recognise that laws not only have a role to constrain (or what some stakeholders have described as "handcuffing"), but also play a role to enable actions. Therefore, the concern about regulations limiting innovation must be tempered by understanding how regulations can also enable the adoption and use of AI[116]. For example, updated legislation on intellectual property could support and incentivise the legal and ethical use of AI for creation and innovation.

[112] MOF (2024)
[113] Here we refer to a broad definition of regulation by Smuha (2021) as "a means to intentionally influence and/or constrain the behaviour of actors, be it individuals, groups, or legal entities such as companies".
[114] Such as Singapore's AI Verify.
[115] Farlina Said (2024)
[116] From stakeholder interviews

Here are some **further considerations for Malaysia's legal framework** for AI governance, collected from our stakeholder discussions.

- **Firstly, governance experts can work with the current system, identifying and filling gaps in existing laws.** Most stakeholders prefer a sectoral approach (See Box 4.1) for regulations, as it recognises the context in which AI is applied, as well as the different risks, requirements and preparedness of each sector. Different sectors may therefore move at different paces for adoption and regulation.
- **Secondly, if and when a horizontal law such as an AI Act is to be put in place, stakeholders have suggested a modular approach**, with a basic framework law that can be read together with components including sectoral regulations and standards. These components can be updated as the technology advances or as impacts evolve, without the need to go through a lengthy parliamentary process to amend the law.
- **Thirdly, the judiciary will have a role in shaping the direction of AI regulation** as well, when they set legal precedents and create case laws in their decisions on AI-related cases.
- **Fourthly, it is important to ensure that the legal system is coherent**, from the aspects of horizontal and vertical/sectoral laws, local and international laws, as well as regulations across different layers of the AI technology stack (e.g. application, data, model development, infrastructure).
- **Fifthly, oversight mechanisms would be important to monitor AI impacts** (see Section 5.6) but their efficacy will likely rely on legal requirements for algorithmic transparency or other forms of mandatory reporting.
- **Lastly, this framework should also take into account the intersections between policy, law and other regulatory tools** such as incident reporting and ISO standards.

While we recommend a softer approach at the current time for Malaysia's regulatory framework, we anticipate a global shift towards tighter rules and laws in time. Already, the EU AI Act applies to providers and deployers of AI systems that are located outside the EU if the output produced is intended to be used within the Union, or if persons affected are located within the EU[117]. It is therefore important that Malaysia **boosts its public and private sector readiness for AI governance and regulation** in areas such as enforcement, auditing and certification.

Stakeholders from the private sector have reflected that local companies that export overseas will need support and guidance to comply with influential regulations such as the EU AI Act to be competitive globally. An example of such support could be an AI readiness checklist for Micro, Small and Medium Enterprises (MSMEs) engaging in digital trade internationally[118]. Another suggestion is the possibility of providing incentives to companies to put in place AI governance frameworks, to promote the responsible use of AI at the firms' level[119].

Other recommendations will feed into the complex process of building and preparing for a regulatory framework that is fit for purpose. Section 5.4 focuses on data governance, while Sections 5.5 and 5.6 delve deeper into building understanding and research that will contribute to our preparedness for AI governance from a broader perspective.

[117] KPMG (2024)
[118] Gong (2024b)
[119] From stakeholder interviews

5.4 Strengthen data governance frameworks that build trust and safeguards

Personal data privacy and cybersecurity were clearly acknowledged in our stakeholder conversations as necessary components of digital governance, including AI governance. We acknowledge that the government is making a concerted effort towards building legislation to safeguard privacy and safety and recommend further strengthening of data governance frameworks to be compatible with the needs of the AI era.

There is a need to **bridge gaps in our existing data governance frameworks** for AI-related risk scenarios. A tangible example of a data governance gap is that the data held by government agencies remains largely unregulated. Even after its 2024 amendment, the PDPA does not govern government data. This is a significant gap as government actors hold and collect a great amount of data and are well-placed to apply AI technologies on a large scale, for example in critical sectors such as healthcare[120]. The Official Secrets Act 1972 (OSA) does govern government information, but only with respect to communication of restricted information to non-authorised personnel. It does not cover how general government data or information might be used for analysis or training purposes. The introduction of the Data Sharing Act 2024 is a step in the right direction in enabling purposeful data sharing across government agencies, and user access controls will be key for appropriate data usage.

