

Market Review on the Digital Economy Ecosystem Under the Competition Act 2010

Malaysia Competition Commission (MyCC)
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Abbreviations

ACC	Android Compatibility Commitment
ACCC	Australian Competition & Consumer Commission
ACM	Netherlands Authority for Consumers and Markets
AES	Advanced Encryption Standard
AGCM	Autorità Garante della Concorrenza e del Mercato
AI	Artificial Intelligence
AI-RMAP	Artificial Intelligence Roadmap
AMLA	Anti-Money Laundering, Anti-Terrorism Financing and Proceeds of Unlawful Activities Act 2001
AOSP	Android Open-Source Project
APEC	Asia-Pacific Economic Cooperation
API	Application Programming Interface
AR	Augmented Reality
ASEAN	Association of Southeast Asian Nations
ASO	App Store Optimisation
ASP	Application Service Provider
ATT	App Tracking Transparency
BEPS	Base Erosion and Profit Shifting
BIMB	Bank Islam Malaysia Berhad
BLE	Bluetooth Low Energy
BMW	Bayerische Motoren Werke
BNM	Bank Negara Malaysia
BRI	Belt and Road Initiative
CAGR	Compound annual growth rate
CAP	The Consumers' Association of Penang
CCCS	Competition and Consumer Commission of Singapore
CCI	Competition Commission of India
CCPA	California Consumer Privacy Act
CDD	Compatibility Definition Document
CDEI	Centre for Data Ethics and Innovation
CII	Critical Information Infrastructure
CMA	Competition and Markets Authority/Communications and Multimedia Act
CMCF	Communications and Multimedia Content Forum of Malaysia

CNIL	National Commission on Informatics and Liberty
CR4	Four-Firm Concentration Ratio
COVID	Coronavirus Disease
CPU	Central Processing Unit
CRF	Cyber Resilience Framework
DDA	Developer Distribution Agreement
DDI	Domestic Direct Investment
DMA	Digital Markets Act
DMCC	Digital Markets, Competition and Consumers
DNB	Digital Nasional Bhd
DOJ	Department of Justice
DOSM	Department of Statistics Malaysia
DPO	Data Protection Office
DPP	Developer Program Policies
DSA	Digital Services Act
EC	European Commission
EEA	European Economic Area
EMI	E-money Issuers
EPU	Economic Planning Unit
ESG	Environmental, Social, and Governance
EU	European Union
EUR	Euro
FBA	Fulfillment by Amazon
FCA	French Competition Authority
FCO	Federal Cartel Office
FGD	Focus Group Discussion
FOMCA	The Federation of Malaysian Consumers Associations
FOMO	Fear of Missing Out
FPX	Financial Process Exchange
FRP	Foreign Registered Person
FTC	Federal Trade Commission
FWIG	Foreign Workers Insurance Guarantee
GDI	Global Digitalisation Index
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GERD	Gross Domestic Expenditure on R&D
GMS	Google Mobile Services

GMT	Global Minimum Tax
GPS	Global Positioning System
GUI	Graphical User Interface
HHI	Herfindahl-Hirschman index
HR	Human Resources
HTTPS	Hypertext Transfer Protocol Secure
IAP	In-app Purchases
IC	Integrated Circuit
ICA	Italian Competition Authority
ICC	Indonesia Competition Commission
ICT	Information and Communication Technology
ID	Identification
IDC	International Data Corporation
IDI	In-depth interview
IMD	Institute for Management Development
IP	Internet Protocol/Intellectual Property
IPS	Integrated Payment Systems
IT	Information Technology
ITU	International Telecommunication Union
JARING	Joint Advanced Research Integrated Networking
JENDELA	National Digital Infrastructure Plan
JFTC	Japan Fair Trade Commission
JPDP	Jabatan Perlindungan Data Peribadi
JPJ	Jabatan Pengangkutan Jalan
KEGA	Key Economic Growth Area
KPDN	Ministry of Domestic Trade and Cost of Living
LLC	Limited Liability Company
LVG	Low-Value Goods
MADA	Mobile Application Distribution Agreements
MADANI	keMampanan (Sustainability), kesejAhteraan (Prosperity), Daya cipta (Innovation), hormAt (Respect), keyakiNan (Trust) and Ihsan (Compassion)
MAMPU	Malaysian Administrative Modernisation and Management Planning Unit
MAVCOM	Malaysian Aviation Commission
MCMC	Malaysian Communications and Multimedia Commission
MCPA	MyChannel Partner Agreement

MCSS	Malaysia Cyber Security Strategy
MDC	Multimedia Development Corporation
MDEB	Malaysia Digital Economy Blueprint
MECD	Ministry of Entrepreneur and Cooperatives Development
MFA	Multi-Factor Authentication
MFN	Most Favoured Nation
MITI	Ministry of International Trade and Industry
MIUI	Xiaomi's User Interface
ML	Machine Learning
MOF	Ministry of Finance
MOSTI	Ministry of Science, Technology and Innovation
MOTAC	Ministry of Tourism, Arts and Culture
MPC	Malaysia Productivity Corporation
MRANTI	Malaysian Research Accelerator and Technology Innovation
MSC	Multimedia Super Corridor
MSIC	Malaysia Standard Industrial Classification
MSME	Micro, Small and Medium Enterprises
MYR	Malaysia Ringgit
N-IICS	Number-Independent Interpersonal Communication Service
NACSA	National Cyber Security Agency
NADI	National Information Dissemination Centres
NAIO	National Artificial Intelligence Office
NCS	National Security Council
NESR	National E Commerce Strategic Roadmap
NFC	Near Field Communication
NIIF	New Investment Incentive Framework
NIMP	National Industrial Master Plan
NSW	National Single Window
NTIS	National Technology and Innovation Sandbox
OECD	Organisation for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
OS	Operating System
OSS	Open-Source Software
OTA	Online Travel Agency
OTT	Over-The-Top
PADU	Pangkalan Data Utama
PDG	Princeton Digital Group

PDPA	Personal Data Protection Act
PE	Permanent Establishment
PENJANA	Pelan Jana Semula Ekonomi Negara
PIAM	General Insurance Association of Malaysia
PII	Personal Identifiable Information
PLKS	Pas Lawatan Kerja Sementara
PSA	Postal Services Act
PSO	Payment System Operator
QR	Quick-response
RAM	Random-Access Memory
RMCD	Royal Malaysian Customs Department
RMS	Razer Merchant Services
RSA	Revenue Sharing Agreement
SC	Securities Commission Malaysia
SCENIC	Sabah Creative Economy and Innovation Centre
SDEC	Sarawak Digital Corporation
SDK	Software Development Kit
SEA	Southeast Asia
SIRIM	Institut Piawaian dan Penyelidikan Perindustrian Malaysia
SIWA	Sign in with Apple
SME	Small and Medium Enterprise
SPV	Shared Prosperity Vision
SSM	Suruhanjaya Syarikat Malaysia
SST	Sales and Service Tax
SUPER	Malaysia Startup Ecosystem Roadmap
SWN	Single Wholesale Network
TLS	Transport Layer Security
TNG	Touch 'n Go
TPM	Technology Park Malaysia
TSA	Transportation Security Administration
TTPM	Tribunal of User Claims Malaysia
TV	Televisions
UAE	United Arab Emirates
UCB	User Choice Billing
UI	User Interface
UK	United Kingdom
UN	United Nations

U.S.	United States
USD	United States Dollar
UWB	Ultra-wideband
UX	User Experience
VC	Venture Capital
WAF	Web Application Firewall
WCC	World Competitiveness Center
WHT	Withholding Tax
YTL	Yeoh Tiong Lay
ZTE	Zhongxing Telecommunication Equipment

1. Executive summary

1.1 Global digital economy

- The digital economy encompasses a wide range of activities primarily driven by digitised technologies. The sector is dynamic and rapidly evolving, continuously adapting to technological advancements and changing societal needs.
- As of 2022, the sector was valued at USD 11.1 trillion globally, with an expected annual growth rate of 10.4% by 2028.
- Key trends shaping the sector's development include its growing role in geopolitics, data emerging as a critical factor, and increasing digitalisation of governments, businesses, and consumers.
- The sector has given rise to companies that dominate global industries – e.g., Google, Apple, Meta. Many of the largest global companies are also operating across multiple industries.
- Key players' involvement in anti-competitive practices are becoming more prominent, largely due to their strong dominance and traditional regulatory frameworks struggling to keep up with rapid sector changes.
- As Malaysia continues to develop its digital economy, understanding the sector and the potential anti-competition challenges posed by key players will be crucial.

1.2 Digital economy in Malaysia

- In Malaysia, its digital economy sector is crucial to the country's growth. In 2023, it contributed approximately 23.5% to the national gross domestic product (GDP) and employed around 1.2 million people (7.8% of total employment). E-commerce holds the largest share, at about 41%.

- The sector is vulnerable to anti-competitive practices and data privacy violations. Several companies, such as Dagang Net, MyEG, Grab, Shopee, Carousell, and iPay88, have faced both allegations and formal investigations in recent years. As the digital economy grows, anti-competitive cases are expected to rise.
- Malaysia has developed several policies and regulations to support the digital economy. However, there are gaps which hinder effective oversight and enforcement, such as the lack of an overarching digital economy framework, unclear jurisdictional boundaries between regulatory bodies, and overlapping competition regulations.
- As anti-competitive practices increase, it is essential for Malaysia to understand the technologies and complexities within the sector, especially in the four sub-sectors.

1.3 Mobile operating and payment system

- This review focuses on three core components of the mobile ecosystem:
 - Mobile OS: Software platforms that run smartphones
 - App stores: Digital distribution channels for apps
 - Integrated payment systems: enable seamless in-app purchases through Application Programming Interface (APIs).
- Smartphone usage in Malaysia is nearly universal, with ownership reaching 98.4% in 2023.
- The widespread use of smartphones has led to increased consumption of digital content and services.
- In May 2024, Malaysians spent an average of five hours and six minutes daily on smartphones, primarily on entertainment apps (39.8%), social media (26.7%), and gaming (14.9%), with the rest on shopping, utilities, and productivity.
- Within the sub-sector, four key types players exist:

- **Device manufacturers:** Invest in R&D and design smartphones that support the latest mobile OS.
 - **OS developers:** Create and maintain the architecture of mobile operating systems.
 - **App stores:** Act as gatekeepers, managing app distribution, quality control, updates, security, and integrated payment systems.
 - **App developers:** Create applications for specific tasks and choose from monetisation strategies such as in-app purchases (IAPs), subscriptions, or advertising.
- In OS, Google's Android leads the market with 68.4%, followed by Apple's iOS at 30.5%, giving both companies a combined market share of 98.9%.
 - Apple and Google are vertically integrated, controlling hardware, OS, app stores, and app ecosystems, creating barriers for new entrants.
 - Indirect network effects further entrench their dominance, as users and developers are drawn to platforms with larger ecosystems.
 - In terms of regulatory in the sub-sector, current framework is largely non-existent.
 - High entry barriers may exist for new OS and app store providers, due to one or more factors. These include platform control, network effects, and limited access to key functionalities.
 - Developers also face restrictions in browser app development and app distribution, and are often required to use proprietary in-app payment systems.
 - Platform operators are able to engage in self-preferencing, prioritising their own services and disadvantaging third-party apps.

- Three targeted recommendations are proposed to address competition and regulatory concerns specific to the mobile operating and payment systems sub-sector.
 - **Develop mobile operating and payment system sub-sector guideline:** Establish a clear and specific set of guideline for key digital platforms operating in the sub-sector in Malaysia
 - **Expand the regulatory scope of payment systems:** Potential expansion of the definition of e-money issuers (EMIs) in Malaysia to include tokenisation platforms and mobile wallets that facilitate payments, such as Apple Pay and Google Pay. These platforms currently operate without direct regulation from Bank Negara Malaysia (BNM).
 - **Establish a local app developer consultative body:** Establish a clear and specific set of guideline for key digital platforms operating in the mobile operating and payment system space in Malaysia.
- Six general recommendations also being proposed, with the most critical being the establishment of a central digital economy taskforce. This taskforce would lead key high-level initiatives, including the development of a digital platform ombudsman, clear guidelines on platform conduct, and a unified legislative framework to clarify regulatory roles, address existing gaps, and ensure a level playing field across the digital ecosystem.
- Another key general recommendation is the consolidation of competition oversight under a single authority. Aligned with the 13th Malaysia Plan, this aims to clarify and delineate the regulatory boundaries between MyCC and other sectoral regulators with competition mandates.

2. Introduction

2.1 Market review on the digital economy ecosystem

The Malaysia Competition Commission (MyCC) is an independent body established under the Competition Commission Act 2010 [Act 713], tasked with enforcing the Competition Act 2010. Through its efforts, MyCC aims to foster a robust, efficient, and sustainable economy for Malaysia and its people.

Under section 11(1) of the Competition Act 2010 [Act 712], MyCC has the authority to conduct market reviews to assess if there are any activities in a market that may prevent, restrict or distort competition. These reviews help MyCC understand market conditions and identify any competition issues that need to be addressed.

Given the rapid growth of the digital economy, MyCC has decided to conduct a market review focusing on selected digital economy sub-sectors. The market review will be the eighth review, following previous studies on the professional body fees, domestic broiler market, pharmaceutical, building materials in construction, food, wholesale retail trade and transportation sectors since 2013.

2.2 Market review objectives

The Market Review on the Digital Economy Ecosystem under the Competition Act 2010 aims to achieve the following objectives:

- To study the market structure, supply chain and profile of industry players that are involved throughout the upstream and downstream of the digital economy and sub-sectors studied;
- To study any market interactions and competition concerns in the digital economy and sub-sectors studied;
- To study the extent of potential market distortion by authority's regulations and policies and whether government intervention is

necessary in curbing competition concerns in the digital economy and sub-sectors studied; and

- To provide recommendations to the government agencies and regulators in the digital economy to minimise the actual or potential restrictive effect of regulations on competition.

2.3 Expected outcomes

Four outcomes expected from the market review of the digital economy sector:

- Identify potential anti-competitive behaviour in the sub-sectors, and validate the effectiveness of MyCC's enforcement tools;
- Provision of an all-encompassing study of the digital economy to the government (which provides details on the supply chain and its current state and prospect);
- Provision of better understanding of the sector to the government in the areas of market practices and competition issues; and
- Serve as a detailed guidance for the government and industry stakeholders to bolster Malaysia's digital economy in line with international standards, thereby further boosting its contribution to the national GDP.

2.4 Research methodology

This study employs a two-pronged approach, incorporating both primary and secondary research methods:

Table 1: Research methodologies

Methodology	Activity	Details
Primary research	Focus group discussion (FGD)	Qualitative data collection method through the gathering of a small group

Methodology	Activity	Details
		of relevant supply chain stakeholders for each sub-sector. Purpose of the FGDs is to validate existing understanding of the market structure, as well as current practices by stakeholders.
	In-depth interviews (IDI) with sub-sector stakeholders	Sessions with sub-sector stakeholders to gain deeper insight in their practices and operations. Aside from key sub-sector players, related stakeholders along the supply chain such as associations, merchants, logistics providers, advertisers, agencies, hotels, etc., are engaged to gain better understanding of the potential anti-competition practices by key players.
	Written input from sub-sector players	Formal submissions provided by sub-sector players either following an IDI session or on their own initiative after receiving a list of interview questions from MyCC.
	Sub-sector surveys	Four online surveys targeting customers

Methodology	Activity	Details
		(differ according to sub-sectors) of the four sub-sectors. Questions focused on three main areas: (1) respondent profile, (2) the nature of the operational relationship with the key player, and (3) key challenges encountered.
	End-user/ public survey	One survey targeting end-users across the four sub-sectors (app users, e-commerce buyers, individuals who have interacted with digital advertisements and OTA users). Survey focused on understanding consumer behaviour throughout the customer journey, from initial awareness to post-purchase engagement.
	Public consultation sessions	Online-based public consultations to both share findings and gather additional insights from stakeholders, with the aim of refining the market study.
Secondary research	Literature review	Review of existing literature, including industry reports, market

Methodology	Activity	Details
		studies, and government publications.
	Public data/information review	Utilise secondary data from reputable sources.
	Industry research report review	Assess industry-specific reports to gather complete picture of each sub-sector's market structure.
	Player analysis	Examine various secondary information/data related to the players, focusing on areas that may be indicative of anti-competition practices.
	Benchmarking analysis	Review of anti-competitive practices in similar sub-sectors across other countries, as well as initiatives taken to curb it.

Source: MyCC

2.5 Focus of the market review

The review focuses on three sections:

2.5.1 Overview of the digital economy sector

Historical performance and expected performance of the sector as a whole, including key policies and regulations related to the digital economy.

2.5.2 Sub-sector deep dive

Four digital economy sub-sectors are selected for review in this study, with focus on its:

1. **Study scope:** Scope/ market boundaries of the review. The boundaries are outlined solely to define the study area and do not reflect MyCC's final view on the sub-sector.
2. **Market structure and supply chain:** Organisation of the sub-sector, specifically how services flow within the supply chain.
3. **Market practices:** Common business practices employed by players in the sub-sector.
4. **Data privacy and protection:** Data collection and management practices by key players within the sub-sector.
5. **Sub-sector regulations:** Regulations, guidelines and codes specific to the sub-sector, as well as relevant issues.
6. **Consumer behaviour and innovation trends:** Consumer behaviour in interacting with the sub-sector, along with the latest innovation trends that may impact competition.
7. **Key players:** Key players along the sub-sector's supply chain.

8. **Key market-related issues:** Key structural or functional problems found in the sub-sector.
9. **Competition assessment:** Degree of competition within the sub-sector based on the following three areas - market concentration, degree of horizontal and vertical integration and level of entry barriers. These assessments are based on insights and data gathered from FGDs, IDIs, and secondary research sources.
 - **Market concentration:** Extent to which a small number of firms dominate the sub-sector (defined based on the study scope), reflecting the level of competition within the market. Two key quantitative measures used to assess this: the Herfindahl-Hirschman Index (HHI) and the Concentration Ratio of the top 4 firms (CR4):

Table 2: Overview of HHI and CR4

Factors	HHI	CR4
Definition	- Commonly used measure of market concentration and competition among companies in a sector. - Assesses how much market share is controlled by the key companies.	- Another common measure of market concentration that focuses on the largest companies in a sector. - It shows how much of the market is controlled by the top four companies.
Formula	$HHI = S1^2 + S2^2 + S3^2 + \dots$ - S1, S2, etc.: Refers to the market share (in %) that	$CR4 = S1 + S2 + S3 + S4$ - S1, S2, S3, S4.: Refers to the market share (in %) of four largest

Factors	HHI	CR4
	key players hold in the sub-sector	players in the sub-sector
Indication of competition	• < 100 = no concentration • 100-1,500 = low concentration • 1,500-2,500 = medium concentration • > 2,500 = high concentration	• 0% = no concentration • 1-49% = low concentration • 50% = oligopoly • 51-99% = high concentration • 100% = monopoly

Source: Corporate Finance Institute

- **Degree of horizontal and vertical integration:** Extent to which sub-sector players expand their control either by merging or acquiring competitors at the same stage of production (horizontal) or by controlling multiple stages of the supply chain (vertical).
- **Level of entry barriers:** Assessment of how easy or difficult it is for new companies to enter the sub-sector.

10. **Key competition-related issues:** Behaviours and activities observed that harm fair competition in the sub-sector.

The focus sub-sectors in this review are:

(a) Mobile Operating & Payment System

Software platforms designed for mobile devices and serve as intermediaries between device hardware and applications. This study will focus exclusively on the mobile operating system (OS), app store, app distribution and its integrated payment system.

(b) E-commerce (retail marketplace)

Business-to-consumer (B2C) marketplace platforms that allow users and merchants to buy and sell goods over the internet. These platforms act as intermediaries between sellers and buyers. This excludes service-related (e.g., transportation, food delivery) platforms.

(c) Digital Advertising Services

Online marketplaces and platforms that enable supply and demand partners to buy or sell digital ad inventory, with ads displayed on search engine results, social media, and other digital properties.

(d) Online Travel Agencies (OTAs)

Web and mobile-based platforms that allow consumers to book travel services, with the focus being only on accommodation booking platforms.

The selected sub-sectors are based on two considerations: (a) alignment with other digital economy studies and (b) alignment with key digital economy anti-competition cases. Detailed rationale is highlighted in section 2.6.

In addition to the four sub-sectors, one enabling area will be studied across them:

(e) Data Privacy & Protection:

Data plays a central role in the business models of all the aforementioned sub-sectors. For example, app stores use data to customise app offerings and improve user experience; e-commerce marketplaces rely on customer data to personalise product recommendations; digital advertisers leverage data to tailor content and target audiences effectively; and OTAs rely on data to offer personalised travel recommendations and dynamic pricing.

Given the critical role of data in the digital economy, access to relevant data can thus be a key factor in determining the competitive position of

companies in their respective sub-sector ¹. influencing both market dominance and the ability to expand its market presence.

This study examines two key data-related areas:

- **Data privacy:** which relates to the rights of internet users to control which data is shared with whom, and how their personal information is used in the digital marketplace.
- **Data protection:** which focuses on the mechanisms and management practices employed by companies (data controller) to prevent the misuse or unauthorised access of personal and sensitive information that they collect, store, and process.

In understanding data privacy & protection across the four sub-sectors, key areas of data collection, usage, control and compliance will be studied.

2.5.3 Strategic recommendations

Key recommendations for each sub-sector are provided to address the identified competition- and regulatory-related issues. These recommendations may be implemented by the relevant ministries and government agencies to promote greater competition and ensure an inclusive digital economy, without undermining foreign investment or stifling innovation.

2.6 Benchmarking studies

The selected sub-sectors (mobile operating and payment system, e-commerce (retail marketplace), digital advertising services and online travel agencies) are based on two considerations, aimed at identifying areas with the highest likelihood for anti-competitive practices:

¹ CMA (2021). Competition and data protection in digital markets: a joint statement between the CMA and the ICO, page 13. <https://ico.org.uk/media/about-the-ico/documents/2619797/cma-ico-public-statement-20210518.pdf>

2.6.1 Alignment with other digital economy studies

Table 3: Key published studies on the digital economy by competition commissions of selected economies:

Study	Focus areas	Relevant sub-sector
Final Report Regarding Digital Advertising (2021) by Japan Fair Trade Commission ²	• Examination of the digital advertising market practices, focusing on how digital platforms interact with advertisers, publishers, and consumers • Identification of potential abuses of dominant positions under the Antimonopoly Act.	Digital advertising
Market Study Report on Mobile OS and Mobile App Distribution (2023) by Japan Fair Trade Commission ³	• Analysis on the dominance of Apple and Google, highlighting concerns over high fees, self-preferencing, and limited competition.	Mobile OS
Market study on e-commerce in India (2020) by Competition Commission of India ⁴	• Analysis of the e-commerce sector, with focus on identifying competition impediments such as lack of platform neutrality, unfair	E-commerce

² JFTC (2025). Press releases. <https://www.jftc.go.jp/en/>

³ JFTC (2025). Press releases. <https://www.jftc.go.jp/en/>

⁴ CCI (2025). Market studies and research. <https://www.cci.gov.in/economics-research/market-studies/details/18/6>

Study	Focus areas	Relevant sub-sector
	contracts, exclusive arrangements, and deep discounting.	
Mobile ecosystems market study final report (2022) by United Kingdom's (UK) Competition and Markets Authority ⁵	Examination of how Apple's and Google's dominance over mobile OS, app stores, and web browsers affects competition and consumer outcomes.	Mobile OS
Online Travel Booking Sector (2019) by Singapore's Competition & Consumer Commission ⁶	Examination of competition and consumer protection issues in the online travel booking industry, identifying practices such as drip pricing, pre-ticked boxes, and misleading claim.	OTA
E-commerce Platforms (2020) by Singapore's Competition & Consumer Commission ⁷	Examination of competition and consumer protection issues in Singapore's multi-sided e-commerce platforms.	E-commerce

⁵ GOV.UK (2025). Competition and markets authority. <https://www.gov.uk/government/organisations/competition-and-markets-authority>

⁶ CCCS (2025). Market studies. <https://www.cccs.gov.sg/resources/publications/market-studies/>

⁷ CCCS (2025). Market studies. <https://www.cccs.gov.sg/resources/publications/market-studies/>

Study	Focus areas	Relevant sub-sector
Digital Platforms Services Inquiry 2020-25 (2025) by Australian Competition & Consumer Commission ⁸	Examination of the competitive and consumer impacts of digital platform services, including internet search engines, social media, online messaging, app marketplaces, digital advertising, and data practices.	Digital platform
Market study on the distribution of hotel accommodation in the EU (2020) by the European Commission ⁹	Examination of distribution practices among hotels, OTAs, and price comparison sites.	OTA

Source: JFTC, CCI, Gov.UK, CCCS, ACCC and European Union

Table 4: Other relevant published studies on the digital economy by competition commissions of selected economies:

Country	Year	Study	Focus area
Japan ¹⁰	2019	Report regarding trade practices on digital platforms (Business-to-Business transactions on online retail platform and app store)	E-commerce, Mobile OS
	2021	The Study Group on Competition Policy in Digital Markets Released the Report on Algorithms/AI and Competition Policy	General digital economy

⁸ ACCC (2025). Publications. <https://www.accc.gov.au>

⁹ EU (2025). Competition Policy. https://competition-policy.ec.europa.eu/index_en

¹⁰ JFTC (2025). Press releases. <https://www.jftc.go.jp/en/>

Country	Year	Study	Focus area
		Report of the Study Group on Competition Policy for Data Markets	Data
	2022	Report Regarding Cloud Services	Cloud services
	2023	Report on the Follow-up Survey on Fintech-based Services	Fintech
United Kingdom ¹¹	2019	Assessment of merger control decisions in digital markets	General digital economy
	2020	Centre for Data Ethics and Innovation (CDEI) Review of online targeting	
	2021	2021 Compendium of approaches to improving competition in digital markets	
	2022	CMA consumer research into purchasing behaviour in the UK smartphone market	Mobile OS
		Online Choice Architecture: How digital design can harm competition and consumers	General digital economy
		2022 Compendium of approaches to improving competition in digital markets	
		Music and streaming market study	Music & streaming
	2023	2023 Compendium of approaches to improving competition in digital markets	General digital economy
		Frontier AI: capabilities and risks	
		Trends in Digital Markets: a CMA horizon scanning report	
	2024	International Scientific Report on the Safety of Advanced AI	

¹¹ GOV.UK (2025). Competition and markets authority. <https://www.gov.uk/government/organisations/competition-and-markets-authority>

Country	Year	Study	Focus area
Germany ¹²	2019	Algorithms and Competition	
	2021	Digital Markets Act: Perspectives in (inter)national competition law	
	2022	Merger control in the digital age	
United States ¹³	2020	A Brief Primer on the Economics of Targeted Advertising	Digital advertising
		Social Media Bots and Advertising: FTC Report to Congress	
	2022	Combatting Online Harms Through Innovation	General digital economy
	2023	Protecting Kids from Stealth Advertising in Digital Media: A FTC Staff Perspective	Digital advertising
		Generative Artificial Intelligence and the Creative Economy Staff Report: Perspectives and Takeaways	General digital economy
	2024	A Look Behind the Screens: Examining the Data Practices of Social Media and Video Streaming Services	Data
		Tech Summit on Artificial Intelligence: Consumer Facing Applications	General digital economy
Australia ¹⁴	2021	Digital Advertising Services Inquiry	Digital advertising
European Union ¹⁵	2019	Competition issues in the area of Financial Technology (FinTech)	Financial technology
		Competition policy for the digital era	Digital economy regulation

¹² Bundeskartellamt (2025). Publication. & Markets Authority. https://www.bundeskartellamt.de/EN/Home/home_node.html

¹³ FTC (2025). Reports. <https://www.ftc.gov/>

¹⁴ ACCC (2025). Publications. <https://www.accc.gov.au>

¹⁵ EU (2025). Competition Policy. https://competition-policy.ec.europa.eu/index_en

Country	Year	Study	Focus area
	2020	Opportunities of artificial intelligence	Artificial intelligence
	2021	Digital Markets Act in the making	Digital economy regulation
		The Digital Services Act and the Digital Markets Act	
		The EU digital markets act	
	2022	Merger review in digital and technology markets	General digital economy
		Digital Services Act & Digital Markets Act	Digital economy regulation
		Merger enforcement in digital and tech markets	

Source: European Union, JFTC, Gov.UK, Bundeskartellamt, FTC, ACCC, EU

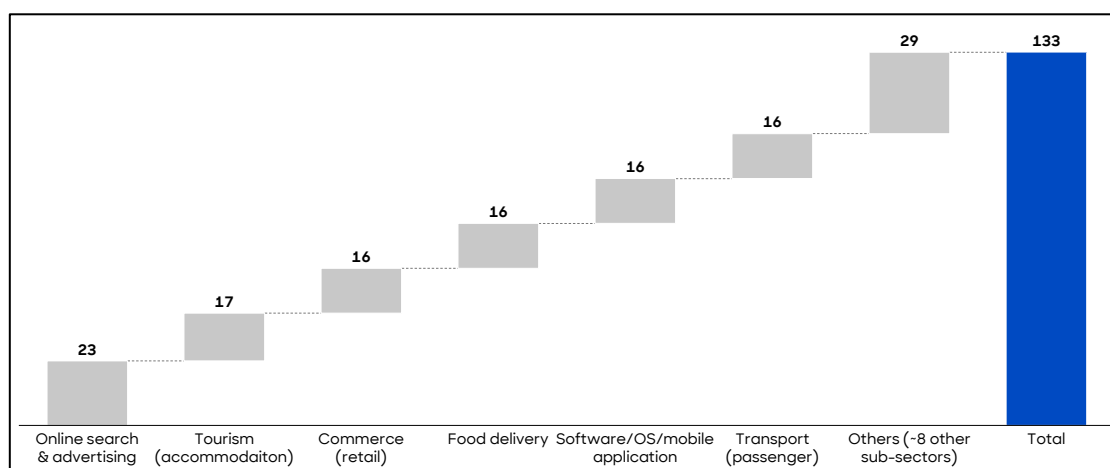
Studies published by various competition authorities in key economies since 2019 – including the Japan Fair Trade Commission (JFTC), Competition Commission of India (CCI), Competition and Markets Authority (CMA – UK), Federal Cartel Office (FCO – Germany), and Federal Trade Commission (FTC – U.S.), Competition and Consumer Commission of Singapore (CCCS), Australian Competition & Consumer Commission (ACCC) and European Commission (EC) – indicated the four sub-sectors of this study as focus. Below are the emphasis of the studies:

- Comprehensive analysis of the sub-sectors (e.g., Mobile OS, E-commerce, Digital advertising, OTA, Data Privacy and Protection);
- Examination of consumer behaviour, market practices, and supply chain developments;
- Discussion of global issues related to competition, market dynamics, and regulatory frameworks;
- Analysis of data utilisation by market players and interventions by competition authorities, and

- Consideration of any other pertinent matters that could further enhance this market review.

2.6.2 Alignment with key digital economy anti-competition cases

Figure 1: Anti-competitive cases by sub-sectors in the digital economy sector worldwide, 2006-2022 [# of cases]¹⁶



Source: World Bank

The selected sub-sectors are also based on the volume of anti-competitive cases observed globally. According to the World Bank Group's Global Markets Competition and Technology Digital Antitrust Database, from 2006 to 2022, the top sub-sectors with the most anti-competition cases were primarily related to online search and advertising, tourism (accommodation), e-commerce, food delivery, software/OS/mobile applications and transport.

Recent notable cases include the abuse of dominance ruling against Yandex in Russia for self-preferencing its own products in online search results¹⁷, Japan's antitrust case against Booking.com over price parity

¹⁶ World Bank Group (2025). The Global Markets Competition and Technology Digital Antitrust Database. <https://dataviz.worldbank.org/views/Global-Digital-Antitrust-Database/Overview?%3Aembed=y&%3AisGuestRedirectFromVizportal=y>

¹⁷ Global Competition Review (2021). Russia probes Yandex over self-preferencing concerns. <https://globalcompetitionreview.com/article/russia-probes-yandex-over-self-preferencing-concerns>

clauses in hotel contracts¹⁸, South Korea's investigation of Naver for self-preferencing its own online shopping site¹⁹, and China's case against Alibaba for exclusive dealing practices²⁰.

Food delivery and transport sub-sectors are excluded from this market review as MyCC has previously undertaken initiatives on food delivery and conducted a market review on transportation in 2021. Further details on these prior undertakings and reviews conducted can be found on MyCC's [website](#).

2.7 Limitation of the study

- The conclusions, analysis, and recommendations in this report are derived from both primary and secondary sources. While effort has been made to ensure the completeness and accuracy of the information, it is important to note that the information may be influenced by the respondents' knowledge or willingness to disclose details, as well as potential unintentional errors or gaps from the publishers.
- This market review will consist of confidential and non-confidential versions. The non-confidential report will only utilise publicly available information, and any data involving numbers will be aggregated. Any confidential information shared by both private and publicly listed companies²¹ is considered sensitive and competitive in nature. Such information will be exclusively retained for MyCC's internal use to

¹⁸ Lexology (2023). Spotlight: restrictive agreements and dominance in Japan. <https://www.lexology.com/library/detail.aspx?g=ed6bc6bc-a67c-4287-97f0-187c3215394d>

¹⁹ KFTC (2020). KFTC imposes corrective measures on Naver for favoring its own real-estate search, shopping, and video services over competitors. <https://www.ftc.go.kr/eng/downloadBbsFile.do?atchmnfNo=17327>

²⁰ SAMR (2021). The State Administration for Market Regulation issued the administrative penalty decision and administrative guidance letter in the monopoly case of Alibaba Group Holding Limited in the online retail platform services market within China. https://www.samr.gov.cn/cms_files/filemanager/samr/www/samrnew/fldes/tzgg/xzcf/202204/t20220424_341930.html

²¹ Unless the information is disclosed in the companies' public documents (e.g., annual reports).

protect the data provided by key stakeholders while allowing the MyCC to conduct a comprehensive and thorough analysis.

- Additionally, given that data availability for certain sub-sectors varies depending on the level of confidentiality of the data retrieved from market participants, the coverage in the sections of market structure and supply chain, and key players and level of competition may vary across sub-sectors.
- This study is aimed at understanding the current state of the market, including prevalent practices, issues, and potential concerns related to competition, market structure, and regulation. Given the continuously changing nature of these sub-sectors, it is challenging to comprehensively identify every issue along the supply chain.
- The report's highlighted issues are based on observations and inputs gathered through primary and secondary research. Since much of the information required to substantiate these findings is sensitive - often requiring access and disclosure of internal company documents and transparency from the companies involved - a more thorough examination (if required) is thus necessary in order to validate any claims of anti-competitive behaviour.

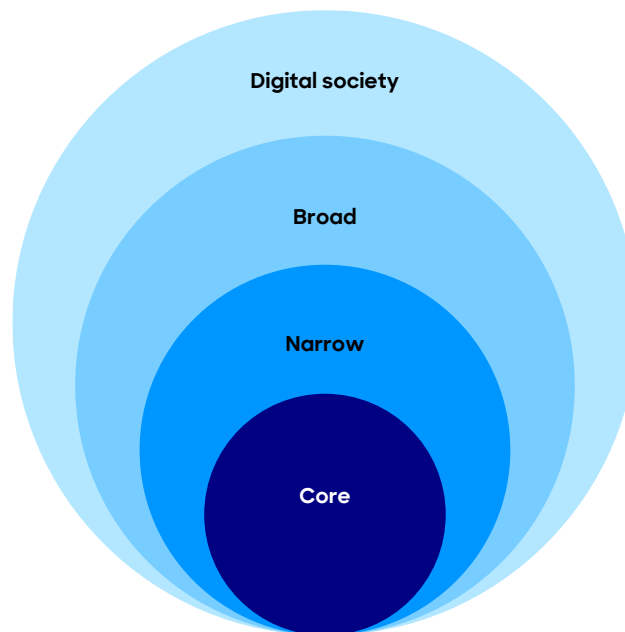
Despite these limitations and the acknowledgment of the dynamic nature of the market, the MyCC remains resolutely committed to further developing the study through continuous, rigorous, and thorough analysis. This aligns with the initial objective of conducting a comprehensive study and assures stakeholders of the MyCC's unwavering competence in market oversight.

3. Overview of digital economy

3.1 Digital economy in a global context

Digital economy refers to a broad spectrum of activities that are primarily driven by the use of digitised technologies. A crucial sector within an economy, the digital economy plays a key role in transforming industries, enhancing productivity, and driving economic growth. By adopting digital technologies such as artificial intelligence (AI), cloud computing, and big data analytics, businesses can streamline operations, lower costs, and develop new products and services. The digital economy also facilitates global trade and expands access to services, especially in emerging markets. Additionally, it supports job creation, skill development, and enhances global competitiveness.

Figure 2: Layers of the digital economy



Source: OECD

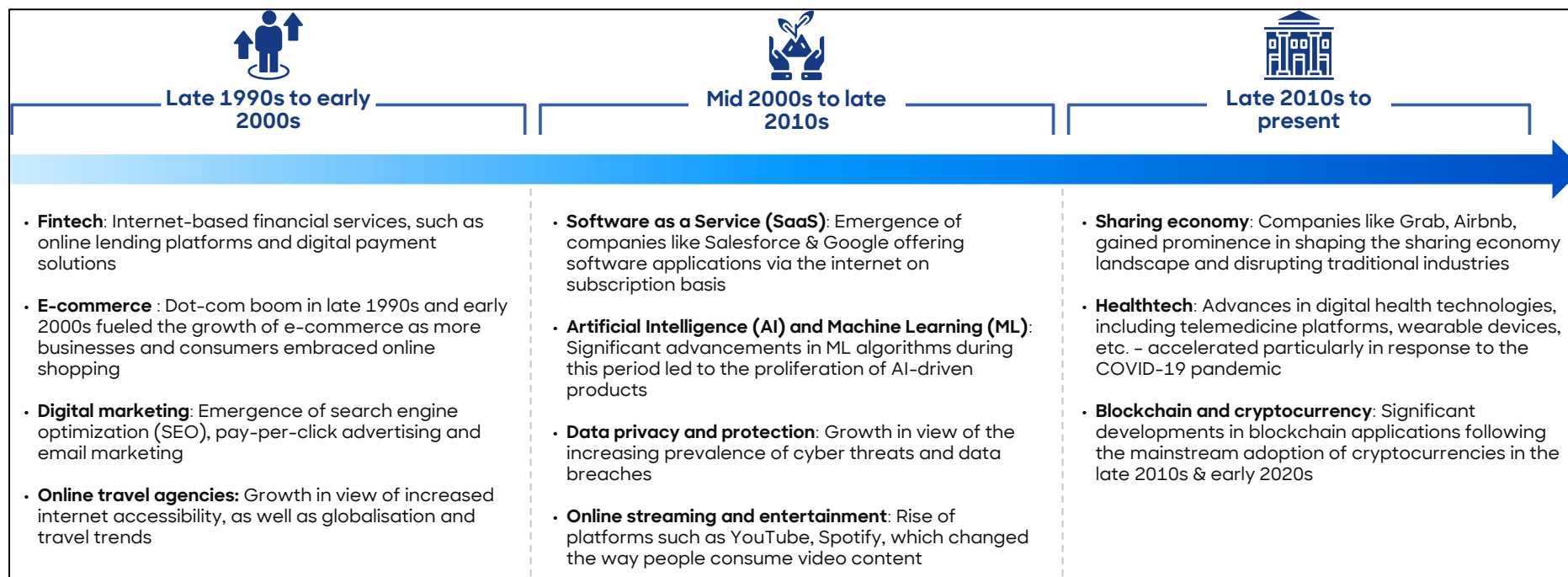
According to the Supporting the Digital Transformation of Higher Education in Hungary, published by the Organisation for Economic Co-

operation and Development (OECD), the digital economy is divided into four key layers²²:

- (a) **Core measurement:** Includes all economic activities linked to the production of Information and Communication Technology (ICT) goods and digital services.
- (b) **Narrow measurement:** Expands on the core measurement by encompassing businesses that rely entirely on digital technologies and data to operate. These organisations do not directly produce ICT goods or services, but their operations are heavily dependent on them.
- (c) **Broad measurement:** Further extends to include all sectors where digital technologies and data significantly enhance the production processes, even if they do not rely on them exclusively.
- (d) **Digital Society:** Refers to the non-commercial use of digital activities by individuals in a society, involving activities like social media interaction, personal data use, and digital communication that are not conducted for profit but influence social dynamics and everyday life.

²² OECD (2021). Supporting the digital transformation of higher education in Hungary. https://www.oecd.org/en/publications/supporting-the-digital-transformation-of-higher-education-in-hungary_d30ab43f-en.html

Figure 3: Key digital economy industries from 1990s to present



Source: Secondary research and MyCC analysis

The digital economy is an ever-evolving sector, constantly adapting and expanding in response to technological advances and shifting societal needs. The rise of the digital economy began in the early 1980s with the creation of the internet, which initially offered basic online services like email and internet access. Early platforms such as Compuserve²³ and Prodigy²⁴ provided basic digital communication but were not widely accessible. A significant turning point came in the early 1990s with the advent of the World Wide Web²⁵, which made it easier for individuals to share content online, sparking a surge in website creation and digital resources.

As internet usage increased, the “dot-com boom” ushered in a new era for key industries. This period saw the rise of e-commerce, with major players like Amazon and Alibaba emerging, alongside the growth of financial technology (fintech) as online payment solutions (e.g., Paypal in 1998) became essential. Digital marketing (e.g., Yahoo! in 1994, Google in 1998) also gained traction as businesses sought to reach consumers online. Furthermore, online travel agencies (e.g., Priceline in 1997, Expedia in 1996) transformed the travel industry by making bookings more accessible²⁶.

This period culminated in the dot-com (stock market) bubble in the year 2000, which resulted in the failure of many companies, including but not limited to Pets.com (pet supply), Webvan.com (grocery delivery) and eToys (toys)²⁷. Despite this, the boom laid the groundwork for future advancements in the digital economy and at the same time, also led to the increase in regulation and scrutiny of the industry.

²³ Wired (2009). Sept. 24, 1979: First online service for consumers debuts. <https://www.wired.com/2009/09/0924compuserve-launches/>

²⁴ The Atlantic (2014). Where online services go when they die. <https://www.theatlantic.com/technology/archive/2014/07/where-online-services-go-when-they-die/374099/>

²⁵ CERN (2025). A short history of the web. <https://home.cern/science/computing/birth-web/short-history-web>

²⁶ Medium (2023). A journey through time: looking back at the dot com bubble and early internet companies. <https://medium.com/@sikanderfraz72/a-journey-through-time-looking-back-at-the-dot-com-bubble-and-early-internet-companies-c937d5d1cba2>; Skift (2025). The definitive oral history of online travel. <https://skift.com/history-of-online-travel/>

²⁷ CNN Money (2010). 10 big dot.com flops. https://money.cnn.com/galleries/2010/technology/1003/gallery.dot_com_busts/2.html

The mid-2000s to late 2010s marked another transformative phase in the digital economy. Software as a Service (SaaS) became increasingly popular, enabling businesses to access applications via cloud. This era also witnessed the rise of artificial intelligence (AI) and machine learning (ML), which allowed companies to harness big data for personalised customer experiences. With this, the importance of data privacy and protection grew, leading to regulatory developments. Additionally, online streaming and entertainment services gained prominence, changing how consumers accessed media.

From the late 2010s to the present, the sharing economy has taken centre stage, driven by the proliferation of smartphones and mobile applications. Platforms like Airbnb and Grab connected users directly, enabling individuals to monetise underutilised assets such as spare rooms and vehicles. Healthcare technology also emerged as a key industry, focusing on telehealth and digital health solutions. Meanwhile, blockchain technology and cryptocurrencies gained traction, introducing new paradigms in finance and data security.

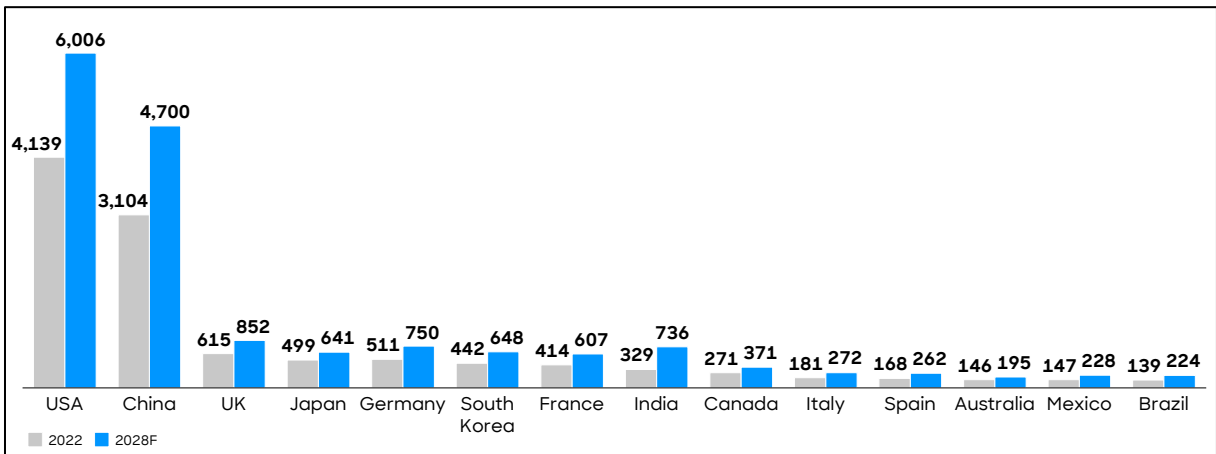
Today, the digital economy is characterised by ongoing digital transformation across various sectors, enhancing efficiency and customer engagement. The Coronavirus Disease (COVID)-19 pandemic further accelerated the adoption of remote work and digital collaboration tools, reshaping workplace dynamics. However, as the digital economy continues to grow, concerns around two aspects, data privacy and data protection, are also becoming more prominent. This is especially the case, considering growing cybersecurity, data breach, and monopolistic practice issues in the digital economy, all of which leads to increased regulatory scrutiny, signalling a new chapter in the evolution of the digital landscape.

3.2 **Size of the global digital economy**

As of 2022, the global digital economy was valued at USD 11.1 trillion, with an anticipated annual growth rate of 10.4%. By 2028, this figure is projected to reach approximately USD 16.5 trillion²⁸.

Technology spending plays a central role in the digital economies of many countries. South Korea, for example, stands out for its significant spending on research and development (R&D), with a strong focus on areas such as AI, semiconductors, Fifth Generation (5G) and Sixth Generation (6G) networks, quantum computing, the metaverse, and cybersecurity.

Figure 4: Selected key economies projected digital economy growth, 2022 & 2028F [USD billion]



Source: Forrester Research

In contrast, countries such as India and Mexico’s digital economies are primarily driven by exports of ICT products and services. India, for example, contributed USD 257 billion to the global digital economy in 2023 ²⁹, representing 4.4% of the world’s total exports of digitally delivered services. Meanwhile, Mexico, is the largest exporter of technology-related products

²⁸ Forrester (2024). The global digital economy will reach \$16.5 trillion and capture 17% of global GDP by 2028. <https://www.forrester.com/blogs/the-global-digital-economy-will-reach-16-5-trillion-and-capture-17-of-global-gdp-by-2028/>

²⁹ International Trade Administration (2023). Mexico - country commercial guide. <https://www.trade.gov/country-commercial-guides/mexico-advanced-manufacturing>

and services in Latin America, with key exports including satellites, computers, and automation-focused robotics³⁰.