It should be noted that the PDPA was not designed to protect personal data in an age of AI[121]. Another data governance challenge is the obsolescence of the practice of obtaining individual consent to share personal data and of expectations of individual privacy. AI systems can make highly accurate inferences about a person through available data provided by others with similar profiles even if the system knows very little about that person itself[122].

For the purpose of building useful, robust and reliable AI systems, the quality of training data is fundamental. This will often require data sharing, whether within an organisation or across different organisations. There is therefore a need to **build trust and common principles for data governance** as a foundation for data sharing in service of safeguarding the interests of the data subjects while also building better technology for the local context.

Increased transparency around what types of training data are being used, especially if such data are not publicly available, is one approach to building public trust. For example, if historical house prices and purchasers are being used to train an AI model on financial risk assessment models, it may be worth considering requiring fintech AI deployers using this model to disclose their training data sources. One of the requirements of an AI registry or repository (see Section 5.6 below) might include disclosure of sources of training data.

Trust in AI systems can also be built by ensuring that smaller businesses are able to participate meaningfully in an AI ecosystem. For example, individual merchants that are registered with a large e-commerce or digital trading platform and share their data with that platform should be able to gain access to the analyses and insights to which their data contribute.

[120] From stakeholder interviews
[121] Jaspal Kaur Sidhu Singh and Darmain Segaran (2023)
[122] Khoo (2024)

Cybersecurity risks around AI are only just beginning to be uncovered. All technologies have vulnerabilities that can be exploited[123]. For example, AI systems can be fed tampered data that negatively affects their predictive accuracy, or they can be reverse-engineered to obtain information on specific high-value targets whose personal data the systems can access. Although these may seem like distant science fiction threats, their potential harms are significant. Part of Malaysia's approach to AI governance could include international cybersecurity partnerships.

5.5 Cultivate understanding of AI impacts and how to manage them

The discussions about the lack of capacity to adapt to an AI-powered future have commonly focused on job displacement and replacement. We recommend a broader perspective, building on existing initiatives to expand understanding of AI impacts to both experts and laypeople.

Much effort has been invested into "futureproofing" the labour force in the face of AI automation, including identifying trends within the job market, building talent and providing training to reskill and upskill[124]. These are important initiatives that need to be sustained and strengthened. In addition to that, we believe that another area that has been largely overlooked is to **identify and connect experts across different disciplines and localities** for cross-fertilisation of ideas and knowledge sharing. For instance, there is a need to connect technologists and domain experts (e.g. in areas of health, finance, law and so on, which are technical domains in their own right) to find appropriate use cases and discuss possible risks. With that, a broader and more systemic lens can be used to understand human rights and the societal impacts of AI.

Also, there is a great need to **build expertise on AI governance** which will fill roles such as auditing, certification and enforcement, to staff various functions of the AI governance ecosystem that is being built. The building of state capacity is of great urgency in order to build a pathway beyond industry self-regulation, as the lack of in-house capabilities for investigation and enforcement is a practical limitation to what the government can do in the face of technology abuse. One interviewee suggested a regular "stocktake" of existing capabilities within government agencies. This stocktake could provide policymakers and regulators with a clearer understanding of their own capacity, revealing the expertise they have and the gaps they need to address. For the private sector, as Malaysia's talent pool matures, it might consider professional associations for AI professionals and practitioners, who would be bound by codes of conduct or professional standards[125].

The AI for Rakyat initiative spearheaded by the government is a significant initial step in building AI literacy for the general public, and the next step would be to **extend awareness campaigns into matters such as consumer and civic education on AI impacts**. Existing civil society organisations working on consumer protection and democratic participation at the grassroots level would be good partners with whom to collaborate.

At the same time, given the wide-ranging impacts that AI has on society, we also recommend **facilitating conversations among non-experts**, so that laypeople can also participate in discussions on how technology can affect their lives, relationships and society at large. This support

[123] Laventhen Sivashanmugam and Tan (2024)
[124] Talent Corp and Ministry of Human Resources (2024)
[125] From stakeholder interviews

for bottom-up discourse will address some of the concerns arising about the need for critical thinking around technology adoption, and the need to diversify perspectives by drawing from circles wider than groups of experts. Related to this recommendation is the need for clear consultation pathways for members of the public to provide their input on data and AI governance.

We recommend that the government identifies areas of governance to prioritise by **engaging in consultations with groups and communities vulnerable to AI risks**, such as platform workers and persons with disabilities. Their concerns regarding AI are likely to be different from industry concerns, and they add value by providing alternative perspectives and means of addressing AI risks.