3.3 Leaders in the digital economy

The United States (U.S.) and China lead the expansion of the global digital economy, together accounting for roughly two-thirds of the sector.

The U.S. digital economy's strength lies primarily in digitally delivered services, which comprised about a quarter of its total exports in 2022. Telecommunications, computer services and software licensing are key contributors. These services not only boost the country's economic output but also solidify its position as a technological innovator.

Overall tech dominance also resides in the U.S., where it is home to the world's largest tech companies by market capitalisation, such as Microsoft, Apple, NVIDIA, Alphabet, etc.

China, as the second-largest digital economy, has made significant strides, especially in 5G infrastructure. Between 2022 to September 2024, it built a network of four million 5G base stations, up from one million in 2022³¹. This rapid expansion has led to a substantial increase in 5G mobile subscribers, reaching 966 million by September 2024. Additionally, China dominates digital payments, with apps like WeChat Pay and Alipay integrated into daily life and business.

Furthermore, the country's intelligent manufacturing equipment industry is valued at over USD 450 billion and continues to innovate to maintain its position as the world's top manufacturer³². It has more than 420 national-

³⁰ WTO (2024). Global trade outlook and statistics. https://www.wto.org/english/res_e/publications_e/trade_outlook24_e.htm

³¹ State Council of the People's Republic of China (2024). China home to 4 million 5G base stations. https://english.www.gov.cn/archive/statistics/202409/25/content_WS66f40117c6d0868f4e8eb416.html

³² World Bank Group (2025). Manufacturing, value added (current US\$). <https://data.worldbank.org/indicator/NV.IND.MANF.CD>

level demonstration factories, with AI and digital twins being applied in more than 90% of the factories³³.

According to the China Academy of Information and Communications Technology, to-date, the digital economy in the country is estimated to represent 41.5% of the country's GDP³⁴.

3.4 Trends impacting the development of digital economy

3.4.1 Digital economy as a flashpoint for geopolitics

Beyond its obvious economic impact, the digital economy is emerging as a key geopolitical tool, with many countries leveraging it to gain strategic advantages. For example, in March 2025 in India, the government decided to scrap its 6% tax on online services, including digital advertising, in an effort to ease trade tensions with the United States. Introduced in 2016, the tax targeted cross-border digital advertising transactions by non-resident platforms that earned revenue from Indian advertisers, even without a physical presence in the country³⁵.

Meanwhile, the EU in April 2025 fined Apple and Meta for a combined value of EUR 700 m for violations of digital market rules. This is despite warnings from the U.S. government about potential retaliation against any fines imposed on American firms³⁶.

However, the most significant flashpoint in this evolving digital landscape is the competition between the U.S. and China. As the two largest digital

³³ The State Council of the People's Republic of China (2024). Digital economy expands in scale, demonstrating enormous potential. https://english.www.gov.cn/archive/statistics/202405/26/content_WS6653223bc6d0868f4e8e77a9.html

³⁴ The State Council of The People's Republic of China (2023). Digital sector roadmap to aid recovery. https://english.www.gov.cn/news/202312/09/content_WS6573d73dc6d0868f4e8e204a.html

³⁵ Reuters (2025). India to scrap digital ad tax, easing US concerns. <https://www.reuters.com/world/india/india-proposes-remove-equalisation-levy-digital-services-government-source-says-2025-03-25/>

³⁶ Fox Business (2025). EU hands Apple, Meta massive fines despite warnings from Trump. <https://www.foxbusiness.com/media/eu-hands-apple-meta-massive-fines-despite-warnings-from-trump>

economies, their rivalry has significant implications for global power dynamics and international relations.

At the heart of the competition between the two countries lies the bifurcation of the global digital ecosystem and the push for technology dominance. Each nation has developed its own technological infrastructure and set of dominant players. On the U.S. side, companies such as Google, Meta, and Apple lead the way in software, services, and platforms. Similarly, China's ecosystem is dominated by tech giants like Alibaba, Tencent, Baidu, and Huawei. This division has led to a growing fragmentation of global technology markets, with competing standards in areas such as 5G networks, cloud computing, and digital applications.

For example, in the telecommunications sector, 5G infrastructure in the U.S. is largely built by companies like Verizon and AT&T and partners such as Nokia and Ericsson, while Huawei and Zhongxing Telecommunication Equipment (ZTE) control the Chinese market. Similarly, popular global platforms such as TikTok, which originated in China, face potential bans or heavy scrutiny in multiple countries due to national security concerns. This rivalry has contributed to the emergence of two distinct digital spheres, with varying levels of access to platforms, apps, and services depending on geographical region.

Data security and privacy concerns have further exacerbated these tensions. The U.S. government has cited potential threats posed by Chinese tech firms (e.g., TikTok, China Mobile) to national security^{37,38}. This has led to increased scrutiny and restrictions on Chinese applications and platforms.

Such rivalry has significant implications for Malaysia, as both countries are major investors in the nation. This is particularly the case in ICT manufacturing, where Malaysia has emerged as one of the key destinations for many global companies' (e.g., Micron, Intel) China Plus One

³⁷ CNN Business (2023). Lawmakers say Tiktok is a national threat, but evidence remains unclear. <https://www.cnn.com/2023/03/21/tech/tiktok-national-security-concerns/index.html>

³⁸ Reuters (2024). Exclusive: US probing China telecom, China mobile over internet, cloud risks. <https://www.reuters.com/business/media-telecom/us-probing-china-telecom-china-mobile-over-internet-cloud-risks-2024-06-25/>

(C+1) strategy, where they seek to diversify its supply chains in one or more additional countries. Additionally, many international tech companies have or planned to set up data centres in the country, including but not limited to NVIDIA, AirTrunk, GDS Holdings, Princeton Digital Group (PDG)³⁹ and ByteDance⁴⁰.

However, Malaysia's position in the digital economy is dominated by global technological superpowers (the U.S. and China), which requires a careful balancing act. Its close economic ties with China, especially under initiatives like the Belt and Road Initiative (BRI), have opened the door for collaboration on various digital-related projects, including the "Digital Twin Cities⁴¹" (2024: collaboration between China's Lingang New Area and Malaysia's Cyberjaya in areas such as data economy, cross-border data flows), Digital Free Trade Zone⁴² (2017: establishment of a logistics centre for global marketplaces) and City Brain initiative⁴³ (2018: Kuala Lumpur became the first city outside of China to adopt AliCloud's system, allowing real-time data collection and integration of traffic and emergency data from traffic cameras and other sources).

Separately, Malaysia's dependence on the U.S. for technological imports and investment in sectors like cloud computing (commitment by Amazon to invest MYR 29.2 billion to establish Amazon WebServices Asia Pacific⁴⁴),

³⁹ Channel News Asia (2024). Johor's data centres getting a boost from the Singapore factor; water, power remain bottlenecks. <https://www.channelnewsasia.com/asia/malaysia-johor-data-centres-nvidia-ytl-kulai-sedenak-sez-us-china-trade-war-4310496>

⁴⁰ Data Centre Dynamics (2024). TikTok owner ByteDance to expand Malaysia data center footprint in \$2.1bn AI deal. <https://www.datacenterdynamics.com/en/news/tiktok-owner-bytedance-to-expand-malaysia-data-center-footprint-in-21bn-ai-deal/>

⁴¹ China (Shanghai) Pilot Free Trade Zone, Lin-Gang Special Area (2024). Lin-gang special area, Malaysia sign Mou to build 'digital twin cities'. <https://www.lingang.gov.cn/html/website/lg/English/News1630758253379031042/Updates/c1810961039432421377.html>

⁴² The Straits Times (2017). Malaysia and Alibaba launch regional logistics hub. <https://www.straitstimes.com/asia/se-asia/alibaba-launches-electronic-trading-hub-in-malaysia>

⁴³ Alibaba Cloud (2018). Alibaba Cloud launches Malaysia City Brain to enhance city management. https://www.alibabacloud.com/en/press-room/alibaba-cloud-launches-malaysia-city-brain-to-enhance-city-management?_p_lc=1

⁴⁴ Amazon (2024). AWS launches Malaysia's first cloud infrastructure region. <https://www.aboutamazon.sg/news/aws/aws-launches-malysias-first-cloud-infrastructure-region>

software and enterprise and cybersecurity solutions, underscores the country's delicate positioning in the wider tech geopolitical competition.

3.4.2 Emphasis on data

Data is increasingly recognised as a critical driver of economic growth and innovation, particularly within the digital economy. The ability to collect, analyse, and leverage vast amounts of data enables organisations to make more informed decisions, improve efficiency, and develop new products and services that meet the evolving needs of consumers. In advanced areas like AI and ML, data is being harnessed across to learn, adapt, and make predictive analyses.

In view of this, many countries are implementing policies to leverage data for economic development and influence in the global digital economy. A prime example is China, where in 2020, it formally recognised data as the fifth factor of production, alongside land, labour, capital, and technology⁴⁵. This showcases a shift in how China views data not just as a resource, but as an essential component of its economic future. Separately, United Arab Emirates (UAE) “Dubai Data” is an example of an initiative by the local government aimed at creating a seamless sharing of data citywide to enable the powering of smart cities, resolving business problems and improving residents’ quality of life⁴⁶.

With data becoming a critical economic resource, many countries are focusing on data sovereignty which is the concept of regulating data within national borders. Governments are increasingly concerned with controlling their citizens' data and preventing foreign entities from accessing it. For instance, the European Union (EU) has established a comprehensive data protection framework through the General Data Protection Regulation (GDPR), enacted in 2018. It sets strict guidelines on how personal data, especially from EU citizens, can be collected, processed, and stored. It requires companies to obtain consent before collecting data, mandates transparency in data usage, and gives

⁴⁵ Stanford University, DigiChina (2022). China wants to put data to work as an economic resource - but how? <https://digichina.stanford.edu/work/china-wants-to-put-data-to-work-as-an-economic-resource-but-how/>

⁴⁶ Digital Dubai (2025). Initiatives. <https://www.digitaldubai.ae>

individuals the right to access or delete their data. While focused on privacy, the GDPR reflects the EU's approach to controlling data generated within its borders⁴⁷. In China, the Cybersecurity Law (2017) requires that data generated in China be stored domestically and restricts the transfer of sensitive data abroad⁴⁸. This regulation ensures that China can manage the data produced within its borders and prevent foreign access to certain types of data.

3.4.3 Digitalisation in government, business and consumers

The growing digitalisation of governments, businesses, and consumers is a key driver of the global digital economy, contributing to increased efficiency, new economic opportunities, and broader market access.

Many governments worldwide are increasingly adopting digital technologies to improve public services, enhance administrative efficiency, and drive economic development. In 2023, Gartner, a technology research company, estimated worldwide government Information Technology (IT) spending would reach USD 589.8 billion, with a growth of 7.6% from 2022. Majority of the spending lies in Information Technology (IT) services (35.5%) and software (31.2%)⁴⁹, with the aim to ensure more effective public services can be delivered.

Digitalisation has become a standard practice for many businesses. According to the International Data Corporation (IDC), global spending on digital transformation across business processes, products, and organisations is projected to reach USD 2.8 trillion by 2025, more than double the amount spent in 2020. In addition to investments in operational digital transformation, customer experience in consumer-oriented sectors

⁴⁷ EU (2016). Regulation (EU) 2016/679 of the European parliament and of the council. <https://eur-lex.europa.eu/eli/reg/2016/679/oj>

⁴⁸ In Country (2024). China's digital data sovereignty laws and regulations. <https://incountry.com/blog/chinas-digital-data-sovereignty-laws-and-regulations/>

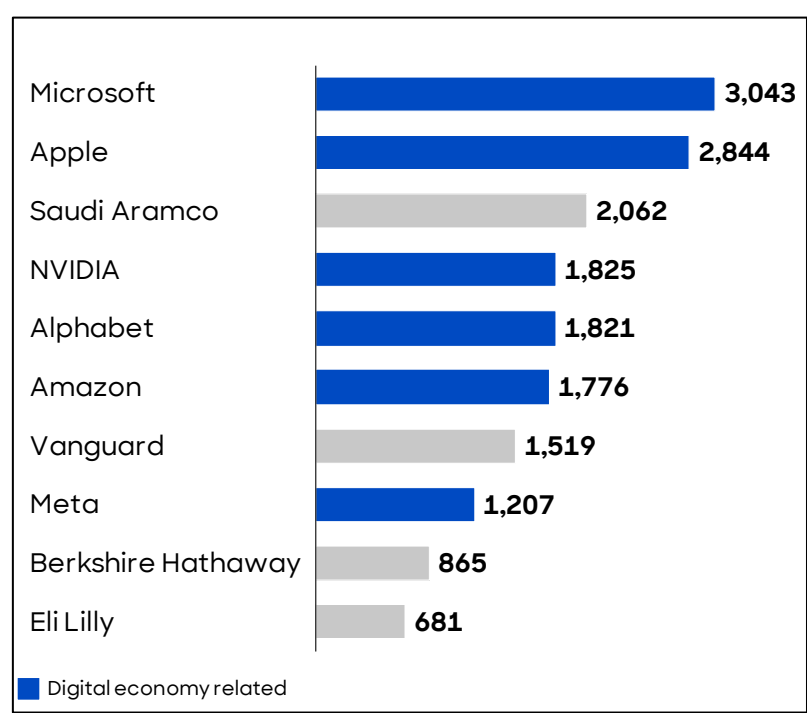
⁴⁹ Gartner (2023). Gartner forecasts worldwide government IT spending to grow 8% in 2023. <https://www.gartner.com/en/newsroom/press-releases/2023-05-24-gartner-forecasts-worldwide-government-it-spending-to-grow-8-percent-in-2023>

such as securities and investment services, banking, and retail are attracting significant investments⁵⁰.

Consumers are also driving the growth of the digital economy. Greater access to the internet and mobile devices has fuelled a rise in online shopping, digital banking, and on-demand services. According to the World Bank, 67.4% of the global population were internet users in 2023, nearly double the 35.4% recorded in 2013⁵¹. This widespread internet adoption has created a more connected consumer base, increasing demand for digital services across various industries.

3.5 Digital economy and competition

Figure 5: Companies with the largest market capitalisation in the world, as of February 2024 [USD billion]



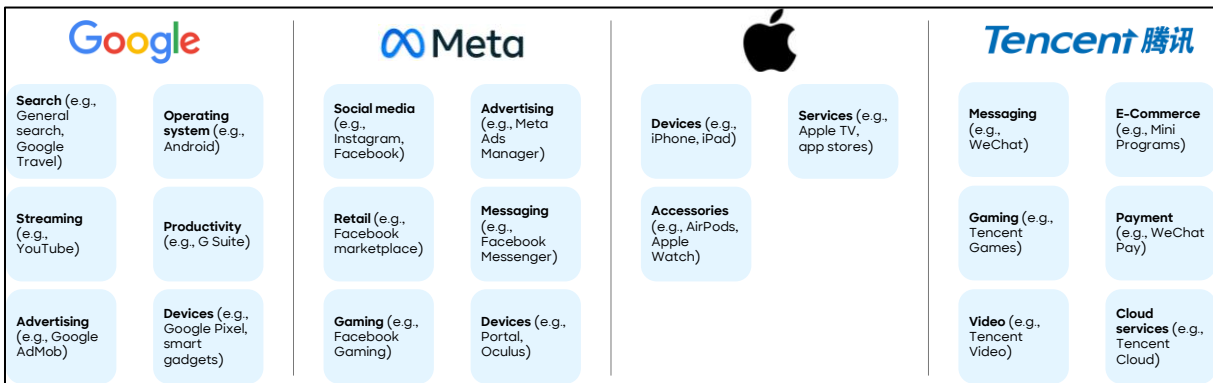
Source: Capital IQ and MyCC analysis

⁵⁰ Business Wire (2021). New IDC spending guide shows continued growth for digital transformation in 2020 as organizations focus on strategic priorities. <https://www.businesswire.com/news/home/20211109006138/en/New-IDC-Spending-Guide-Shows-Continued-Growth-for-Digital-Transformation-in-2020-as-Organizations-Focus-on-Strategic-Priorities>

⁵¹ World Bank Group (2025). World development indicators. <https://datatopics.worldbank.org/world-development-indicators/>

The digital economy has given rise to numerous companies that now dominate selected industries across the world. Companies like Amazon, Apple, Microsoft, Alphabet (Google), Meta and Alibaba, to name a few, have emerged as leaders in the sector, with their influence extending beyond traditional market boundaries. As of early 2024, many players in digital economy-related industries dominate as the world's largest companies⁵².

Figure 6: Selected digital economy players' involvement in different digital economy sub-sectors



Source: Secondary research and MyCC analysis

Many of the major players in the digital economy have expanded their operations across multiple sub-sectors by leveraging their core technological strengths and vast data capabilities. For instance, Alphabet Inc. (Google), originally a search engine company, has leveraged its ability to process and analyse mass amounts of data to diversify into areas such as Google Ads, allowing them to deliver targeted ads based on user interests and search history. Additionally, its core strength helps build a foundation for branching into online travel. Through Google Hotel Ads, it utilised its search capabilities to aggregate data from travel providers and display it in a user-friendly format. This effectively turned Google into a metasearch engine for the travel industry, allowing users to compare prices, explore options, and make bookings⁵³.

⁵² Data extracted from Capital IQ as of February 2024.
⁵³ Google (2025). From the garage to the Googleplex. <https://about.google/our-story/>

For Meta, it began as a social media platform with Facebook in 2004, with a core strength in connecting people and sharing content. The platform's rise was driven by its ability to capture vast amounts of data on user behaviour, interests, and interactions. Utilising these data provided Meta with the insights to offer targeted advertising, turning Facebook into a digital advertising player. Its acquisition of Instagram in 2012 and WhatsApp in 2014 further expanded its reach and user base, allowing Meta to strengthen its social media and messaging capabilities⁵⁴.

Apple's emphasis on seamless integration of hardware and software as its core has been central to its expansion into new areas. For instance, iOS, the mobile OS, powers Apple's iPhones and iPads. It also capitalised on its OS integration by creating the App Store in 2008 by providing a controlled marketplace for apps, allowing app developers to reach its users while also generating revenue from app sales and IAP⁵⁵.

Tencent started in 1998 as a simple messaging platform called QQ in China. However, it quickly evolved into a vast digital ecosystem spanning multiple sectors, including social media, gaming, fintech, cloud computing, and AI. In particular, drawing on its messaging expertise, Tencent developed WeChat, an all-in-one app that enabled it to expand into diverse areas such as fintech (WeChat Wallet and WeChat Pay), e-commerce (Mini Programs), and entertainment (Tencent Games), among others⁵⁶.

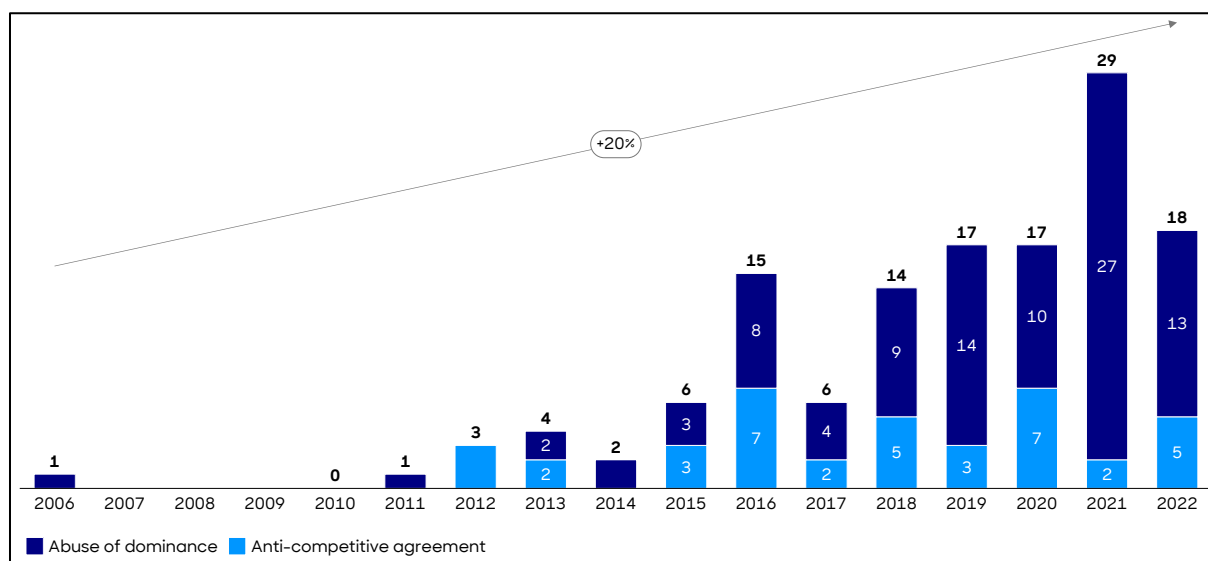
As the digital economy continues to expand, concerns regarding anti-competitive practices, data privacy, and data protection are becoming increasingly prominent. The rapid growth of major tech players and digital platforms has raised alarms about the impact of their market dominance and business practices on competition and consumer rights.

⁵⁴ Meta (2025). Company information. <https://about.meta.com/company-info/>

⁵⁵ PBS News (2023). A timeline of Apple's most influential product announcements. <https://www.pbs.org/newshour/science/a-timeline-of-apples-most-influential-product-announcements>

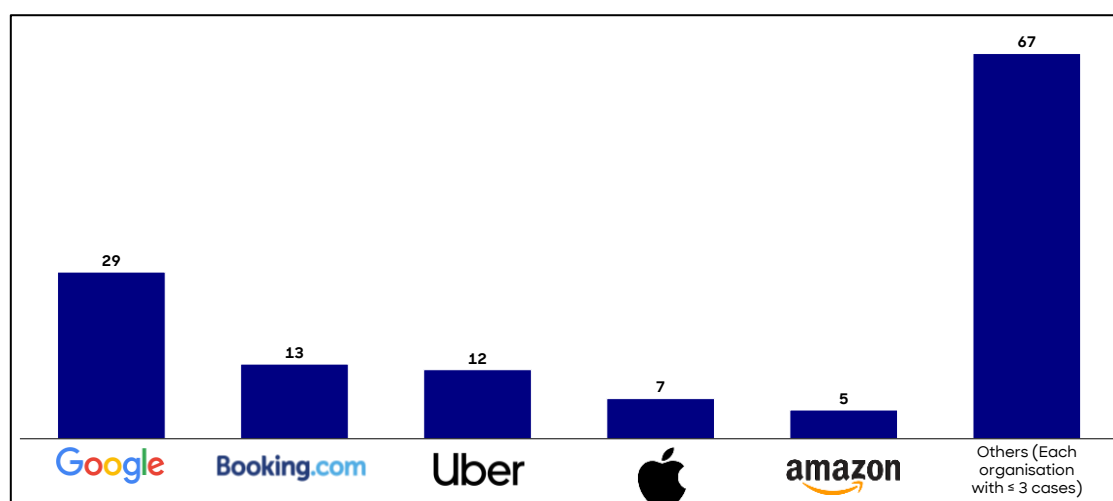
⁵⁶ Tencent (2025). About us. <https://www.tencent.com/en-us/about.html>

Figure 7: Anti-competitive cases by types of infringement in the digital economy sector worldwide, 2006-2022 [# of cases]⁵⁷



Source: World Bank

Figure 8: Anti-competitive cases by companies in the digital economy sector worldwide, 2006-2022 [# of cases]⁵⁸



Source: World Bank

⁵⁷ World Bank Group (2025). The Global Markets Competition and Technology Digital Antitrust Database (2006-2022). <https://dataviz.worldbank.org/views/Global-Digital-Antitrust-Database/Overview?%3Aembed=y&%3AisGuestRedirectFromVizportal=y>

⁵⁸ World Bank Group (2025). The Global Markets Competition and Technology Digital Antitrust Database (2006-2022). <https://dataviz.worldbank.org/views/Global-Digital-Antitrust-Database/Overview?%3Aembed=y&%3AisGuestRedirectFromVizportal=y>

Between 2006 and 2022, the number of anti-competitive cases experienced a compound annual growth rate (CAGR) of 20%. Notably, digital giants such as Google, Booking, Uber, Apple and Amazon account for a significant share of anti-competitive cases during this period.⁵⁹ This growing trend indicates a key concern: as the digital economy continues to evolve, the frequency of anti-competitive cases is likely to increase in the future.

With the expansion of digital platforms across various industries, it is expected that these practices could further disrupt competition, potentially harming consumers and smaller businesses.

Several high-profile cases underscored the rise of anti-competitive conduct within the digital economy:

⁵⁹ World Bank Group (2025). The Global Markets Competition and Technology Digital Antitrust Database (2006-2022). <https://dataviz.worldbank.org/views/Global-Digital-Antitrust-Database/Overview?%3Aembed=y&%3AisGuestRedirectFromVizportal=y>

Table 5: Selected⁶⁰ global anti-competitive cases related to the digital economy:

Year	Parties	Type of conduct	Case details
2012	U.S. Department of Justice (DOJ) and Apple with various publishers	Anti-competitive agreement (vertical restraints)	The U.S. DOJ charged Apple and five major book publishers Hachette, HarperCollins, Simon & Schuster, Macmillan, and Penguin Group over a conspiracy to fix e-book prices. Before Apple entered the e-book market, publishers used wholesale contracts, letting retailers like Amazon set steeply discounted prices, which publishers feared undermined their business model. In response, Apple and the publishers allegedly shifted to agency agreements, giving publishers control over retail pricing and limiting retailers' ability to discounts, thereby raising e-book prices across the market. Apple also negotiated a deal taking a 30% commission on e-book sales and included a "Most Favoured Nation" (MFN) clause to ensure that no other retailer could offer lower prices than Apple. In 2016, the U.S. Supreme Court declined to review an appeals court decision affirming that Apple conspired with five major publishers to fix e-book prices. This decision made final the lower court rulings that Apple orchestrated a price-fixing conspiracy, which led to higher e-book prices for consumers. As a result, Apple agreed to pay USD 400 million to e-book purchasers, bringing the total recovery for

⁶⁰ Selected based on the size of the fine.

Year	Parties	Type of conduct	Case details
			consumers to USD 565 million when combined with settlements from the publishers ⁶¹ .
2013	EC and Microsoft	Abuse of dominance (illegal tying)	The EC imposed a EUR 561 million fine on Microsoft for failing to comply with its commitment to provide Window users with a browser choice screen. The EC had initially raised concerns over Microsoft's practice of tying Internet Explorer to the Windows operating system, which was installed on the majority of PCs worldwide, effectively giving Internet Explorer an unfair distribution advantage. Despite undertaking in 2009 to display a screen offering alternatives such as Google Chrome and Mozilla Firefox until 2014, Microsoft omitted it between May 2011 and July 2012, allegedly affecting up to 15 million EU users. The EC viewed this oversight as a serious infringement of competition law because it perpetuated Microsoft's dominant position in the browser market, depriving consumers of a straightforward method to select alternative browsers and thereby limiting genuine market competition⁶².

⁶¹ Archives, US Department of Justice (2016). Supreme Court rejects Apple's request to review E-books antitrust conspiracy findings. <https://www.justice.gov/archives/opa/pr/supreme-court-rejects-apples-request-review-e-books-antitrust-conspiracy-findings>

⁶² The Guardian (2013). Microsoft fined €561m for browser choice' error. <https://www.theguardian.com/technology/2013/mar/06/microsoft-fined-browser-error#:~:text=Microsoft%20has%20been%20fined%20%E2%82%AC,it%20had%20made%20in%202009.>

Year	Parties	Type of conduct	Case details
2018	EC and Google (Android)	Abuse of dominance (illegal tying)	The EC fined Google EUR 4.34 billion for abusing its dominant position in the mobile operating system market. Google required Android device manufacturers to pre-install its search engine and Chrome browser to access the Google Play Store. Additionally, Google prevented manufacturers from selling devices with alternative versions of Android and offered financial incentives to pre-install only Google's search service. These practices violated EU antitrust laws, as they limited consumer choice and hindered competition. In 2022, the General Court largely upheld this decision, slightly reducing the fine to EUR 4.12 billion ⁶³ .
2020	Autorité de la concurrence / French competition authority (FCA) and Google	Abuse of dominance (self-preferencing, unfair trading conditions)	FCA fined Google up to EUR 500 million for failing to comply with several injunctions issued in April 2020 regarding its obligations under the law on related rights for press publishers and agencies. Specifically, the authority found that Google's negotiations with publishers and agencies were not conducted in good faith, as Google insisted on including a new service, Publisher Curated News, in the negotiations, effectively preventing discussions on the remuneration for existing content usage.

⁶³ Court of Justice of The European Union (2022). The general court largely confirms the Commission's decision that Google imposed unlawful restrictions on manufacturers of Android mobile devices and mobile network operators in order to consolidate the dominant position of its search engine. <https://curia.europa.eu/jcms/upload/docs/application/pdf/2022-09/cp220147en.pdf>

Year	Parties	Type of conduct	Case details
			Additionally, Google limited the scope of the negotiations by excluding certain content, such as press agency photos, and did not provide the information needed for fair negotiations. By restricting meaningful discussion of compensation and narrowing the scope of talks, Google's approach ultimately undermined competition and reinforced its dominant market position ⁶⁴ .
2021	Autorità Garante della Concorrenza e del Mercato (AGCM) or Italian Competition Authority (ICA) and Amazon	Abuse of dominance (self-preferencing)	ICA imposed a fine of EUR 1.13 billion on Amazon for abusing its dominant market position for intermediation services on marketplaces. The ICA concluded that Amazon tied key benefits, such as the Prime label and access to major shopping events, exclusively to its Fulfillment by Amazon (FBA), thereby pressuring third-party sellers to adopt its logistics services. This practice restricted competition by disadvantaging competing logistics operators, who could not offer comparable visibility or sales benefits, and discouraged sellers from listing on other marketplaces ⁶⁵ .

Source: Secondary research

⁶⁴ FCA (2021). Remuneration of related rights for press publishers and agencies: the Autorité fines Google up to 500 million euros for non-compliance with several injunctions. <https://www.autoritedelaconurrence.fr/en/communiqués-de-presse/remuneration-related-rights-press-publishers-and-agencies-autorite-fines>

⁶⁵ ICA (2021). Amazon, press release, case no. A528, 9 December 2021. <https://en.agcm.it/en/mediaépress-releases/2021/12/A528>

As observed in the above cases, anti-competitive practices typically revolve around tying and exclusivity (e.g., EC and Google, ICA and Amazon, EC and Microsoft), abuse of dominance (EC and Google, DOJ and Apple with various publishers), and lack of transparency (FCA and Google), all of which hinder competition by limiting consumer choice, raising barriers to entry, and entrenching the market power of dominant platform. Despite the harm caused by these practices, regulatory authorities face various challenges in effectively enforcing competition laws. Primary obstacles include:

- (a) **Global operations of large technology companies:** The EC's case against Google for Android restrictions underscores the challenges of regulating multinational companies. Google operates globally, and its practices, such as requiring Android device manufacturers that have opted in to pre-install its full suite of non-optional GMS apps, have had an impact on markets around the world, including regions outside the EU. The global nature of its business means that, even though EU regulators imposed a penalty, ensuring compliance across all markets where Google operates remains a complex task. In particular, jurisdictions with less developed regulatory frameworks may face difficulties addressing these practices in the same way, potentially allowing such practices to continue and affecting global competitive conditions.
- (b) **Complexity of digital markets:** Many digital platforms operate with complex, opaque and multi-sided business models, making it difficult for regulators to identify and assess anti-competitive behaviour. For example, in the case of the FCA against Google, the web of interconnected services (Search, News, and Discover) and convoluted data flows adds another layer of complexity in determining market boundaries, outcomes and practices. This presents a challenge for regulators in numerous ways including in determining the precise values for digital products and services or in ensuring that any remuneration or conditions imposed by the platform are fair and do not distort competition.

- (c) **Uncertainty of harm and consumer benefit:** Digital platforms typically emphasise that their practices benefit consumers through low prices, innovation, and improved services. However, regulators face challenges in proving that these short-term benefits are outweighed by long-term anti-competitive effects, such as reduced innovation, monopolistic behaviour, or consumer exploitation through data. In the case of the EC's decision against Microsoft, the company defended its actions by pointing to its provision of free internet browsing to consumers. However, the long-term impact appeared to be a lack of competition in the browser market, where Internet Explorer's dominance may have hindered innovation and limited consumer choice, potentially slowing the development of better alternatives.

To address these challenges, various new regulatory frameworks have been introduced. For example, the Digital Markets Act (DMA) in the EU aims to regulate dominant companies in digital markets, ensuring that they operate fairly and do not limit competition through practices such as self-preferencing or restrictive clauses. Similarly, the Digital Services Act (DSA) focuses on increasing transparency and accountability for digital platforms, particularly concerning user content and advertising practices, thus reducing the risk of platforms leveraging their market power in ways that distort competition.

In addition to these regulations, data protection laws such as the GDPR in Europe and similar frameworks in other regions aim to limit how companies can use consumer data to maintain a competitive edge. By granting consumers with greater control over their personal information, these regulations help curb anti-competitive practices driven by data exploitation, such as exclusive access to vast datasets that can further entrench a dominant position.

4. Digital economy in Malaysia

4.1 Definition of digital economy in Malaysia

The digital economy has traditionally been defined as a business and/or government driven sector. According to the OECD, the sector "incorporates all economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services and data⁶⁶".

In Malaysia, the definition of the digital economy is broader. According to the Malaysia Digital Economy Blueprint (MDEB), the sector encompasses "economic and social activities that involve the production and use of digital technology by individuals, businesses and the government.⁶⁷" The definition ensures all parties' interests/activities (including social) are covered and should be addressed in any related-future endeavours.

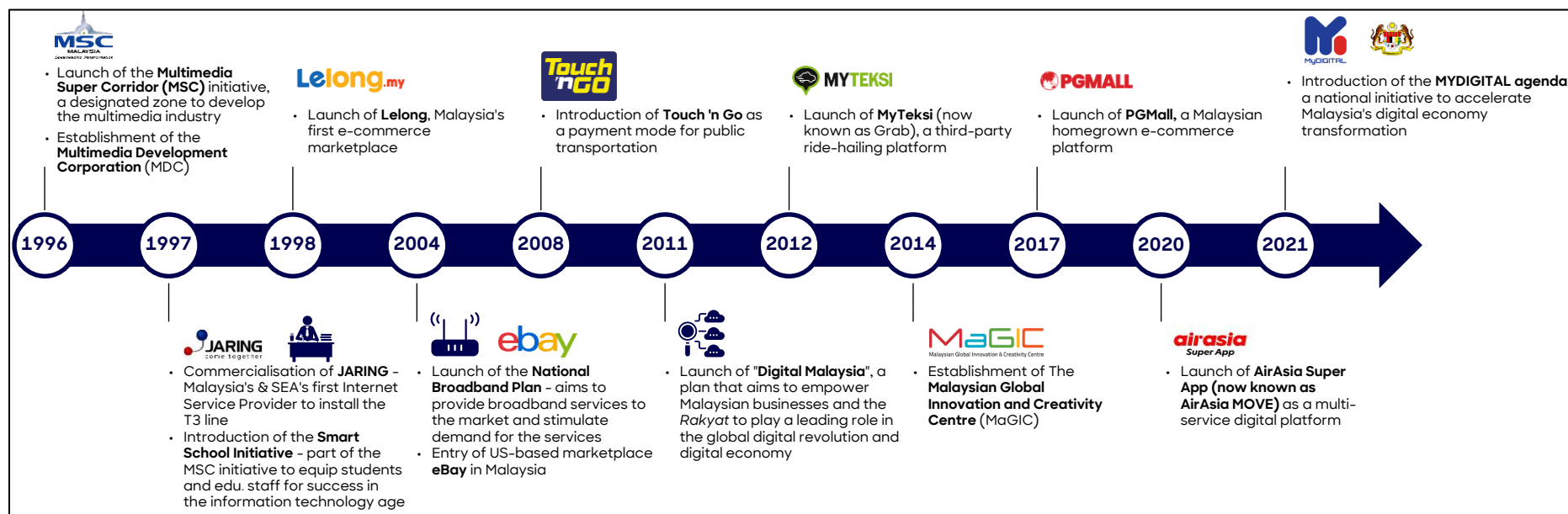
Furthermore, through the inclusion of social activities, it ensures a more comprehensive understanding of how digital technologies impact all aspects of life and can help support more informed decision-making.

⁶⁶ OECD (2021). Digital supply-use tables: A step toward making digital transformation more visible in economic statistics, page 8. https://goingdigital.oecd.org/data/notes/No8_ToolkitNote_DigitalSUTs.pdf

⁶⁷ Ministry of Economy (2025). Malaysia digital economy blueprint. <https://www.ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf>

4.2 Development of digital economy in Malaysia

Figure 9: Selected developments in Malaysia's digital economy sector⁶⁸



Source: Secondary research and MyCC analysis

⁶⁸ Secondary research, MyCC analysis.

Similar to global trends, Malaysia's digital economy journey began in the 1990s, with one of the key initiatives being the launch of the Multimedia Super Corridor (MSC) in 1996⁶⁹ which aimed to foster the development of the multimedia industry and attract investments in technology and digital services. This was subsequently followed by the establishment of Multimedia Development Corporation (MDC) (now known as the Malaysian Digital Economy Corporation - MDEC), which further supported the sector's growth. This era also saw the rise of first internet service providers (ISPs), such as Joint Advanced Research Integrated Networking (JARING), which helped increase internet access for businesses and consumers.

Recognising the significance of technology in education, the government introduced programmes such as the Smart School programme (MSSi). It was one of the seven flagship applications under the MSC, aimed to equip students and educators for the IT age, developing relevant curricula and teaching materials, as well as to foster a knowledge-based economy⁷⁰.

In the 2000s to 2010s, Malaysia made significant strides in its digital economy. The National Broadband Plan of 2004 was launched to enhance internet connectivity nationwide and facilitate broader access to online services. E-commerce platforms, including C2C sites like eBay and Lelong, began gaining traction, while digital payment solutions like Touch 'n Go laid the foundation for cashless transactions.

In 2011, the government introduced the Digital Malaysia initiative that set the stage for Malaysia's goal of becoming a developed digital economy by 2020.

During this period, key global players began to emerge and gain traction. YouTube, launched in 2005, became globally available and widely adopted in Malaysia. This was followed by Facebook in 2006, which transitioned from serving university students to becoming a global social media

⁶⁹ Lexology (2025). Multimedia Super Corridor (MSC) to Malaysia Digital (MD): A revamp of Malaysia's digital economy initiative. <https://www.lexology.com/library/detail.aspx?g=5cb38784-44d8-4f4c-ad96-631ce458630b>

⁷⁰ World Bank Education (2016). Building and sustaining national ICT/education agencies: lessons from Malaysia. <https://openknowledge.worldbank.org/server/api/core/bitstreams/7499a1ce-f135-5334-8c0c-d27071365544/content>

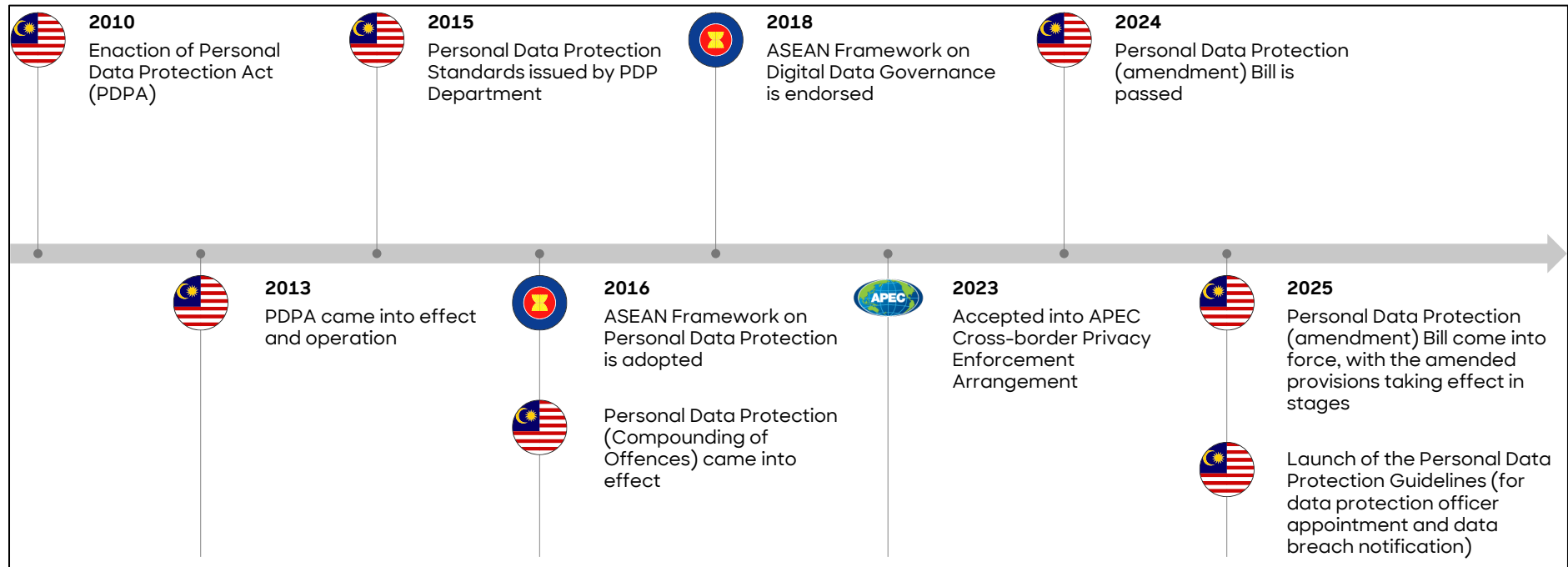
platform. Twitter (now known as “X”) was also launched in the same year. These platforms, along with earlier ones like Friendster and MySpace, shaped digital interaction in Malaysia. The newer platforms gained widespread popularity due to their user-friendly features, global connectivity, and localised content that resonated with Malaysia.

From the 2010s onwards, startups such as MyTeksi (now known as Grab) emerged, shaping the ride-hailing space. During this same period, PGMall was established as a homegrown e-commerce platform, marking Malaysia’s entry into the competitive B2C e-commerce marketplace. Most recently, in 2020, local airline AirAsia launched its Super App, shifting its focus from being an airline-centric company to expanding into broader digital services, such as accommodation, fintech, and gaming⁷¹.

At the same time, the government made various efforts to develop the digital economy sector. In 2014, it established the Malaysian Global Innovation & Creativity Centre (MaGIC), focusing on building a vibrant ecosystem for startups and the digital economy. In 2021, the agency then merged with Technology Park Malaysia Corporation (TPM) under Ministry of Science, Technology and Innovation (MOST)I, introducing a new agency called the Malaysian Research Accelerator for Technology and Innovation (MRANTI). In the same year, MyDIGITAL agenda was introduced and is overseen by MyDIGITAL Corporation, an agency under the Ministry of Digital.

⁷¹ Airasia (2020). Airasia.com is the Asean super app for everyone. <https://newsroom.airasia.com/news/2020/10/8/airasiacom-is-the-asean-super-app-for-everyone>

Figure 10: Timeline of Malaysia's development and participation in data privacy and protection



Source: Secondary research and MyCC analysis

As the digital economy expanded, concerns around protecting and ensuring the privacy of personal data grew. In response, Malaysia enacted the Personal Data Protection Act (PDPA) in 2010, which regulates the processing of personal data in commercial transactions. This regulation applies to any transaction of a commercial nature, even if the data controllers are not listed under the Personal Data Protection (Class of Data Users) Order 2013, which categorises specific types of data users such as banks, insurers, and telecommunication providers⁷². While such data controllers are not required to be registered, they must still adhere to the Act's principles. These include ensuring data is processed lawfully and with consent, informing individuals about the purpose of data collection, protecting data from unauthorised access and allowing individuals to access and control their personal data.

To further protect consumer and public rights, the Personal Data Protection Standard 2015 was introduced. This standard provides businesses with detailed guidelines to safeguard personal data from loss, misuse, unauthorised access, and other threats, regardless of whether the data is processed electronically or otherwise. Key provisions include secure data storage, limiting access to authorised personnel, and maintaining audit trails to ensure accountability⁷³.

By 2016, Malaysia, as part of the Association of Southeast Asian Nations (ASEAN), adopted the ASEAN Framework on Personal Data Protection 2016 to align its data protection laws and practices with regional standards⁷⁴. This framework sets strategic priorities for digital data governance and supports the growth of the ASEAN digital economy. In 2018, Malaysia endorsed the ASEAN Framework on Digital Data Governance⁷⁵, which provides principles and initiatives to help ASEAN

⁷² Personal Data Protection Commissioner (2025). Personal data protection order (class of data users). <https://www.pdp.gov.my/ppdpv1/en/akta/personal-data-protection-order-class-of-data-users/>

⁷³ Personal Data Protection Commissioner (2025). Personal data protection standard 2015. <https://www.pdp.gov.my/ppdpv1/en/akta/personal-data-protection-standard-2015/>

⁷⁴ Asean.org (2025). Framework on digital data governance. <https://asean.org/wp-content/uploads/2012/05/10-ASEAN-Framework-on-PDP.pdf>

⁷⁵ Asean.org (2025). Framework on digital data governance. https://asean.org/wp-content/uploads/2012/05/6B-ASEAN-Framework-on-Digital-Data-Governance_Endorsedv1.pdf

member states to enhance its data management, harmonise data regulations among the states and promote intra-ASEAN flows of data. The framework focuses on the key areas of data life cycle and ecosystem, cross-border data flows, digitalisation and emerging technologies, and legal, regulatory and policy frameworks. Furthermore in 2021, ASEAN (consisting of Malaysia) introduced the ASEAN Data Management Framework⁷⁶, a voluntary and non-binding detailed guidance for ASEAN businesses to adopt effective data management practices.

Recognising the opportunity of digitalisation and the challenges brought by the COVID-19 pandemic, Malaysia introduced the MyDIGITAL agenda in 2021 to accelerate its digital economy transformation. As part of this agenda, two key documents were introduced: the MDEB and the National 4IR Policy (N4IRP). These policies aim to position Malaysia as a technologically advanced economy by 2030, complementing the broader goals of the Shared Prosperity Vision 2030 (SPV 2030)⁷⁷. SPV 2030 seeks to ensure inclusive and sustainable economic growth while reducing income inequality among Malaysians.