5.6 Support research and oversight on AI impacts

Evidence-based AI governance necessitates more research and transparency requirements on AI use and impacts for better oversight and policy decision-making.

We recommend having independent oversight of the adverse effects of AI. These effects should be considered from the perspectives of a diverse set of stakeholder groups that represent a broad spectrum of societal interests. The data collected through close monitoring of these may support the AI regulatory framework (see Section 5.3). In time, as more countries build their own AI oversight structures, Malaysia will be well-positioned to work with others on sharing threat intelligence and mitigation measures.

An **incident repository**[126] **to monitor and record AI-related harms** in Malaysia will be useful, beginning from the angle of online safety as it has been recognised as an emerging area of concern. The Legal Affairs Division (BHEUU) of the Prime Minister's Department, supporting K-KOMM, has already begun defining the parameters of online safety under the Online Safety Bill, which includes online child safety, scams, cyberbullying and hate speech. Some of this information would already exist within police departments and grassroots organisations that serve as first responders for consumer protection (e.g. Federation of Malaysian Consumer Associations) or gender-based violence (e.g. Women's Aid Organisation or Women's Centre for Change in Penang). Getting buy-in from these organisations would expedite the process of obtaining insights and aggregating the data on AI-enabled online harms, to get a baseline understanding of current trends of AI harms.

There is a need for **better monitoring of AI being used in areas of high risk, particularly by the state and large corporations**. There have been some research and reporting on the use of AI for court sentencing in Sabah and Sarawak[127] or facial recognition for crime prevention in Penang[128], but such efforts have been initiated by researchers and journalists, with no official and publicly available information over time. There needs to be systematic tracking of such initiatives and periodic assessments of their efficacy levels. This is no easy task and implementation is key. For example, a recent report on the UK indicates that despite a mandatory requirement since February 2024 to register algorithmic systems that are used in the public sector, its registry remains to be sparsely

[126] An example of an incidents repository is the UK-based AIAAIC Repository, a database of crowd-sourced incidents of AI harms globally. AIAAIC stands for "AI, Algorithmic and Automation Incidents and Controversies", and the repository can be accessed at https://www.aiaaic.org/aiaaic-repository.
[127] Lim and Gong (2020)
[128] Bernama (2019)

populated with only nine entries, leaving out known applications in areas of social welfare and national security[129].

An underlying point raised throughout our interviews was about building public trust and preventing large corporations from exploitative uses of data or algorithms. Here, Malaysia may draw inspiration from China's algorithmic registry, established since 2021, which mandates the registration of algorithms that have "public opinion properties or … social mobilization capabilities."[130] The registry, together with regulations that mandate disclosure, has been credited with improving the working conditions of food delivery drivers in China. This was accomplished indirectly through increasing the algorithmic transparency of big tech companies. Two of the biggest food delivery platforms have emphasised in the information submitted to the registry that they have taken steps to lengthen delivery times in algorithms used, therefore making it safer for delivery drivers on the road[131].

The Chinese case demonstrates the effective orchestration of moving parts of the regulatory framework, including regulations, an algorithmic registry and enforcement in mandating disclosure. These are backed by the political strength of the Chinese government and the size of the Chinese market. Malaysia has put in place a licensing system for social media and internet messaging platforms and is working on passing an Online Safety Bill. Nonetheless, it will likely need to rely on collaboration with like-minded countries (see Section 5.2) to compel the compliance of multinational big technology companies on addressing issues of technology abuse.

For the purposes of industrial development, Malaysia could also **establish systematic data collection to track AI adoption**. This could take the form of an AI repository documenting what sort of AI models are being adopted and/or deployed by firms in Malaysia as well as a directory of firms whose primary products or services are AI-centric. Such a database could also serve as a resource for firms intending to deploy AI. This would facilitate better categorisation and governance of AI models used in Malaysia, and improve assessments of Malaysia's AI ecosystem needs and the contribution of AI to Malaysia's economy.

[129] Booth (2024)
[130] Sheehan (2023)
[131] Sheehan and Du (2022)

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The interviews conducted with key stakeholders in Malaysia's AI governance landscape highlight a shared recognition of the urgent need for effective governance to address AI's transformative potential.