In 2023, Malaysia joined the Asia-Pacific Economic Cooperation (APEC) Cross-Border Privacy Enforcement, demonstrating its commitment to international cooperation in protecting personal data. This move aligns with global efforts to create stronger data protection standards. Following this, the country took another significant step with the passing of the Personal Data Protection (Amendment) Bill in 2024. The bill introduces enhanced safeguards and more comprehensive provisions for personal data protection, focusing on areas such as the inclusion of biometric data, expanded legal obligations for data processors, increased penalties for non-compliance, the requirement to appoint a data protection officer, and mandatory data breach notifications, among others⁷⁸. The amended provisions will take effect in stages starting in 2025, allowing businesses

⁷⁶ Digital Policy Alert (2021). Asean: Adopted Asean data management framework. <https://digitalpolicyalert.org/event/7533-adopted-asean-data-management-framework>

⁷⁷ MyDigital (2022). MyDigital progress report 2021: building a dynamic digital economy by 2030. <https://www.mydigital.gov.my/mydigital-progress-report-2021-building-a-dynamic-digital-economy-by-2030/>

⁷⁸ Department of Personal Data Protection (2024). Personal Data Protection (Amendment) Act 2024. <https://www.pdp.gov.my/ppdpv1/wp-content/uploads/2024/11/Act-A1727.pdf>

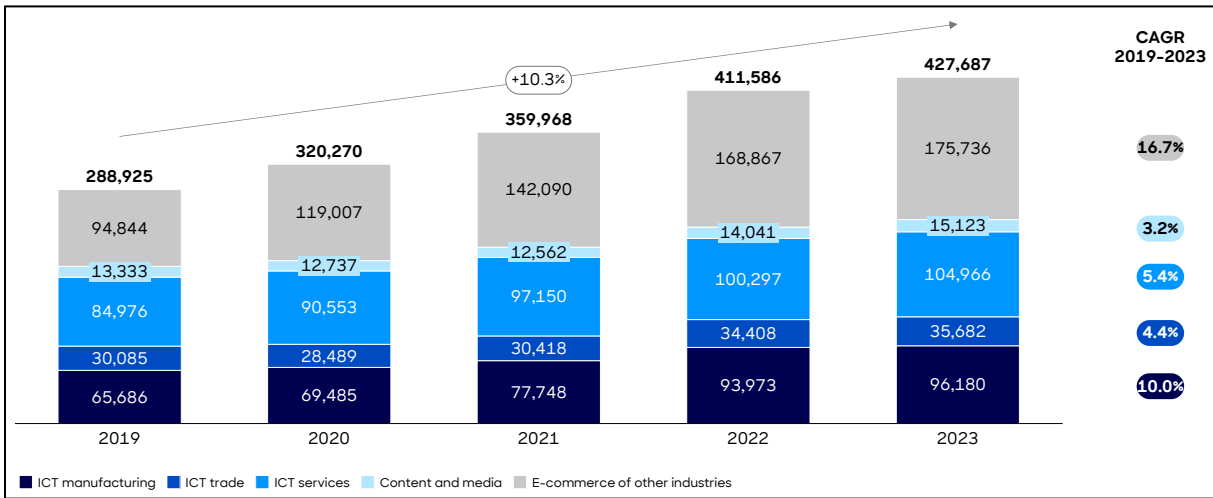
sufficient time to comply with the new requirements. Jabatan Perlindungan Data Peribadi (JPDP) subsequently in February 2025 released guidelines pertaining to data breach notification and protection officer appointment⁷⁹.

In line with global trends, Malaysia is also set to establish a Digital Trust and Data Safety Commission in the first half of 2025. This commission, spearheaded by the Ministry of Digital, aims to build a safe, secure, and trusted data ecosystem that promotes productive data flows across industries⁸⁰.

4.3 Performance in digital economy

4.3.1 Domestic performance

Figure 11: GDP contribution of Malaysia’s digital economy, 2019-2023 [MYR million]

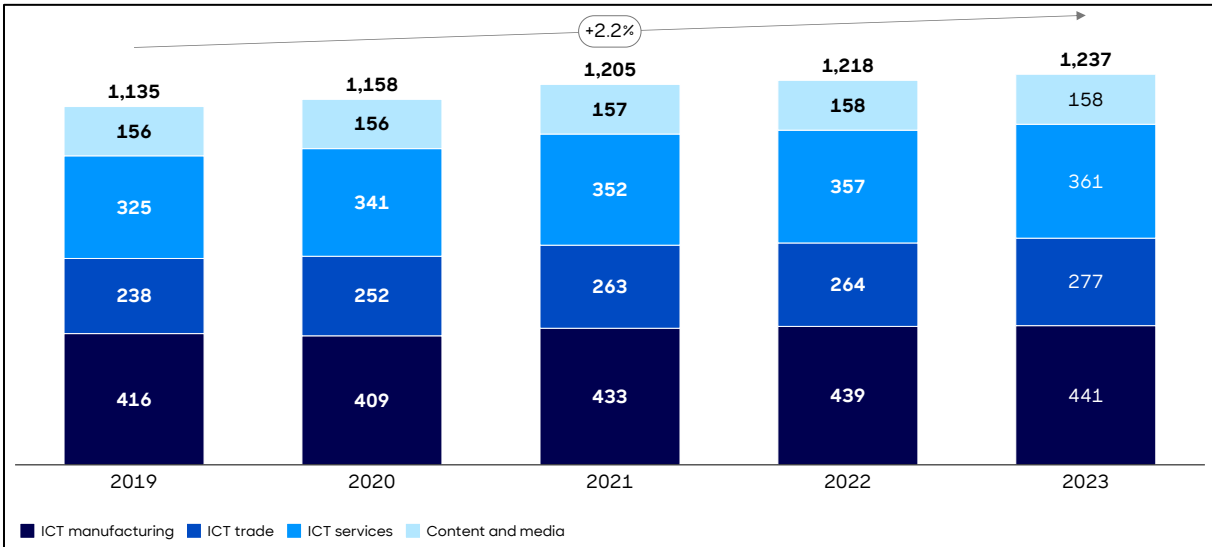


Source: DOSM

⁷⁹ JPDP (2024). Pekeliling pelantikan pegawai perlindungan data dan pemberitahuan pelanggaran data susulan pindaan Akta Perlindungan Data Peribadi 2010. <https://www.pdp.gov.my/ppdpv1/en/slaid-circular-on-the-appointment-of-data-protection-and-data-breach-notification-following-amendments-to-the-personal-data-protection-act-2010/>

⁸⁰ The Star (2024). Gobind: proposal to set up a digital trust and data safety commission in the first half of 2025. <https://www.thestar.com.my/business/business-news/2024/10/24/gobind-proposal-to-set-up-a-digital-trust-and-data-safety-commission-in-the-first-half-of-2025>

Figure 12: Employment in Malaysia's ICT sector, 2019-2023 ['000 persons]



Source: DOSM

The digital economy sector is a key driver of Malaysia's economic growth. In 2023, the ICT and e-commerce sectors generated MYR 427.7 billion, accounting for 23.5% of the national GDP, up from 22.9% in 2022. Between 2019 and 2023, the sector experienced an average annual growth rate of 10.3%, surpassing the overall economy's growth of 2.4% during the same period⁸¹. Employment in the sector also grew, reaching 1.2 million jobs in 2023, making up 7.8% of total employment⁸².

The e-commerce sub-sector has been particularly significant. Specifically in 2022, 78,236 establishments involved in e-commerce transactions, generating an income of MYR 1,126.9 billion. The domestic e-commerce market outperformed the international market, contributing MYR 1,003.5 billion. B2B transaction recorded the highest contribution (MYR 786.5 billion), followed by B2C transactions (MYR 312.6 billion) and B2G (MYR 27.8 billion). This growth is largely driven by the digital transformation of

⁸¹ DOSM (2024). Malaysia digital economy 2024, page 125. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf
⁸² DOSM (2024). Malaysia digital economy 2024, page 18. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf

businesses, as well as increasing preference for online shopping among Malaysian consumers⁸³.

Within the sub-sector, OTAs have contributed positively, where more Malaysians today turn to the internet for travel planning. Platforms such as AirAsia, Agoda, and Booking.com have gained popularity over the years, enabling them to easily compare prices and book flights, accommodations, and travel packages.

ICT services represent the second-largest sub-sector, contributing 24.5% to the overall digital economy in 2023. This sub-sector includes industries such as data management (data centres, data security, big data analytics), software and system design (application development, e-platforms) and creative and digital content (eSports, gaming, and animation).

One of the key industries is app development. With the increasing penetration of smartphones and mobile internet, apps have become essential tools for daily activities, from shopping and banking to healthcare and education. Recognising its importance, various government entities have launched specific programmes to support and nurture this sub-sector. For instance, MDEC's Digital Content Fund provides financial assistance to startups involved in digital content creation, including mobile apps.

Separately within ICT services, the government has prioritised data management as a core industry. From 2021 to 2023, investments totalling MYR 114.7 billion related to data centres and cloud services were approved, with contributions from global tech companies such as Amazon, GDS Holdings Ltd, Yeoh Tiong Lay (YTL) Corp Bhd, and ByteDance Ltd⁸⁴. Additionally, in May 2024, the Ministry of Investment, Trade & Industry (MITI) secured a commitment from Google to invest MYR 9.4 billion, which will

⁸³ DOSM (2024). Malaysia digital economy 2024, page 45. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf

⁸⁴ MIDA (2024). Data centres make up the bulk of RM144.7b in approved digital investments. <https://www.mida.gov.my/mida-news/data-centres-make-up-the-bulk-of-rm144-7b-in-approved-digital-investments/>

support the establishment of its first data centre and cloud region in Malaysia⁸⁵.

Following closely behind ICT services is ICT manufacturing, which contributed 22.5% to the total digital economy in 2023. Key industries in this sub-sector include components (e.g., semiconductors), electronic boards, communication equipment and consumer electronics. The government has placed particular emphasis on the semiconductor industry, aiming to attract MYR 500 billion in investment to advance its National Semiconductor Strategy. Several major players have already established operations in Malaysia, including US-based Intel, which plans to set up its first overseas facility for advanced Third Dimensional (3D) chip packaging and German-based Infineon, which unveiled the world's largest 200-millimetre silicon carbide (SiC) Power Fabrication facility in August 2024.

ICT trade follows, contributing 8.3% to the total digital economy. It includes ICT resale transactions among both wholesalers and retailers.

The smallest sub-sector within the digital economy is content and media, accounting for 3.5% of the total market. This includes industries such as motion picture, video, and television programme activities, along with online content and related services. The digital advertising services industry, which is highly relevant to this study, plays a vital role in fostering engagement and generating revenue for businesses within the digital landscape. The rapid growth of digital advertising is largely fuelled by increased engagement in various online activities, particularly social media and search platforms. At the same time, the industry is undergoing a rapid transformation, with emerging players like Retail Media Networks (RMNs)⁸⁶ gaining prominence⁸⁷. These networks, which include major platforms and apps such as Grab, Shopee, and others, have the potential to disrupt traditional digital advertising models. They leverage real-time consumer data and purchasing behaviour within their own retail ecosystems, enabling highly targeted and personalised advertising that drives conversions on their platforms.

⁸⁵ Bernama (2024). Malaysia approved RM114.7bln investments in data centres, cloud services from 2021 to 2023. <https://www.bernama.com/en/news.php?id=2306763>

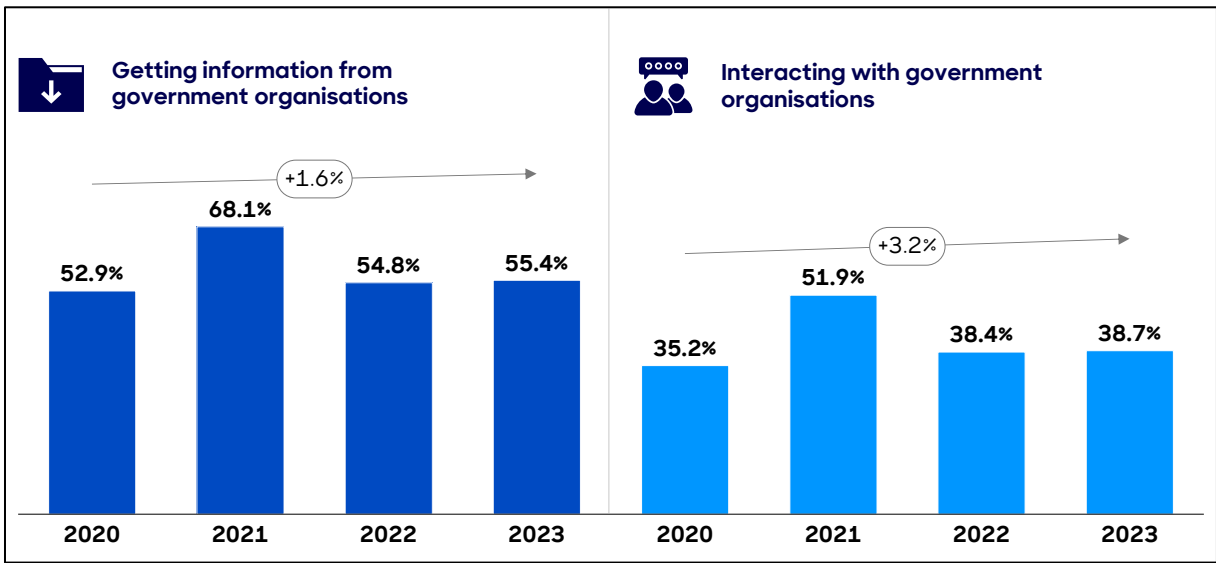
⁸⁶ Advertising technology (AdTech) platform owned and/or operated by a retailer

⁸⁷ The Edge (2024). Trends: the rising advertising superpower of super-apps. <https://theedgemalaysia.com/node/723900>

4.3.2 Digitalisation in government, businesses, and among citizens

According to the Department of Statistics Malaysia’s (DOSM) Malaysia Digital Economy 2024 report⁸⁸, there are varying levels of participation and activity among the government, business establishments, and citizens.

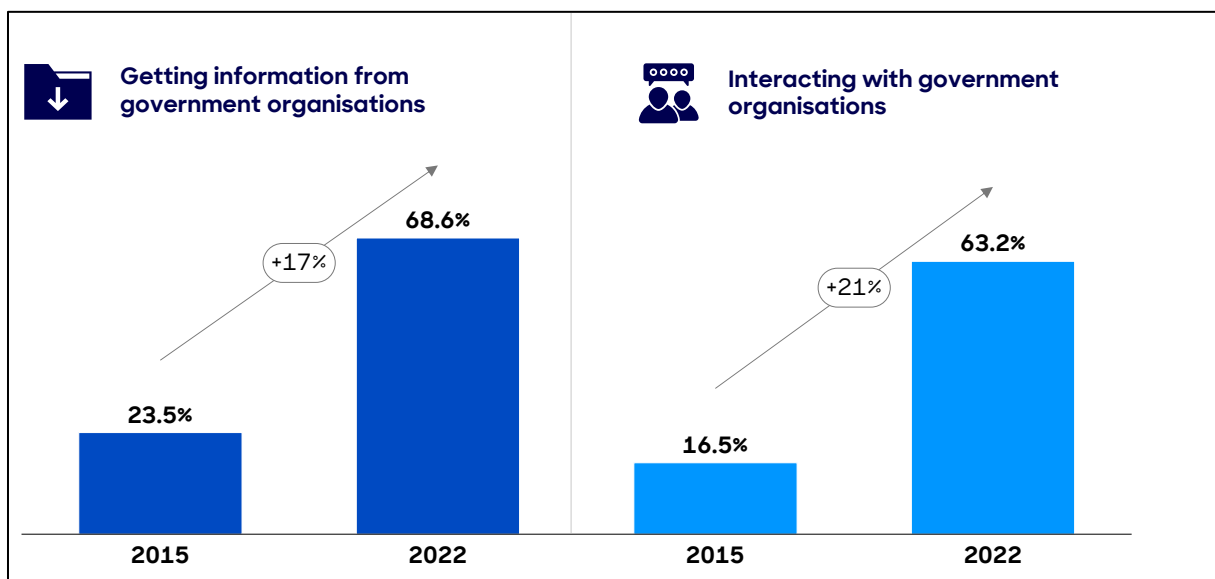
Figure 13: Purpose of internet usage by individuals, 2020-2023 [%]



Source: DOSM

⁸⁸ DOSM (2024). Malaysia digital economy 2024, page 80. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf

Figure 14: Purpose of internet usage by establishments, 2015 and 2022 [%]



Source: DOSM

From the government's perspective, the two most prominent activities involve the level of digital interaction that businesses and individuals have with government organisations. These activities are measured by both parties' use of ICT to (a) get information and (b) interact with government organisations.

Overall, there has been an increase in their reliance on ICT tools to engage with the government by both individuals and businesses. While activities peaked during the COVID-19 pandemic in 2021, continuous efforts by the government are expected to further enhance its digital engagement with both individuals and businesses.

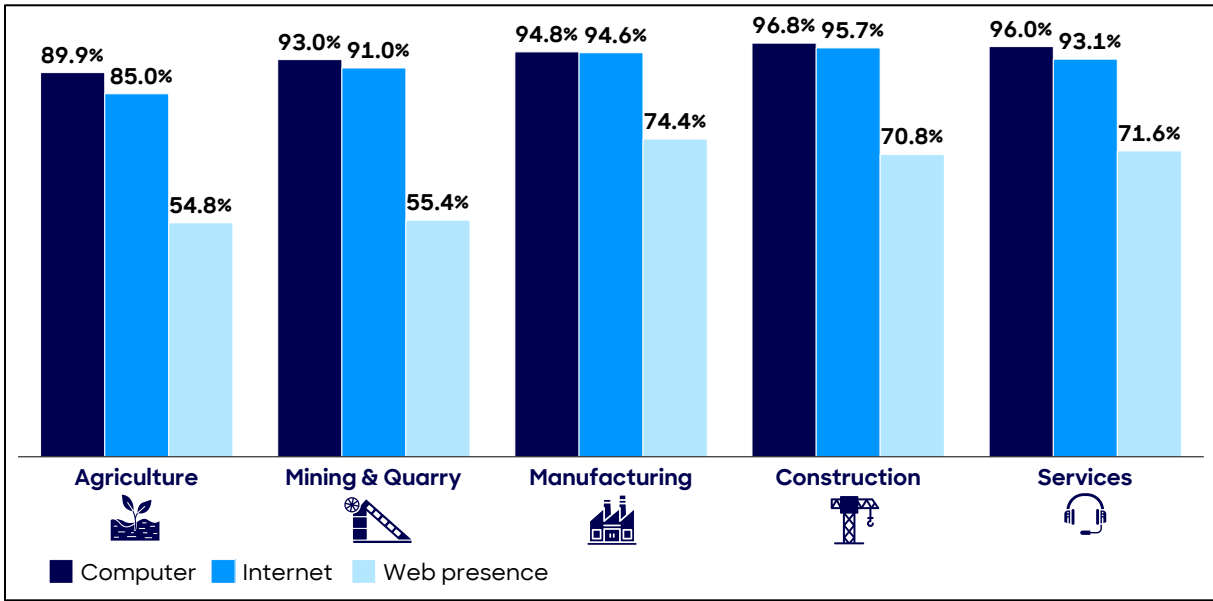
Various initiatives have driven the growth, starting with the 1996 "Electronic Government" initiative under the MSC Flagship Applications⁸⁹, aimed at optimising operational processes and improving government information delivery. This included projects such as E-Procurement, E-Syariah, and the Electronic Labour Exchange. More recently, the government and MDEC launched the Malaysia Digital initiative⁹⁰ to attract companies, talent, and investment, while enabling businesses and

⁸⁹ ePerolehan (2009). Overview. <https://eperolehan.com/en/about/overview2.html>

⁹⁰ MDEC (2022). Malaysia Digital. <https://mdec.my/malaysiadigital>

Malaysians to participate in the digital economy. Targeting nine key sectors, Digital Agriculture, Services, Cities, Health, Finance, Trade, Content, Tourism, and the Islamic Digital Economy, the initiative seeks to foster innovation, entrepreneurship, and investment.

Figure 15: Usage of computer, internet and web presence by various sector, 2022 [%]



Source: DOSM

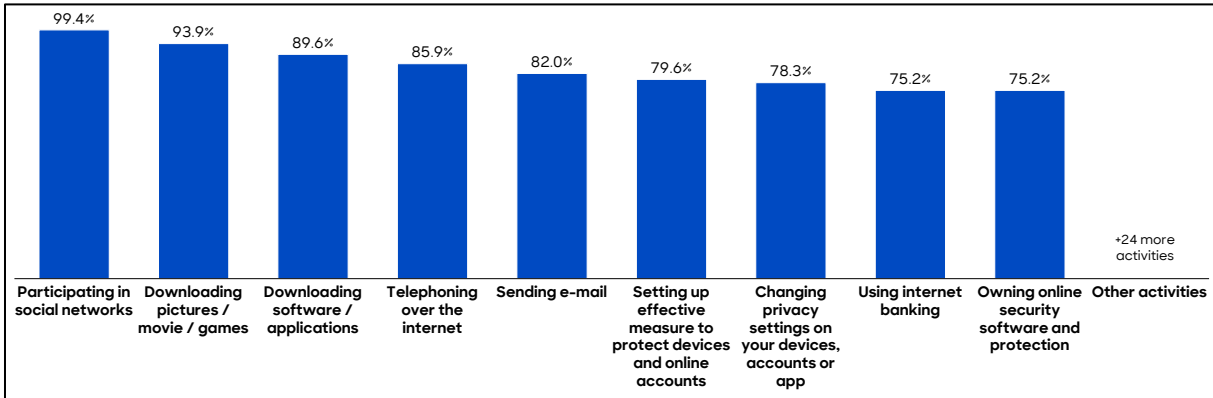
The usage of ICT by businesses and establishments, in terms of computers, internet, and web presence, varies across sectors. Construction leads in both computer and internet usage, while manufacturing leads in web presence. Overall, the average usage of computers and internet among Malaysian businesses is high, at approximately 95.9% and 93.3%, respectively. However, web presence remains lower, with about 71.4% of businesses having an online presence. The service sector, which includes most of the sub-sectors in this report, performs largely above the national average across all three ICT elements, with 96.0% for computer usage, 93.1% for internet usage, and 71.6% for web presence⁹¹.

⁹¹ DOSM (2024). Malaysia digital economy 2024, page 65. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf

Specifically, the adoption of e-commerce by businesses in Malaysia has grown significantly, particularly during the COVID-19 pandemic. According to MyCC’s Market Review under the Competition Act 2010 for the Service Sector in Malaysia, published in 2020⁹², the pandemic accelerated digital adoption for both consumers and industries. In particular, businesses have begun adopting digital platforms like Grab.

Businesses' digitalisation efforts are further supported by government initiatives, such as the National E-Commerce Strategic Roadmap (NESR 1.0), which aims to accelerate e-commerce adoption by enhancing areas such as last-mile delivery and online payment systems⁹³. With the global e-commerce market projected to reach USD 8.0 trillion by 2027⁹⁴, it is crucial for Malaysian businesses, particularly Small and Medium Enterprise (SMEs), to leverage digital platforms to expand their market reach and remain competitive.

Figure 16: Top 10 activities by Malaysian using internet, 2023 [%]



Source: DOSM

Separately, Malaysians have varying levels of participation rates amongst the different activities made available via the internet, which is a large part of how Malaysians today interact with the ICT sector. The primary activities

⁹² MyCC (2020). Market Review under the Competition Act 2010 for the Service Sector in Malaysia, page 81. <https://www.mycc.gov.my/market-review/final-report-market-review-for-service-sector>

⁹³ MITI (2016). Malaysia’s national eCommerce strategic roadmap, page 2. https://www.miti.gov.my/miti/resources/1._NeSR_Book_Final_.pdf

⁹⁴ EMarketer (2024). Worldwide retail ecommerce forecast 2024. <https://www.emarketer.com/content/worldwide-retail-ecommerce-forecast-2024>

that Malaysians perform using ICT tools is shown above, with the top five activities being communications-related and the highest being participating in social networks (e.g., Facebook, Whatsapp, Instagram, X, etc.) at ~99%. Emphasis on data privacy and protection is observed as the second core focus among Malaysians, with activities including setting up measures to protect devices, online accounts, and adjusting privacy settings⁹⁵.