Boosting preparedness is key in managing the wide-ranging AI risks. The potential adverse effects on society are diverse and complex, spanning areas such as privacy concerns, environmental impact and economic displacement. As AI continues to evolve, enhancing our readiness to address these challenges ensures that both governance frameworks and societal systems can support the safe and equitable adoption of AI technologies.

Furthermore, the call for agility in governance underscores the need for effective coordination among various stakeholders, including government agencies, industry players and civil society. A collaborative approach will help address the challenges of AI, enabling a unified response that leverages innovation while safeguarding public interests. As Malaysia pushes forward in AI development and adoption, it should avoid the pitfall of stifling progress with poorly designed regulations that could inhibit growth. Striking the right balance between regulation and innovation will be crucial for creating a flexible, dynamic framework that supports AI's responsible advancement and fosters a vibrant and competitive AI ecosystem in Malaysia.

Regulatory frameworks need to be tailored to address specific gaps and contextual needs, rather than taking a one-size-fits-all approach. AI regulation should set minimum standards without being overly broad, ensuring that policies reflect unique standards and perceptions relevant to the Malaysian context. High-risk sectors like transportation and healthcare require more targeted regulation due to their potential for significant societal impact. Targeted, sector-specific regulation will allow for a more practical and responsive governance model, addressing the unique demands of AI applications across different fields.

Thus to strengthen Malaysia's AI governance, we recommend:

1. Focusing on national coordination of existing initiatives and actors
2. Participating in international collaboration and global governance
3. Establishing an agile and fit-for-purpose regulatory framework for AI
4. Strengthening data governance frameworks that build trust and safeguards
5. Cultivating an understanding of AI impacts and how to manage them
6. Building effective oversight and research on AI impacts

The recommendations presented in this report point towards the necessity of funding to implement effective policies and initiatives. Without adequate financial support, the ambitious goals set forth for AI governance may remain unfulfilled. Securing resources to achieve our strategic vision for AI will pave our way not only to managing risks but also to capitalising on the opportunities presented by the technology.

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APPENDIX A

RESEARCH METHODS

The study team was composed of four KRI researchers with the support of one independent researcher. The study employed qualitative research methods to answer the research questions laid out in Section 1.1 to gain in-depth knowledge of stakeholders' perceptions of AI risks as well as challenges and strategic pathways of AI governance in Malaysia.

Data collection

In-depth interviews

The study team conducted semi-structured, in-depth interviews (n = 21) with a sample of key experts. The core group of key experts were purposively and snowball sampled based on the need for a diverse group of stakeholders from each segment of AI governance and adoption. As depicted in Figure 1.1, key experts were identified from the government sector (33%), private sector (24%), academia (24%) and non-governmental organisations (14%). The interview questions were guided but kept open-ended to elicit the widest possible range of responses.

Ethics. In-depth interviews were conducted by two researchers. Interview notes were triangulated post-interview to ensure internal validity. Free, prior and informed consent was solicited from each interviewed key expert (see below) for the interview to be recorded. Transcription was done with the aid of Otter.AI, with a researcher then performing manual cleaning and human verification.

Roundtable discussion

The first phase of data collection was followed by a roundtable discussion. To ensure validity, the preliminary findings from analysis of the interview data were presented to a wider group of stakeholders (n = 36) at the roundtable discussion. The discussion was conducted physically and virtually through Slido polls to validate, clarify and check for completeness of findings. The open-ended responses collected from the event were used to substantiate existing findings derived from in-depth interviews and to capture omissions.

List of interviewees

We would like to thank the following individuals and organisations (including one expert who preferred not to be named) for their valuable insights.

Table A: List of interviewees (alphabetically by organisation)

Organisation	Name
Canterbury Christ Church University	Assoc Prof Dr Jaspal Kaur Sadhu Singh
Federation of Malaysian Consumers Association (FOMCA)	Ybhg Dato' Indrani Thuraisingam
Institut Kefahaman Islam Malaysia (IKIM)	Dr. Shaikh Mohd Saifuddeen Shaik Mohd Salleh
Khazanah Nasional Berhad (KNB)	Mr Anand Panchalingam
Malaysia Digital Economy Corporation (MDEC)	Ts Tengku Azrul Tengku Azhar Ms Chan Chuey Hwye Ms Naabilah Farha Binti Kamarul Zaharin
Malaysian Autonomous Intelligence and Robotics Association (MyAIRA)	Mr Soo Ho Hock Meng

Malaysian Communications and Multimedia Commission (MCMC)	Mr Shamsul Izhan Abdul Majid
Microsoft	Ms Adilah Junid
Ministry of Digital (KD)	Ybhg Tuan Fabian Bigar (formerly at MyDigital) Mr Ma Sivanesan A/L Marimuthu @ Muthiah
Ministry of Science, Technology and Innovation (MOSTI)	Ms Aidawati Binti Misdar Ir Dr Airull Azizi Bin Awang Lah
National Cyber Security Agency (NACSA)	Ts Mohamed Kheirulnaim Bin Mohamad Danial
Pandai	Mr M. Suhaimi Ramly
Selangor Human Resource Development Centre (SHRDC)	Ts Dr Chua Wen-Shyan
Third World Network (TWN)	Ms Chee Yoke Ling
Universiti Malaya (FSKTM)	Prof Ir Dr Chan Chee Seng
Universiti Putra Malaysia (UPM)	Prof Ts Dr Nur Fadhlina Binti Mohd Sharef
Universiti Teknologi Malaysia (UTM)	Assoc Prof Dr Suzana Aini Ariffin
Wise AI	Mr David Lim Dr Lim Chern Loon
Independent	Mr Ng Kang Siong

Interview Questions

1. Tell us about yourself, your organisation and your work related to AI and AI governance.
2. What is AI to you? How would you define AI?
3. What are AI risks to you, and from the perspective of your organisation?
4. What do you think are risks that are most urgent/overlooked/relevant to Malaysia?
    a) Most urgent:
    b) Most overlooked:
    c) Most relevant:
5. Who do you see as the key government players/regulators/partners in AI governance, and what would their roles be?
6. What are the challenges of governing AI within the context of Malaysia?
7. What do you think are strategic and feasible pathways forward in AI policy and advocacy, from local and international perspectives?
    a) Local:
    b) International:
8. Who else would you recommend for us to talk to?

Data analysis

Three researchers were separately assigned to conduct data analysis on three different thematic areas: (1) risks, (2) challenges and (3) strategic pathways. A coding frame was developed through three separate exercises of identification and labelling using the interview notes by researchers in a five-person group. The transcripts were then coded with the coding frame by one researcher and cross-validated by a second researcher assigned to the respective thematic areas. The findings were then supplemented with desk research to provide substantiation.

Table B: AI risk theme coding scheme and count of theme

Theme	Count of Theme
Data Governance and Privacy	18
Regulation and Guidelines	17
Cybersecurity	16
Innate Tech Risks	14
Education & Awareness	13
Inappropriate Use / Misuse	9
Beyond Our Control	6
Job Displacement	6
Being Left Behind	5
Capabilities	5
Cross Border	5
Human Rights & Sustainability	5
Overreliance	5
Workforce	4
Ethics	3
Current Government Structures	3
Malaysian Context / Bias	3
Trust in AI	3
Digital Divide	2
Infrastructure	2
Misinformation	2
Transparency	2
Environmental	1
Lack of Resources	1
National Security	1

Consent form

KHAZANAH RESEARCH INSTITUTE

CONSENT TO TAKE PART IN A RESEARCH STUDY

Thank you for your interest in this research project. Your participation is voluntary, and you are free to withdraw from the study at any time. Please take time to read this entire form and ask questions before deciding whether to take part in this research interview.
Things you should know:

- The purpose of the study is to better understand Artificial Intelligence (AI) impact and governance within the Malaysian context and to map out feasible and strategic pathways forward.
- You are invited to participate in a semi-structured interview about your views on risk management concerns of AI, challenges faced in policymaking and potential strategies for effective AI governance.
- The interview will take approximately 1 hour.
- Your participation is voluntary, and you will not receive direct benefits or compensation associated with your participation in this research.
- The research interview will be audiotaped, transcribed, and analysed. We will keep the information we collect during the research for three years for study recordkeeping.
- The results of this study may be published in an article or presentation for public dissemination. You may be quoted in these articles or presentations, and listed as a respondent in the study. Kindly let us know if you have concerns about these.

Your input will help us better understand the current landscape of AI impact and governance in Malaysia and formulate actionable policy recommendations.

I understand what the study is about, and my questions so far have been answered. I agree to take part in this study. My preference for credit attribution is as follows:

[ ] *I would like my identity to be kept confidential.*

[ ] *I would like to be included in the list of experts interviewed.*

Name: _____

Signature: _____

Date:_____

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