4.3.3 International performance

Figure 17: Malaysia’s performance in Institute for Management Development’s (IMD) World Digital Competitiveness, 2024 [ranking]⁹⁶

Country		World Digital Competitiveness 2024 global ranking
Singapore		1
Malaysia		36
Thailand		37
Indonesia		43
Philippines		61

Source: IMD

Malaysia is ranked 36th out of 64 countries in the Swiss-based International Institute for Management Development (IMD)’s World Digital Competitiveness Ranking. Within ASEAN, it holds the second position behind Singapore, which ranks first globally⁹⁷.

⁹⁵ DOSM (2024). Malaysia digital economy 2024, page 234. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf

⁹⁶ Ranks the extent to which countries adopt and explore digital technologies.

⁹⁷ IMD (2024). Rankings out of 67 economies. https://www.imd.org/centers/world-digital-ranking/#_tab_List

However, the country’s ranking has been slipping over the years, dropping from a high of 26 in 2019 to 36 in 2024. According to the Malaysia Productivity Corporation (MPC), the challenges include embracing a digital-first mindset and enhancing digital technology across various sectors⁹⁸.

Published annually by the World Competitiveness Center (WCC), the ranking evaluates how prepared and capable economies are in adopting digital technologies for economic and social transformation. It assesses digital competitiveness through three main factors: knowledge, technology, and future readiness. The ranking relies on various in-country partners, including the MPC, to supply data from national sources and distribute survey questionnaires⁹⁹.

Figure 18: Malaysia’s performance in International Telecommunication Union’s (ITU) ICT Development Index, 2024 [%]¹⁰⁰

Country		ICT Development Index 2024 score (max. being 100%)
Singapore		97.8%
Brunei Darussalam		95.7%
Malaysia		95.0%
Thailand		91.0%
Vietnam		85.0%
Indonesia		82.8%

Source: ITU

⁹⁸ Malay Mail (2023). Malaysia falls to 33rd spot in world digital competitiveness ranking, trails Singapore. <https://www.malaymail.com/news/malaysia/2023/12/02/malaysia-falls-to-33rd-spot-in-world-digital-competitiveness-ranking-trails-singapore/105384>

⁹⁹ IMD (2025). Partner institutes. <https://www.imd.org/centers/wcc/world-competitiveness-center/partnerships/>

¹⁰⁰ Ranks the extent to which connectivity is universal and meaningful.

Despite these challenges, Malaysia has made significant progress in ICT development in recent years, with collaboration between the government and private sector driving investments in digital technology and infrastructure. In the 2024 ICT Development Index published by the International Telecommunication Union (ITU) ¹⁰¹, Malaysia scored 95%, surpassing the Asia Pacific average of 77.3% and the Upper Middle Income category's score of 79.1%.

One of the recent efforts contributed to the growth is the establishment of Digital Nasional Bhd (DNB), where it has accelerated the deployment of 5G infrastructure across Malaysia. As of 2024, Malaysia's 5G network has received global recognition for its quality and performance, earning various accolades, including:

- Ranked 1st globally for OOKLA 5G consistency score in 2023¹⁰².
- Winner of FutureNet World Global Award 2024 for automated operations Solution incorporating AI functionality¹⁰³.
- Malaysian Telco companies using DNB's 5G network continue to be the highest-ranked mobile operators globally for all categories in the Opensignal 5G Global Awards 2024¹⁰⁴.

As Malaysia continues to develop its digital infrastructure, it will not only improve its ranking in the IDI but also enhance overall competitiveness and readiness to adopt new digital technologies, positively impacting its IMD World Digital Competitiveness Ranking (as highlighted in the previous index). More importantly, it is projected to have a favourable effect on the economy. According to an Ernst & Young study commissioned by DNB, the

¹⁰¹ ITU Data Hub (2024). Malaysia ICT development index. <https://datahub.itu.int/dashboards/idi/?y=2024&e=MYS>

¹⁰² OOKLA (2024). 5G in Malaysia - single wholesale network driving regional leadership. <https://www.ookla.com/articles/malaysia-5g-swn-q4-2023>

¹⁰³ Ericsson (2024). DNB & Ericsson's AI intent-based operations solution wins third award, recognizing future-readiness of Malaysia's 5G network. <https://www.ericsson.com/en/press-releases/2/2024/10/dnb--ericssons-ai-intent-based-operations-solution-wins-third-award-recognizing-future-readiness-of-malaysias-5g-network>

¹⁰⁴ Opensignal (2024). 5G global mobile network experience awards 2024. <https://www.opensignal.com/2024/10/5g-global-mobile-network-experience-awards-2024>

widespread adoption of 5G enterprise use cases could boost Malaysia’s GDP by 5% (MYR 122 billion) by 2030¹⁰⁵.

Figure 19: Malaysia’s performance in Huawei’s Global Digitalisation Index ranking, 2024 [score]¹⁰⁶

Country		Huawei Global Digitalisation Index (GDI) 2024
Singapore		76.1
Malaysia		49.9
Thailand		47.2
Vietnam		36.7
Philippines		34.9
Indonesia		33.1

Source: Huawei

Separately, according to Huawei’s Global Digitalisation Index (GDI) 2024, which evaluates digital economic development, industry progress, and talent ecosystem readiness across 77 countries, Malaysia scored 49.9 ranking second highest in Southeast Asia and classified as an “Adopter”. This classification reflects Malaysia’s rapid progress in digital development, driven by widespread basic connectivity and supportive industry policies.

As an adopter, Malaysia focuses on expanding reliable connectivity, which is essential for digital services and the development of cloud, data centres, and storage. By strengthening its digital foundations, Malaysia is positioned

¹⁰⁵ Ernst & Young (2021). Estimating the economic impact of the single wholesale 5G network in Malaysia. <https://www.digital-nasional.com.my/themes/custom/dnb/pdf/estimating-the-economic-impact-of-the-single-wholesale-5G-network-in-malaysia.pdf>

¹⁰⁶ Huawei (2024). Global Digitalization Index (GDI) 2024. <https://www.huawei.com/en/gdi>

to foster economic growth and accelerate its digital transformation initiatives.

Figure 20: Malaysia’s performance in UN’s E-Government Index, 2024
[score]¹⁰⁷

Country		UN E-Government Index 2024
Singapore		96.9
Thailand		83.5
Malaysia		81.1
Indonesia		79.9
Vietnam		77.1
Philippines		76.2

Source: UN

On government services, Malaysia has made significant progress. According to the United Nations (UN) E-Government Index, which measures a country’s readiness, capacity, and progress in using e-government for the provision of public services, Malaysia improved its score from 61.1% in 2014 to 81.1% in 2024, ranking third in Southeast Asia after Singapore and Thailand.

Various initiatives contributed to the improve in ranking, including but are not limited to, the digitalisation of motor vehicle licenses (road tax)¹⁰⁸, the introduction of MyDigital Identification (ID) as the sole verification system for other government-related apps¹⁰⁹, and the launch of Pangkalan Data

¹⁰⁷ UN (2024). UN E-government survey 2024. <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2024>

¹⁰⁸ MOT (2023). Digital road tax and licence explained., pages 1-3. <https://www.mot.gov.my/en/News/DIGITAL%20ROAD%20TAX%20AND%20LICENCE%20EXPLAINED.pdf>

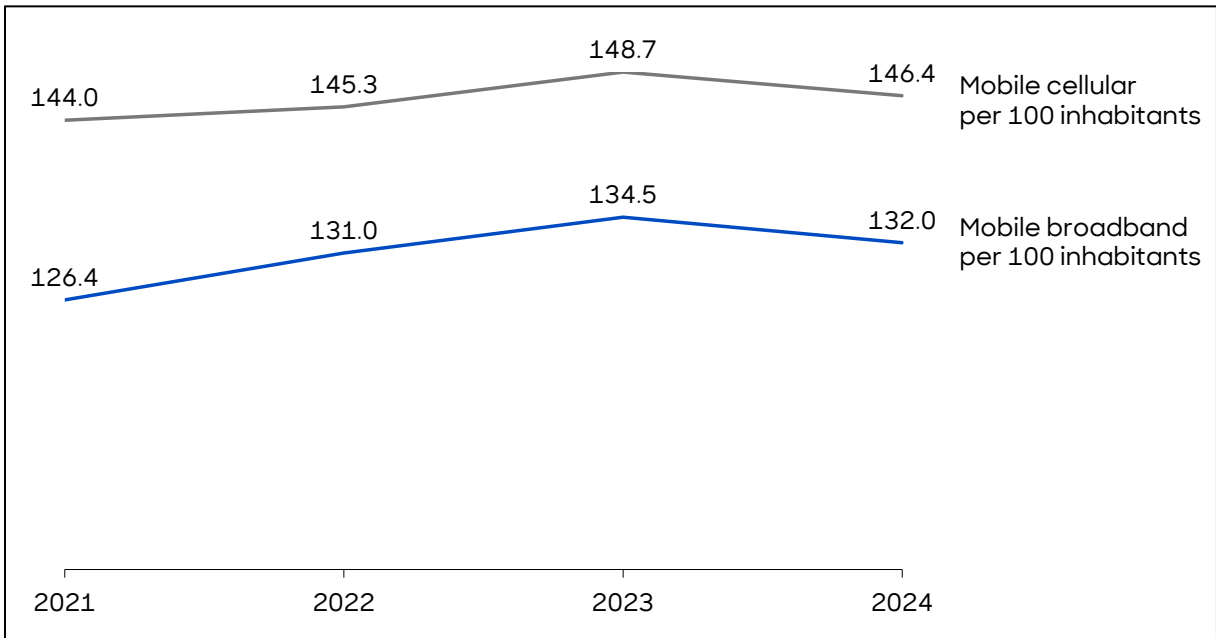
¹⁰⁹ MyDigital ID (2024). Brochure. https://digital-id.my/pdf/MyDigital_ID_Brochure_2024.pdf

Utama (PADU)¹¹⁰, a centralised database hub designed to consolidate information on Malaysian citizens and support the government in better distributing benefits. These efforts have enhanced the efficiency and accessibility of public services, contributing to Malaysia’s advancement in e-government development.

4.3.4 Key factors driving Malaysia’s digital economy

4.3.4.1 Population’s increasing connectivity

Figure 21: Mobile broadband and mobile cellular penetration rates, 2021-2024¹¹¹ [%]



Source: DOSM

Growing internet penetration in Malaysia is a significant catalyst for the expansion of the digital economy. According to DOSM, the percentage of individuals using mobile phones and computers is 99.4% and 80.4%, respectively as of 2023¹¹². DOSM also highlighted mobile broadband

¹¹⁰ PADU (2025). Homepage. <https://padu.gov.my/>
¹¹¹ Penetration rate for the year is based on the latest available figures from the most recent quarter.
¹¹² DOSM (2024). Malaysia digital economy 2024, page 57. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf

penetration rate reaching 132.0 subscriptions per 100 inhabitants, while mobile cellular subscriptions reached 146.4 per 100 inhabitants by the Quarter 3 (Q3) of 2024¹¹³.

As more Malaysians come online through the deployments of Fourth Generation (4G) and 5G high-speed networks coverage in both sub-urban and rural areas (80% of population coverage), it has enabled greater access to innovative digital services, further boosting economic growth and digital transformation across sectors¹¹⁴.

A key factor in this growth is the country's focus on improving connectivity, particularly through the recent push for 5G development. Malaysia's 5G network development began in 2018 with the establishment of the National 5G Taskforce. Initially, a Single Wholesale Network (SWN) model was adopted to accelerate the rollout and ensure inclusive coverage across the country. However, in May 2023, the government transitioned to a dual-network approach to mitigate risks associated with a single point of failure, ensure redundancy for 5G services, and foster a competitive 5G ecosystem¹¹⁵.

As of October 2024, 5G penetration stands at 51.5%, and the coverage of 5G infrastructure now extends to 82.1% of populated areas, benefiting more than 17.5 million subscribers¹¹⁶. This shows a rate of increase of ~20% per month from ~3.1% in March 2023. Various 5G use cases have been adopted across multiple sectors of the economy, including the implementation of Malaysia's first 5G private network in the oil and gas industry by Petronas in October 2023¹¹⁷.

¹¹³ DOSM (2024). Malaysia Digital Economy 2024, page 85. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf

¹¹⁴ Malaysia Network Operators Group (2024). Malaysia's unique approach on 5G network rollout. <https://www.mynog.org/wp-content/uploads/2024/06/Plenary-1010-DNB-1.pdf>

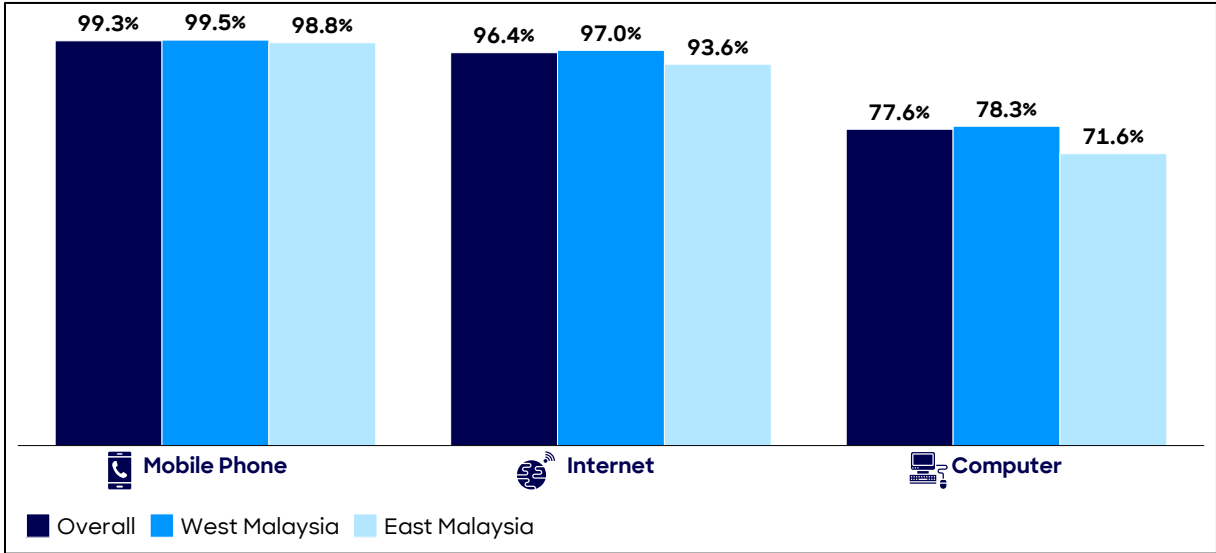
¹¹⁵ The Edge (2023). 5G: no rollback as Cabinet decides to stay with single wholesale network till DNB completes 80% coverage. <https://theedgemaalaysia.com/node/665485>

¹¹⁶ Bernama (2024). 17.5 million 5G users in Malaysia - Gobind. https://www.bernama.com/en/news.php/crime_courts/sports/news.php?id=2370501

¹¹⁷ Petronas (2023). Petronas becomes first in Malaysia to adopt 5G private network for enterprise use. <https://www.petronas.com/media/media-releases/petronas-becomes-first-malaysia-adopt-5g-private-network-enterprise-use>

In terms of access to ICT tools, the country has experienced a sustained increase in key areas, including computers, internet connectivity, and mobile phone. Current statistics indicate that each of these areas has surpassed a penetration rate of 90% ¹¹⁸ , reflecting a high level of accessibility and integration of technology within the population. This significant penetration highlights that the majority of the population is equipped with the necessary tools for digital engagement, positioning the country as well-prepared for the digital economy.

Figure 22: Percentage of households with access to selected ICT services in Malaysia, 2023¹¹⁹ [%]



Source: DOSM

Despite Malaysia having high overall ICT development, variations in geography, population densities, economic activities, and cultural factors have led to slight disparities in access and development between West and East Malaysia. These differences are particularly evident in the penetration rates of ICT tools, as seen in the comparison between the two regions shown in Figure 22.

¹¹⁸ DOSM (2023). Malaysia digital economy 2024, page 220. https://storage.dosm.gov.my/gdp/digitaleconomy_2023.pdf

¹¹⁹ Figures from both West and East Malaysia are based on the average access rate across all states within each region.

4.3.4.2 COVID-19 and digitalisation

Similar to many countries, the pandemic has acted as a catalyst for Malaysia's digital economy, accelerating the adoption of digital technologies across various sectors.

During that period, various incentives were given to businesses by the government with the objective to stimulate economic growth.

In June 2020, the government launched the PENJANA (*Pelan Jana Semula Ekonomi Negara*) stimulus package, a short-term economic recovery plan worth MYR 35 billion. The package included various digital initiatives for businesses and citizens, such as¹²⁰:

- **Digital Adoption Grant and Loans:** Provision of MYR 700 million in grants and loans to eligible enterprises for the adoption or subscription of digitalisation services.
- **Micro and SME E-Commerce Campaign:** Initiative to encourage micro, small and medium enterprises (MSMEs) to adopt e-commerce, providing onboarding training, seller subsidies and sales support. This campaign is co-funded by the Government through MDEC and various e-commerce platforms.
- **Shop Malaysia Online Campaign:** Collaboration between the government and e-commerce platforms to co-fund e-commerce digital discount vouchers.
- **ePenjana Credit:** Credit of MYR 50 for e-wallet users, with an additional MYR 50 in value offered through cashback vouchers and discounts from e-wallet service providers.
- **Dana PENJANA Nasional:** MYR 1.2 billion fund aimed at providing capital to digital-focused Malaysian venture capital funds and startups.

¹²⁰ Bernama (2020). List of 40 initiatives under Penjana. <https://www.bernama.com/en/news.php?id=1848388>

- **Promotion of Remote Learning and Work:** Provision of 1 gigabyte of free daily capacity for all users to access educational websites, news and video conferencing applications.

According to JENDELA (*Jalinan Digital Negara*), the Digital Network Plan introduced by the Malaysian Communications & Multimedia Commission (MCMC), Malaysia's internet traffic increased up to 70%¹²¹. Additionally, internet usage in residential areas saw a similar rise of up to 70%. Lockdowns and social distancing measures compelled businesses and consumers to shift online, resulting in a surge in e-commerce, online education and remote work solutions. The need for contactless transactions also led to the rapid growth of digital payment systems and e-wallets, e.g., Touch 'n Go and DuitNow, making financial transactions more convenient and secure.

In line with Malaysia's push for digitalisation, the Sarawak and Sabah government have also introduced various state-level initiatives via its local entities¹²² – Sarawak Digital Corporation (SDEC)¹²³ and Sabah Creative Economy and Innovation Centre (SCENIC)¹²⁴.

SDEC:

- **Sarawak rural Broadband Network (MySRBN):** Provision of high-speed broadband connectivity across suburban and rural areas in Sarawak.
- **Innovation hubs:** Platform for startups, creative industries, SMEs and social enterprises.

¹²¹ Malaysian Wireless (2020). Malaysia government wants 100% 4G coverage, 100mbps 5G speeds. <https://www.malaysianwireless.com/2020/09/malaysia-government-jendela-4g-coverage-100mbps-5g-speeds/>

¹²² SDEC is a wholly-owned company by the Sarawak Government through State Financial Secretary Inc. under the Ministry of Finance and Economic Planning. It serves as the state's implementing agency in driving the Sarawak Digital Economy initiatives; SCENIC is an initiative under the Sabah state's Ministry of Science, Technology and Innovation. It is responsible to accelerate industries in the state through entrepreneurship, technology, innovation and creativity.

¹²³ Sarawak Digital Economy Corporation (SDEC) (2025). <https://sdec.com.my/>

¹²⁴ Sabah Creative Economy and Innovation Centre (SCENIC) (2025). <https://scenic.my/>

- **Sarawak Digital Mall:** Platform aimed at boosting e-commerce adoption and sales performance of MSMEs.
- **GoDigital:** Purchase of hardware, software, and digital services aimed at assisting MSMEs in digitalising their business.

SCENIC:

- **SCENIC-SATA Hasanah Special Fund:** Provision of funds to Sabahan social entrepreneurs.
- **SEMAI Summit:** Summit with forums, sharing sessions focusing on social entrepreneurship.

4.3.4.3 Growing adoption of new technologies

Malaysia's digital economy is at the forefront of adopting new technologies, which are driving significant changes across various sectors. The adoption of AI and ML is noteworthy, with applications ranging from personalised shopping experiences in e-commerce to predictive analytics in digital advertising. For instance, e-commerce platforms are now increasingly using AI to recommend products based on user behaviour, resulting in higher engagement and sales conversion rates. In 2023, e-commerce player Lazada launched its AI-powered and augmented reality (AR) “Skin Test Technology”, allowing consumers to diagnose their skin condition through phone cameras¹²⁵.

In the digital advertising sub-sector, publisher REV Media group in October 2024 introduced AI influencers Liz Spark and Adam Spark, offering brands innovative ways to engage with diverse markets¹²⁶. Separately, Astro partnered with Talon Creative to launch an AI-driven initiative that utilises a social listening system to identify online posts expressing emotions like sadness and frustration. In response, AI-generated personalised messages,

¹²⁵ Retail Asia (2024). Lazada launches AI, AR-powered skin test technology. <https://retailasia.com/e-commerce/news/lazada-launches-ai-ar-powered-skin-test-technology>

¹²⁶ New Straits Times (2024). REV Media unveils new AI influencers as part of digital marketing push. https://www.nst.com.my/news/nation/2024/10/1117194/rev-media-unveils-new-ai-influencers-part-digital-marketing-push#google_vignette

crafted to mimic the style and tone of the series' cast members, are sent to offer support and encouragement¹²⁷.

In the online travelling sub-sector, AirAsia launched an AI-powered concierge, 'Ask Bo,' in February 2023. With enhanced ML capabilities, 'Ask Bo' offers more proactive and personalised customer service, providing live updates on flight status, boarding information, baggage tracking, and flight changes¹²⁸.

4.3.4.4 Government's push for startups

The vibrant startup ecosystem in Malaysia plays a crucial role in fostering innovation. While recognising its importance, the government is also aware of the key challenges faced by startups. According to the Malaysia Startup Ecosystem Roadmap (SUPER) 2021-2030, challenges such as funding for early-stage startups, a limited talent pool, particularly in tech and digital fields, and issues related to the regulatory environment and market access remain as hurdles¹²⁹.

In response, the government has introduced several initiatives to promote entrepreneurship and drive innovation. One of the notable efforts is the Ministry of Economy's KL20 Summit 2024, which aims to position Kuala Lumpur among the world's top 20 global startup hubs by 2030. Key activities outlined in this initiative include, but are not limited to¹³⁰:

¹²⁷ Marketing Magazine (2024). Talon Creative works with Astro to leverage A.I. and inspire Positive Social Engagement featuring Mierul Aiman & Shasha Abedul. <https://marketingmagazine.com.my/talon-creative-works-with-astro-to-leverage-a-i-and-inspire-positive-social-engagement-featuring-mierul-aiman-shasha-abedul/>

¹²⁸ AirAsia (2023). "We have listened." Capital A fires chatbot AVA and introduces new AI-powered "Ask Bo" as part of commitment to more transparent, enhanced customer experience. <https://newsroom.airasia.com/news/capital-a-welcomes-ask-bo#gsc.tab=0>

¹²⁹ MOSTI (2021). Malaysia Startup Ecosystem Roadmap 2021-2030, pages 1-38. [https://www.mosti.gov.my/wp-content/uploads/repository/penerbitan/2021/\(SUPER\)%20Malaysia%20Startup%20Ecosystem%20Roadmap%202021-2030.pdf](https://www.mosti.gov.my/wp-content/uploads/repository/penerbitan/2021/(SUPER)%20Malaysia%20Startup%20Ecosystem%20Roadmap%202021-2030.pdf)

¹³⁰ KL20 Summit (2024). Malaysia launches major initiatives at KL20 summit to boost global startup standing. <https://www.kl20.gov.my/malaysia-launches-major-initiatives-at-kl20-summit-to-boost-global-startup-standing/>

- **Unicorn Golden Pass:** Attractive incentives offered to startups, including waived fees for employment passes for senior management, subsidised rental options, concessionary tax rates on corporate profits, etc.
- **KL20 Action paper:** Comprehensive roadmap with initiatives that aim to make talent access easier (Visa Green-laning), investing and deal-sourcing more regular (Venture Capital (VC) Golden Pass) and AI Infrastructure more mature (Graphical Processing Units installation).
- **Kuala Lumpur Innovation Belt:** Initiative by MRANTI to create a one-stop centre for startups and investors.

Furthermore, the Ministry of Science, Technology and Innovation (MOSTI) mandated Cradle Fund, Malaysia's early-stage startup influencer, to lead its ASEAN Startup initiative with the aim to foster greater collaboration, innovation, and growth among startups in the region. The initiative will unfold in two phases: the first phase in 2024 will focus on developing the ASEAN Startup Portal, while the second phase in 2025 will emphasise capacity-building programs.

4.3.5 Projected growth of Malaysia's digital economy

By 2025, the Ministry of Digital projects a total contribution of 25.5% from the digital economy to Malaysia's total GDP¹³¹. This target will be driven by various initiatives, including government-led projects and "Catalytic Projects" through Public-Private Partnerships (PPPs), where the private sector leads and finances the projects¹³².

¹³¹ Malay Mail (2024). Digital minister: govt targets 25.5pc GDP contribution from digital economy by end-2025. <https://www.malaymail.com/news/malaysia/2024/06/25/digital-minister-govt-targets-255pc-gdp-contribution-from-digital-economy-by-end-2025/141472>

¹³² MyDigital (2022). MyDigital catalytic projects facilitating game-changing technological innovation for key sectors. <https://www.mydigital.gov.my/mydigital-catalytic-projects-facilitating-game-changing-technological-innovation-for-key-sectors/>

The overall target will be supplemented by the various sub-targets laid out in both MDEB and the National 4IR Policy (N4IRP) (see section 4.4 for more information):

Target under MDEB (by 2025):

- Total investment in digitalisation: MYR 70 billion
- Number of MSMEs adopting e-commerce: 875,000
- Number of start-ups: Up to 5,000
- Number of unicorns (privately held startup company with a valuation of $\geq$ \$ 1 billion): at least two and being based in Malaysia
- Job opportunities in digital economy: More than 500,000

Target under N4IRP (by 2030):

- Transform 20% of semi- and low-skilled labour to highly skilled labour
- More home-grown Fourth Industrial Revolution (4IR) technology providers
- 3.5% in Gross Domestic Expenditure on R&D (GERD), including for 4IR-related R&D
- Ranked Top 20 in Global Innovation Index
- 80% of online government services are integrated and supported by 4IR technology application
- All teachers are trained to use 4IR technology

The MYDIGITAL agenda is overseen by the Council of Digital Economy and the Fourth Industrial Revolution (MED4IRN), led by the Prime Minister of

Malaysia. The Council includes Cabinet Ministers, private sector representatives, industry leaders, and think tank members¹³³.

Moreover, in October 2024, the government's Budget 2025 outlines various initiatives aimed at enhancing the digital economy, innovation and infrastructure ¹³⁴ , and supporting the achievement of the above-mentioned targets:

Supporting Digital Initiatives (Malaysia Budget 2025):

- Expansion of R&D funding to MYR 600 million is planned to encourage innovation and the development of new technologies.
- Allocation of MYR 320 million to improve internet access, including MYR 120 million for higher education institutions (HEIs), MYR 100 million for broadband in rural schools, and MYR 100 million for the National Information Dissemination Centres (NADI) over five years.
- MYR 10 million allocation to establish of the National Artificial Intelligence Office (NAIO), which will coordinate AI efforts and develop a strategic action plan for AI technology.
- The New Investment Incentive Framework (NIIF) includes a MYR 1 billion fund to support high-value activities like integrated circuit (IC) design services. Special tax deductions will also be given to HEIs that develop new courses in digital technology, AI, robotics, IoT, data science, Fintech, and sustainable technologies.

4.4 Digital economy-related policies

While digitalisation has been recognised in key policy documents such as the Malaysia Plan, a focused approach was only introduced in 2019 under

¹³³ MITI (2021). Publication of information and communication technology satellite accounts (ICTSA) 2021 by Department of Statistic Malaysia (DOSM) - <https://www.miti.gov.my/index.php/pages/view/8527>

¹³⁴ Ministry of Finance (2024). Budget tabling for 2025. <https://belanjawan.mof.gov.my/en/>

the SPV 2030¹³⁵, which identified Digital Economy as one of its 15 Key Economic Growth Areas (KEGA).

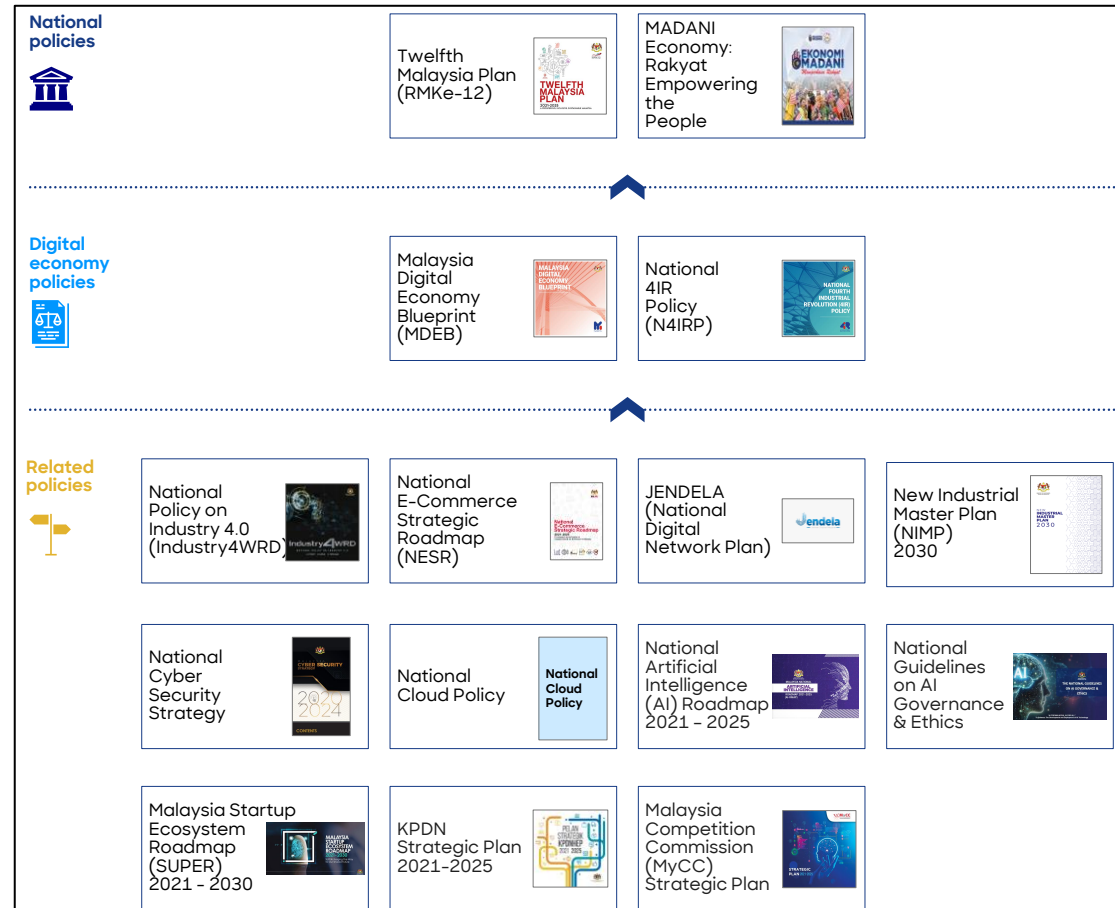
In 2021, the government formalised its commitment to the digital economy with the launch of the MYDIGITAL agenda, which introduced both the MDEB and the National Fourth Industrial Revolution Policy (N4IRP). These policies aim to streamline sectoral policies and align them with broader national goals, with the N4IRP serving as a central industrialisation policy focused on manufacturing and related services.

Subsequent policies were introduced to support the MDEB and N4IRP, with additional industry-specific policies developed in alignment with these frameworks. The figure below outlines the comprehensive policies governing the digital economy, along with related initiatives.

These policies reflect the government's commitment to the robust development of Malaysia's digital economy. The primary goals are to drive national growth, foster inclusiveness, and enhance competitiveness for the benefit of the economy, the people, and the country as a whole.

¹³⁵ Ministry of Economy (2019). Shared prosperity vision 2030. <https://ekonomi.gov.my/sites/default/files/2020-02/Summary%20Shared%20Prosperity%20Vision%202030.pdf>; New Straits Times (2023). Armizan: Malaysia Madani replaces SPV 2030, framework to be launched soon by PM. <https://www.nst.com.my/news/nation/2023/02/883055/armizan-malaysia-madani-replaces-spv-2030-framework-be-launched-soon-pm>

Figure 23: National, key and supporting policies related to the digital economy¹³⁶



Source: Secondary research and MyCC analysis

¹³⁶ MyCC analysis.

4.4.1 National policies

Table 6: Guiding national policies for the digital economy in Malaysia

#	Policy	Description	Competition aspect	Data privacy and protection aspect
1	Twelfth Malaysia Plan (RMKe-12) by <i>Economic Planning Unit (EPU) under the Ministry of Economy</i> 	Five-year, medium-term plan with the objective of developing a “Prosperous, Inclusive, Sustainable Malaysia.” It emphasises the importance of digital transformation across sectors, aiming to enhance digital literacy, promote e-commerce and support technology adoption under the Policy Enabler 2: Accelerating Technology Adoption and Innovation.	Recognises the weak digital global presence of Malaysian companies and proposes initiatives such as developing standards, setting up new platforms, and fostering cross-border activities promote competition in the digital economy. It also plans to expand digitalisation by scaling up digital skills and opportunities for targeted groups to promote inclusiveness of	Recognises the importance of improving data integration and privacy for efficient service delivery. Proposes formulating policies on data sharing whilst protecting data privacy such as developing national digital identification policy to build trust and security for digital transactions and data movement, with the

#	Policy	Description	Competition aspect	Data privacy and protection aspect
			Malaysians in the digital economy.	goal of curbing fraud and enhancing individual rights alongside the PDPA.
2	MADANI¹³⁷ Economy: Empowering the People <i>by the Prime Minister & Finance Minister of Malaysia, Datuk Seri Anwar Ibrahim</i>	Launched in 2023 with the aim to restore Malaysia's economy, position it as a leading nation in Asia and to enhance the people's quality of life through economic growth. It emphasises the integration of digital technologies across various sectors to enhance productivity and competitiveness through the creation of a 'digital and	Attempts to reform the digital economy and increase the exposure of MSMEs to the digital era through providing matching grants of 50% or up to MYR 5,000 for smaller businesses to equip them with financial capabilities to compete with larger, more established companies in the digital marketplace.	Looks to implement Digital ID, which is an initiative to verify people's identity on the internet or in the cyber world. It aims to foster the expansion of online businesses and application whilst ensuring that personal data is well protected from potential misuse or unauthorised access.



¹³⁷ keMampanan (Sustainability), kesejAhteraan (Prosperity), Daya cipta (Innovation), hormAt (Respect), keyakiNan (Trust) and Ihsan (Compassion)

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		innovation-led Industry'. A 'digital and innovation-led industry' will be created through Domestic Direct Investment (DDI) from government-linked companies (GLCs) and government-linked investment companies (GLICs). Through the promotion of digital literacy and access to technology, the plan seeks to empower individuals and businesses, thereby fostering a robust digital economy.	Additionally, it highlighted the need to address all forms of malicious deception and fake news in advertising that can sow division and mistrust within the digital advertising sub-sector. These initiatives aim to enhance Malaysia's competitiveness in the digital economy by supporting small businesses and ensuring a trustworthy digital advertising environment.	The Digital ID is designed to enhance trust in the digital ecosystem, supporting the growth of Malaysia's digital economy. It is part of the broader Malaysia Digital Economy Blueprint, aligning with the MADANI Economy's aspiration to elevate the country as an Asian economic leader and improve the well-being of its people.

Source: Secondary research and MyCC analysis

4.4.2 Digital economy policies

Table 7: Digital economy policies in Malaysia

#	Policy	Description	Competition aspect	Data privacy and protection aspect
1	Malaysia Digital Economy Blueprint (MDEB) by EPU under the Ministry of Economy 	Launched in early 2021, the blueprint aims to transform Malaysia into a digitally driven, high-income nation and regional leader (in the field of digital economy) by 2030. It focuses on three outcomes: 1. Socio-environmental wellbeing for all; 2. Business growth in all sectors; and 3. Fit-for-future government. The blueprint is driven by 22 strategies, 48 national	Contains various initiatives such as the streamlining of regulatory requirements to respond to the digital economy and encourage innovative business models. The initiative focuses on adapting regulations to support the growth of the digital economy and encourage innovative business models. It includes streamlining regulatory requirements, reviewing existing	Initiative of “Enhancing cyber security awareness among businesses and society members” which aimed to raise the public’s confidence to go digital. This initiative includes the development of a multi-pronged and sustained cyber security awareness programme through a People-Private-Public Partnership

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		initiatives and 28 sector-specific initiatives to achieve its goals within the 10-year timeframe (2021-2030). It highlights the need for flexible regulations (“Agile Regulations”) to address challenges such as evolving technologies and new business models. One key focus is ensuring fair competition by streamlining pro-competition measures under its second thrust. MyDIGITAL Corporation, an agency under the Ministry of Digital, is responsible for implementing the blueprint. It is also aligned with other policies, such as the Personal	policies and competition laws, and using regulatory sandboxes to test new rules before full implementation. These efforts aim to ensure fair competition, improve market monitoring by regulators, and create a level playing field for businesses. It also promotes better alignment and interoperability between policies and regulations for more efficient implementation and enforcement.	approach, promoting platforms like the CyberSafe website, enhancing cyber security month activities, and strengthening law enforcement and governance. It also incorporates the development of guidelines for digital users, including consumer rights in commercial transactions. Netiquette modules as part of the national education curriculum

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		Data Protection Act and strategies for the Fourth Industrial Revolution (4IR). Several states, including Negeri Sembilan (Negeri Sembilan Digital Economy Blueprint 2027) and Sarawak (Sarawak Digital Economy Blueprint 2030), have introduced their own digital economy blueprints in line with the national plan.		will also be implemented. This blueprint also addresses cross-border data flows by promising that by 2025, all new trade agreements will incorporate cross-border data protection elements.
2	National 4IR Policy (N4IRP) by EPU under the <i>Ministry of Economy</i>	Comprehensive national framework aimed at guiding the use of 4IR technologies to enhance the country's socioeconomic development.	Introduces the initiative to develop critical 4IR-enabling infrastructure to enable wider application of 4IR technologies, as part of the strategy to strengthen digital	Introduces an ethics framework for technological development and deployment to ensure responsible use of 4IR technologies, specific

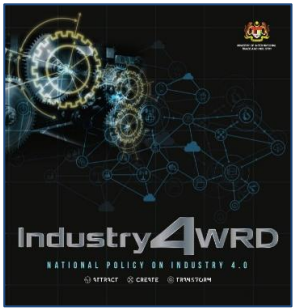
#	Policy	Description	Competition aspect	Data privacy and protection aspect
	 The logo for the National Fourth Industrial Revolution (4IR) Policy. It features a blue background with a white geometric pattern of interconnected lines forming a sphere-like structure. The text 'NATIONAL FOURTH INDUSTRIAL REVOLUTION (4IR) POLICY' is written in white capital letters. At the bottom right, there is a small logo of the Malaysian government and the text 'BERSAMA SAMA MELAKSANAKAN TRANSFORMASI'.	It serves as a foundational document to various plans, including the RMKe-12 and the MDEB. The policy sets a timeframe of ten years (from 2021 - 2030) to improve the following, with 4IR technologies: 1. The <i>rakyat</i> to have an improved quality of life; 2. Businesses to become more productive, competitive and innovative through streamlined bureaucratic and policy processes; and	infrastructure, which will enable higher accessibility and adoption of companies towards 4IR technologies to promote healthy competition. Another part of this policy addresses the need to expand the digital marketplace for the underserved rural community to bridge the technology adoption gap.	legislation on cyber security and enhance personal data protection law, regulations and guidelines. This future-proofs the regulations, at the same time, improves the ease of doing business and safeguards the society's interests.

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		3. Government to be technologically enabled and able to provide more efficient and effective public services. The policy will be realised through four policy thrusts, 16 strategies and 32 national initiatives. Similar to the MDEB, the N4IRP is being implemented by MyDIGITAL Corporation.		

Source: Secondary research and MyCC analysis

4.4.3 Related policies

Table 8: Related policies to the digital economy

#	Policy	Description	Competition aspect	Data privacy and protection aspect
1	National Policy on Industry 4.0 (Industry4WRD) by MITI 	Aims to facilitate the adoption of Industry 4.0 technologies across the manufacturing sector. This policy promotes the use of automation, AI and other advanced technologies to enhance productivity and competitiveness.	Indirectly addresses anti-competitive issues in the digital economy by supporting firms in overcoming challenges related to lack of awareness, adoption, and high investment costs. This is achieved through assessment platforms and tax-based incentives, which are particularly beneficial for SMEs, enabling them to compete more effectively with larger, more dominant players.	Highlights the importance of data integrity, security, and analysis as important areas to ensure seamless data flow across value chains. Also covers the need for centralised and easily accessible information to better help firms protect their data handling, ownership, and

#	Policy	Description	Competition aspect	Data privacy and protection aspect
				storage, ensuring compliance with relevant privacy and protection laws.
2	National E-Commerce Strategic Roadmap (NESR) <i>by MDEC under the Ministry of Digital</i> 	Launched in 2016, the NESR was implemented from 2017 to 2020 and guided by the National E-Commerce Council. With a supportive governance framework and infrastructure, it was aimed at accelerating the growth of e-commerce with focus on six strategic thrusts: Accelerate seller adoption of e-commerce.	No explicit mention/highlight of anti-competition. However, various programmes are aimed at enhancing the competitiveness of logistics providers and sellers. These efforts indirectly support a more vibrant and competitive digital economy, which may help mitigate anti-competitive concerns.	No explicit mention/highlight of data privacy and protection within its framework.

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		Increase adoption of eProcurement by businesses. Lift non-tariff barriers, Realign existing economic incentives. Make strategic investments in selected e-commerce players. Promote national brand to boost cross-border e-commerce. NESR 2.0 was developed at the end of NESR 1.0 in 2020. Led by the NESR taskforce, this initiative is a nationwide collaborative	Key programmes include: • Improve Malaysia's regional performance and competitiveness in logistics • Enhance seller competitiveness and improve consumer trust and confidence through Institut Piawaian dan Penyelidikan Perindustrian Malaysia (SIRIM) Trusted Mark Scheme	

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		effort between the public and private sectors aimed at boosting Malaysia's e-commerce ecosystem from 2021 to 2025. The roadmap focuses on three guiding principles: 1. Intensify e-commerce adoption and growth 2. Enhance ecosystem development 3. Strengthen policy and regulatory environment		
3	JENDELA (National Digital Infrastructure Plan) by MCMC under the Ministry of Communications	Five-year national digital infrastructure plan, starting from September 2020 until 2025. It is aimed at improving Malaysia's	Indirectly supports the digital economy by ensuring nationwide internet coverage, particularly through improvements in 4G	No explicit mention/highlight of data privacy and protection within its framework.

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		digital infrastructure by enhancing broadband connectivity and expanding access to high-speed internet across the country. By addressing connectivity issues, JENDELA supports the digital economy by enabling more Malaysians to engage in online activities.	connectivity in remote areas, fibre networks, and mobile broadband speeds. These efforts enable digital businesses to operate effectively while preventing potential exploitation of consumers. Additionally, the standardisation of electrical tariffs for communications services, aligned with industrial rates, helps create a level playing field among competitors. This prevents large companies from leveraging their financial advantages to negotiate lower electrical rates due to	

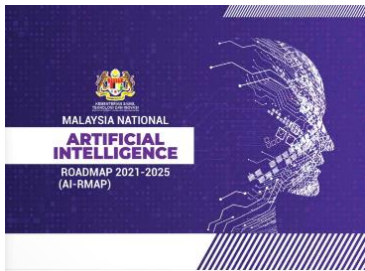
#	Policy	Description	Competition aspect	Data privacy and protection aspect
			their scale and purchasing power.	
4	National Industrial Master Plan (NIMP) 2030 by MITI 	The NIMP 2030 is a seven-year industrial policy aimed at enhancing the competitiveness and sustainability of Malaysia's manufacturing and manufacturing-related services sectors. It emphasises the integration of digital technologies, including automation, AI, and data-driven decision-making, to drive productivity and innovation. Specifically, chapter 6 of the plan focuses on the market structure of digital and ICT services,	Highlights the needs for companies to embrace digital transformation to improve productivity, create value, and spur innovation, especially for SMEs. Under Mission 2, the policy aims to streamline and modernise all interactions between the government and businesses, from start-up to operation, ensuring efficiency, transparency, and ease of doing business. These efforts will help businesses, especially SMEs, to lower their operational	Emphasises the need for a national digital platform for analytics and to facilitate data sharing and collaboration among stakeholders. Proposes using Generative AI in various industries such as healthcare and finance in line with parameters under the PDPA to ensure compliance

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		recognising their critical role in supporting industrial growth. It outlines the need to strengthen the ecosystem for digital and ICT services by promoting fair market practices, supporting the entry of new players, and addressing issues related to market concentration and dominance. The chapter also highlights the importance of fostering collaboration between public and private sectors to develop a robust digital infrastructure that aligns with global standards.	costs and reduce barriers to entry. Under chapter 6, it highlights the need to address market concentration in digital and ICT services by promoting fair competition and reducing barriers for smaller players. It emphasises policies to foster innovation, support new entrants, and prevent anti-competitive practices. By ensuring a more balanced market structure, the plan aims to enhance opportunities for SMEs and encourage a dynamic and competitive digital economy.	with data protection laws.

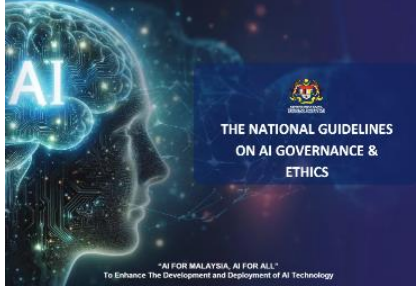
#	Policy	Description	Competition aspect	Data privacy and protection aspect
			The policy also focuses on workforce measures such as proposing a multi-tiered levy mechanism to support SMEs in upgrading their tech and to ensure supply chain resilience.	
5	Malaysia Cyber Security Strategy 2020-2024 (MCSS) by National Cyber Security Agency (NACSA) under the National Security Council (NCS) of Prime Minister's Department	Aims to strengthen Malaysia's cybersecurity framework. It outlines strategic initiatives to protect the nation's critical information infrastructure (CII), promote cybersecurity awareness, ensure the resilience of digital services against cyber threats and enhance public trust in digital services.	No explicit mention/highlight of anti-competition. However, the initiative to ensure businesses are aware of data protection and strengthen cybersecurity leads to improved measures in safeguarding users' data. Not only will it ensure businesses are better equipped to protect their	Includes implementing policies, procedures, and guidelines related to data protection, public key infrastructure, and electronic information management. These efforts will be realised through the development of

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		It fosters a secure environment for online transactions and digital services and enhances consumer confidence in e-commerce and other online activities.	customers' information, enhancing overall data security and trust, but it will also encourage customers to engage with a wider range of businesses, further supporting a competitive and vibrant digital economy.	a data leakage protection mechanism, carried out under the National Cryptography Policy.
6	National Cloud Policy by <i>Ministry of Digital</i>	According to the Prime Minister's speech at Google's groundbreaking ceremony on October 2, 2024, the policy is set to be finalised in 2025 and designed to enhance Malaysia's digital ecosystem by fostering public service innovation, economic competitiveness, data security and inclusivity	No explicit mention/highlight of anti-competition. However, the policy aims to ensure that SMEs and startups enhance their cloud technology for innovation, operational efficiency, and access to global markets.	Strengthening user trust and data security is one of the four core areas of the National Cloud Policy. Aims to establish robust security frameworks and protocols to protect sensitive data and critical

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		By modernising public services through cloud technology, it seeks to make government operations more accessible, responsive and transparent. The policy also supports economic growth by helping SMEs and startups adopt cloud technology, boosting their innovation and global reach. In addition, the policy emphasises user trust and data security, establishing safeguards across public and private sectors to protect sensitive information. Lastly, this	This means these businesses will have the resources to innovate and improve their operations, allowing them to compete more effectively with larger companies indirectly.	infrastructure in both public and private cloud environments. This focus ensures that as digital adoption increases, user data remains secure, thereby fostering trust in digital services.

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		policy promotes digital inclusivity, ensuring all Malaysians have access to digital services and bridging the digital divide for an equitable digital society.		
7	Malaysia Artificial Intelligence Roadmap 2021 - 2025 (AI-RMAP) by MOSTI 	Aims to make Malaysia an AI-driven economy through six key strategies. It establishes AI governance with policies, standards and a National AI Park to guide responsible growth. National and global R&D initiatives will also be initiated to boost innovation across sectors, while digital infrastructure	Highlights the need for Malaysian organisations to invest in digital platforms, such as hyper-scale intelligent cloud, rather than relying on traditional IT infrastructure, to maintain a competitive edge. Additionally, it aims to clarify the challenges of data sharing for AI implementations in the digital marketplace by	Highlights the need for companies to improve data governance to protect sensitive data and prevent data breaches whether through government guidelines, legal agreements / templates, or through new technologies such

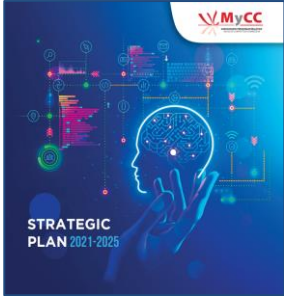
#	Policy	Description	Competition aspect	Data privacy and protection aspect
		upgrades to enhance AI accessibility. Talent development is also prioritised through education and reskilling programs to build a skilled workforce. Furthermore, AI awareness initiatives to promote AI adoption across industries and create a sustainable AI innovation ecosystem with the AI-Catalyst Hub connecting government, academia, industry and society, will be carried out.	developing clear data classification guidelines. This will promote responsible data sharing and collaboration, ensuring that data is exchanged fairly and transparently across the digital ecosystem.	as Responsible AI etc.
8	National Guidelines on AI Governance & Ethics by MOSTI	Aims to strengthen Malaysia's digital economy by promoting responsible, trustworthy AI aligned with	Promotes responsible AI development, especially when it comes to promoting competition and preventing anti-competitive behaviour.	Proposes consumer protection principles for AI, including the rights to information, to

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		Malaysia's National AI Roadmap (2021 - 2025). These guidelines are anchored in seven core principles (fairness, reliability, safety, privacy and security, inclusiveness, transparency, accountability and human-centred benefit). By mitigating AI-related risks, this framework ensures equal distribution of AI's benefits and prioritises the well-being of citizens, while enhancing national productivity, driving economic growth and	Also proposes the development of national AI guidelines for policy makers, developers, designers, technology providers, and suppliers that will promote transparent, explainable, and fair AI practices.	object, to be forgotten, and to interact with a human instead of AI, to collectively redress and be compensated. It also proposes synergistic implementation with the National Cyber Security Agency to strengthen Malaysia's cyber defence and enhance its resilience against emerging AI-related threats.

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		building a competitive edge. It also fosters public trust in AI technologies, maximising their value and ensuring fair, secure and transparent practices across sectors, enriching consumer experiences and advancing digital innovation.		
9	Malaysia Startup Ecosystem Roadmap (SUPER) 2021 - 2030 by MOSTI	Aims to position Malaysia among the Top 20 global startup ecosystems by 2030. This objective will be realised through 16 strategic initiatives focused on five main thematic drivers.	Outlines six critical interventions to foster a competitive startup environment, including the establishment of a regulatory sandbox - National Technology and Innovation Sandbox (NTIS), the promotion of open data,	No explicit mention/highlight of data privacy and protection.

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		By nurturing a vibrant startup ecosystem, Malaysia aims to drive economic growth, create employment opportunities, and establish itself as a centre for innovation and entrepreneurship.	and the development of a startup-friendly legal framework. Such interventions are meant to provide a safe space for startups to test innovative products and services without the heavy burden of regulatory compliance, thereby promoting innovation and innovation and competition within the ecosystem.	
10	Ministry of Domestic Trade and Cost of Living's (KPDN) Strategic Plan 2021-2025	Aims to strengthen domestic trade through value creation and digitisation, push for the adoption of innovation and technology to serve as companies' foundation	Details various strategic initiatives aimed at creating a conducive business environment that encourages innovation, the application of technology, and ethical best practices	Proposes strengthening the redress mechanism through the Tribunal of User Claims Malaysia (TTPM) and

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		and instil rational consumer behaviour through empowering consumers and civil societies. The plan consists of five strategic thrusts, with a key focus on advancing domestic trade. To achieve this, the policy will encourage initiatives such as the increased usage of technology in businesses and strengthening of the business innovation ecosystem.	among local industry players. The plan also proposes the development of a technology-enabled supply chain aimed at enhancing supply chain effectiveness and optimisation, which could potentially reduce reliance on middlemen and mitigate the risk of monopolistic practices, particularly in e-commerce.	enhance user on their rights and responsibilities. This will help users make more informed decisions regarding their data in a responsible manner. Additionally, the plan suggests optimising technology to provide efficient and appropriate services, including the development of a cyber-secure, cloud-based commercial environment that

#	Policy	Description	Competition aspect	Data privacy and protection aspect
				ensures data protection and security against cyber threats.
11	MyCC's Strategic Plan 2021-2025 	This Strategic Plan marks the commission's third five-year plan. With overall economic growth set to recover from the COVID-19 pandemic, it aims to support the country's recovery measures, growth of new economic sectors such as markets for e-commerce and innovation and promote environmental, social, and governance (ESG) agenda for businesses.	Ensures that businesses refrain from engaging in anti-competitive practices, such as cartels and abuse of dominant positions in the marketplace (including digital markets). Plan also includes to continue advise other sector regulators, ministries, and government agencies on competition-related policies to ensure consistency in the application of competition policy and law in the Malaysian markets.	No explicit mention/highlight of data privacy and protection.

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		As part of its strategic initiative, MyCC is conducting a comprehensive market study on digital markets to enhance its understanding of the rapidly evolving digital economy. This in-depth analysis aims to identify potential competition concerns arising from the accelerated digitisation of businesses in Malaysia. The study underscores MyCC's commitment to adapting its regulatory approach in response to the changing market dynamics, ensuring fair	Additionally, it aims to expand and strengthen MyCC's cooperation and collaboration at both international and regional levels. With the goals established in this plan, the MyCC has decided to conduct market studies in the digital economy to better understand and identify potential competition issues, extending beyond the e-commerce sector to include other critical elements of digital markets.	

#	Policy	Description	Competition aspect	Data privacy and protection aspect
		competition in the digital landscape.		

Source: Secondary research and MyCC analysis

4.5 Digital economy-related regulation

Malaysia's digital economy is supported by a regulatory framework that promotes innovation, protects consumer rights, and ensures data security. Although there is no specific act for the sector, 13 relevant laws can be considered as governing regulations for Malaysia's digital economy¹³⁸:

Table 9: Digital economy-related regulation in Malaysia

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
1	Competition Act 2010 (Act 712) by the MyCC under the Ministry of	Aims to protect the competition process by prohibiting anti-competitive	Relevant across all sub-sectors by ensuring fair business	Key legislation that establishes a legal framework to prevent and address business	Indirectly covers data privacy and protection in the context of

¹³⁸ MyCC analysis.

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
	<i>Domestic Trade & Cost of Living (KPDN)</i> 	agreements such as price-fixing and the abuse of dominant position in the market. It is also to ensure fair business operations to improve quality, provide better choices and offer competitive prices for goods and services.	practices in pricing and service delivery.	behaviours and activities that could harm competition in the market. Key provisions include: - Section 4: Prohibition of horizontal and vertical agreement; - Section 10: Prohibition of abuse of dominant position.	preventing sensitive data sharing during investigations and proceedings, subsequently rights of action for relief for individuals. Key provisions include: - Section 21: Protection of confidential information - Section 64: Rights of private action
2	Personal Data Protection Act 2010 (Act 709) by the JPDP under	Protects personal data in commercial transactions by regulating how	Highly relevant to e-commerce and digital advertising,	Strict data protection requirements can limit data sharing and collaboration between	Strict guidelines for companies to adhere to ensure consumers' awareness and

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
	<i>the Ministry of Digital</i> 	personal information is collected, stored, and used. Personal data refers to any information about an individual, such as their name, address, contact details, and even sensitive data (e.g., physical and mental health condition, political opinions, religion beliefs, etc.). The act applies to data processed either automatically or as part of a relevant filing system, requiring data controllers and processors to protect	where personal data is widely used and processed. It ensures that consumers' personal data is treated with respect and protection.	companies, preventing larger companies from exploiting consumer's personal data for their own benefit (except for the purpose of credit reporting). Key provisions include: • Section 6: General principle of processing personal data • Section 8: Disclosure principle • Section 129: Transfer of personal data to	acknowledgement of having their personal data processed. Key provisions include: • Section 7: Notice and choice principle • Section 9: Security principle • Section 30: Right of access to personal data • Section 38: Withdrawal of consent to process personal data

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
		this information to prevent misuse or abuse.		places outside Malaysia	• Section 40: Processing of sensitive personal data • Section 43: Right to prevent processing or purposes of direct marketing • Section 130: Unlawful collecting etc. of personal data
3	Communications & Multimedia Act 1998 (Act 588) by MCMC under the Ministry of Communications	Regulates the communications and multimedia industries and provides a legal framework for the	Relevant across all sectors by ensuring equitable access to communication	Fosters a competitive market, encourages innovation and the introduction of new services and technologies; also	Ensures that any inquiry or report excludes confidential information and prevents unlawful interception and

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
		development of the industries.	and multimedia services.	prevents anti-competitive practices which aims to promote fair competition by regulating monopolistic behaviours. Key provisions include: • Section 133: Prohibition on anti-competitive conduct • Section: 135: Prohibition on entering into collusive agreements • Section 136: Prohibition on tying or linking arrangements	disclosure of communications that may contain sensitive personal information. Key provisions include: • Section 63: Confidential material not to be disclosed • Section 65: Report on an inquiry • Section 80: Publication of information • Section 211: Prohibition on provision of offensive content

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
				• Section 137: Determination of dominant licensee • Section 138: Guidelines as to the meaning of “dominant position”	• Section 233: Improper use of network facilities or network service • Section 234: Interception and disclosure of communications prohibited
4	Electronic Commerce Act 2006 (Act 658) by KPDN 	Ensure electronic transactions are as legally binding and enforceable as traditional paper-based counterparts.	Directly relevant to e-commerce, underpinning online transactions and digital marketplaces.	Indirectly promotes competition by lowering market entry barriers for new and small businesses, ensuring that electronic transactions are legally valid and enforceable.	Promotes some form of protection or steps, to ensure the integrity of information in its original form is protected and completely unaltered. Key provisions include:

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
				Key provisions include: - Sections 6 - 7: Legal recognition of electronic message - Sections 8 - 16: Fulfilment of legal requirements by electronic means - Sections 17 - 24: Communication of electronic message	Section 12: Original
5	Digital Signature Act 1997 (Act 562) by MCMC under the Ministry	Ensures the validity and enforceability of digital signatures.	Particularly relevant for e-commerce and online	Enables secure digital transactions, therefore indirectly lowers barriers to	Indirectly provides guidance to ensure that private keys are kept secure and that

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
	of Communications 		transaction platforms.	entry and promotes market participation by establishing trusted digital signature standards. Key provisions include: • Sections 22 - 26: Requirements of licensed certification authorities • Sections 38 - 42: Representations and duties upon acceptance of certificate • Section 26: Requirements as to advertisement	digital signatures are protected. Key provisions include: • Sections 43 - 45: Control of private key • Sections 62 - 67: Effect of digital signature • Section 72: Obligation of secrecy • Section 73: False information

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
6	Consumer Protection Act 1999 (Act 599) by KPDN 	Ensure fair trade practices, prevent exploitation and provide redress mechanisms for consumers.	Relevant to all sectors, especially e-commerce and digital advertising, protecting consumer rights.	Addresses consumer-related aspects of market competitions (e.g., misleading and deceptive practices, unfair trading), contributing to a comprehensive regulatory environment that supports both consumer rights and fair competition. Key provisions include: • Section 10: False or misleading representation • Section 12: Misleading indication as to price	Includes some provisions covering protection of consumers' personal data. Key provisions include: • Section 139: Use of confidential information

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
				Section 28: Defence of innocent publication of advertisement	
7	Postal Services Act 2012 (Act 741) by MCMC under the Ministry of Communications 	Pursuant to Section 12(1) of the Postal Services Act 2012, the licensing requirement under the Act does not apply to the categories specified in the First Schedule. As such, these categories fall outside the MCMC's jurisdiction for licensing, and any competition issues related to these	Particularly relevant to e-commerce logistics and delivery services.	Provides guidelines on anti-competitive conduct in the postal sector, with specific guidelines to be determined by MCMC to ensure fair competition and consumer protection. Key provisions include: Section: 34: Postal financial services	Some form of acknowledgement that only authorised officers conducting search with a warrant can access computerised data. Key provisions include: Section 81: Access to computerised data

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
		categories will fall within MyCC's purview: 1. Trade announcements, circulars, printed extracts from newspapers, or advertisements, without any name, address or other particulars of the recipient. 2. Postal articles delivered by an employee of the sender. 3. Postal articles delivered by a messenger on request by the sender specifically		• Sections 36 - 37: Regulation of rates • Sections 38 - 48: General competition practices • Sections 49 - 56: Consumer protection	

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
		for that purpose, not being a person employed or engaged in the course of his business or employment in delivering or procuring the delivery of postal articles. 4. Postal articles exceeding two kilograms in weight per postal article. 5. Postal articles sent with the goods and delivered together with the goods. 6. Postal articles carried to or from a post office.			

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
		7. Postal articles carried in accordance with an agreement entered into by the licensee. 8. Transfers between document exchanges. 9. Electronic postal services. 10. Postal articles carried and delivered by a private friend without hire, reward or other profit. 11. Postal articles carried and delivered			

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
		personally by the sender.			
8	Cyber Security Act 2024 (Act 854) by Ministry of Digital 	Provision of a legal framework safeguarding the nation's cyber defences and enhancing resilience against cyber threats. The Act also establishes the National Cyber Security Committee.	Relevant to all sectors reliant on digital transactions and communications.	Helps to protect consumer data, thereby enhancing trust and encouraging competition among businesses. Key provisions include: - Sections 25 - 26: Code of practice - Sections 27 - 34: Cyber security service provider	Guidelines on how companies with national critical information should conduct themselves or act in the event of a cyber-security breach. Key provisions include: - Section 21: Duty to implement code of practice - Section 22: Duty to conduct cyber security

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
					risk assessment and audit • Section 23: Duty to give notification on cyber security incident • Section 24: Cyber security exercise • Section 35: Cyber security incident
9	Financial Services Act 2013 (Act 758) <i>by BNM</i>  BANK NEGARA MALAYSIA CENTRAL BANK OF MALAYSIA	Regulates financial institutions, payment systems and other relevant entities, as well as oversees money market and foreign exchange market to promote financial stability.	Relevant to mobile operating and payment systems, governing payment transactions.	Establishes a regulatory framework to promote the stability and integrity of the financial sector, indirectly fostering competition by ensuring consumer	Provides a framework to safeguard customer information by establishing obligations for financial institutions to ensure confidentiality and

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
				trust in financial institutions. Key provisions include: • Sections 8 - 29: Authorization and registration • Sections 30 - 45: Payment systems • Section 124: Prohibited business conduct • Sections 135 - 139: Restrictions relating to consumer protection	specify conditions for lawful disclosures, reinforcing data privacy and protection within the financial sector. Key provisions include: • Sections 131 - 134: Information and secrecy

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
10	Islamic Financial Services Act 2013 (Act 759) by BNM  BANK NEGARA MALAYSIA CENTRAL BANK OF MALAYSIA	Regulates Islamic financial institutions, payment systems, and other relevant entities, and oversight of the Islamic money market and Islamic foreign exchange market to promote financial stability and Sharia compliance.	Relevant to mobile operating systems, payment systems, and e-commerce in Islamic finance.	Indirectly supports competition in the Islamic finance sector by ensuring fair and transparent operations in line with regulatory requirements, fostering innovation and consumer choice in financial services. Key provisions include: • Sections 8 - 26: Authorization • Sections 27 - 28: Shariah requirements • Sections 39 - 55: Payment systems	Provides a framework for safeguarding customer information in Islamic financial institutions by outlining obligations to maintain confidentiality and conditions for lawful disclosures, thereby reinforcing trust and compliance within the Islamic finance sector. Key provisions include • Sections 142 - 146: Information and secrecy

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
				- Section 136: Prohibited business conduct - Sections 147 - 151: Restrictions relating to consumer protection	
11	Copyright Act 1987 (Act 332) <i>by MyIPO under KPDN</i> 	Governs the protection of original works, including literary, artistic, and software creations, detailing ownership, duration, and enforcement of copyright rights.	Relevant to e-commerce and digital advertising, regulating the use of creative works.	Protects creative works, thereby encouraging innovation and competition in the digital economy. Ensures businesses can safeguard their intellectual property, which is crucial for maintaining	Prohibits unauthorised disclosure of information obtained under the Act, safeguarding sensitive data Key provision Section 52: Disclosure of information

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
				competitive advantages. Key provisions include: • Sections 13 - 25A: Nature and duration of copyright • Sections 26 - 27 - Ownership and assignment of copyright - Sections 27A - 27L: Copyright licensing	

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
12	Computer Crimes Act 1997 (Act 563) by Ministry of Communications 	Addresses cybercrimes such as unauthorised access, data breaches, and misuse of computer systems.	Relevant to all sub-sectors by ensuring a secure digital environment, particularly for e-commerce and digital advertising.	Enhances competition by reducing risks of data theft and sabotage, protecting businesses from malicious attacks	Protects against unauthorised access and manipulation of personal and sensitive data. Key provisions include: • Section 3: Unauthorised access to computer material • Section 5: Unauthorised modifications of the contents of any computer

#	Act	Description	Relevance to the 4 sub-sectors	Relevance to competition	Relevance to data privacy and protection
13	Electronic Government Activities Act 2007 (Act 680) by Ministry of Communications 	Provides the legal framework for electronic government services, ensuring transparency and accountability in digital governance	Supports e-commerce by legitimising digital processes in government interactions	Promotes a level playing field for businesses engaging in government tenders through e-platforms	Ensures secure data handling in digital government transactions. Key provision includes: Section 7: Confidentiality and security in e-transactions

Source: Federal Legislation Portal Malaysia and MyCC analysis

Despite the above-mentioned policies and regulations provide a strategic direction for the digital economy, several potential gaps in the policy and regulatory landscape have been identified, including:

4.5.1 Lack of comprehensive digital economy framework

In Malaysia, there is currently no comprehensive framework specifically designed to regulate competition within the digital economy. Considering the uniqueness and rapid development of this industry, existing regulations may not be sufficient to address the potential challenges and complex dynamics it presents.

This situation is further complicated by the fragmented regulatory landscape across existing sub-sectors. Following table provides an overview of the various regulations governing the four sub-sectors:

Table 10: Key sub-sector regulations governing the sub-sectors' operations

Government's role	Coverage area	Mobile operating and payment system players	E-commerce marketplaces and logistics players	Digital advertising intermediaries	OTAs
Policy oversight	Sub-sector direction	-	KPDN: The Electronic Commerce Act 2006 provides the legal framework governing electronic transactions and online business activities in Malaysia. Amendment to the act is currently underway (as of August 2025). MDEC: The National E-Commerce Strategic Roadmap	-	MOTAC: The Tourism Industry Act 1992 covers the licensing and registration of tourism operators, travel agencies, tour guides, hotels, and other tourism-related businesses. Amendment to the act is underway to also cover digital platforms (as of August 2025).

Government's role	Coverage area	Mobile operating and payment system players	E-commerce marketplaces and logistics players	Digital advertising intermediaries	OTAs
			(NESR) aims to boost e-commerce adoption and drive digital trade growth.		
Operational oversight	Company licensing	SSM: Under the Companies Act 2016, SSM oversees company incorporation, registration, and statutory compliance.			
	Sub-sector operating license	No regulatory supervision by any ministry/agency.	MCMC: Under the Postal Services Act 2012, all logistics providers offering postal or courier services for items weighing 2 kg or less are required to obtain a license. MOT: Regulates postal or courier services for items weighing above 20 kg.	No regulatory supervision by any ministry/agency.	MOTAC: Under the Tourism Industry Act 1992, OTA and digital travel service operators with a physical office in Malaysia must obtain a Travel Operating Business and Travel (TOBTAB) license.

Government's role	Coverage area	Mobile operating and payment system players	E-commerce marketplaces and logistics players	Digital advertising intermediaries	OTAs
	Tax payment	LHDN: Under the Income Tax Act 1967, it oversees assessment, collection, and enforcement of income tax obligations for businesses (and individuals).			
		RMCD: Under the Service Tax (Digital Services) Regulations 2019, it imposes a 6% (increased to 8% in 2024) service tax on digital services provided by foreign service providers to Malaysian consumers.			
					MOTAC: Under the Tourism Tax Act 2017, it imposes a MYR 10 per night rate on foreign tourists, which in 2021 included bookings from digital platform service providers.
	Consumer protection	KPDN: Under the Consumer Protection Act 1999, it safeguards consumer rights, ensuring fair trade, product safety, and protection against misleading practices.			
	Data privacy and protection	JPDP: Under the PDPA 2010, data controllers must ensure responsible handling of personal data—including collection, processing, and lawful cross-border transfers under specified conditions.			

Government's role	Coverage area	Mobile operating and payment system players	E-commerce marketplaces and logistics players	Digital advertising intermediaries	OTAs
	Competition	MyCC: Under the Competition Act 2010, it prohibits anti-competitive agreements and abuse of dominant position in the market.			
			MCMC: Under the Postal Services Act 2012, courier and logistics activities related to e-commerce fulfilment are regulated, including oversight of competition practices.		
	Dispute resolution (for businesses)	No regulatory supervision by any ministry/agency.			

Source: Federal Legislation Portal Malaysia and MyCC analysis

There are existing foreign regulations that specifically target the digital economy market, with a particular focus on efforts to regulate Big Tech companies. Developed countries and regions, such as the UK and the EU have made strides toward more proactive or ex-ante regulation for example the EU's DMA, introduced in 2022 and effective in 2023 and the UK's Digital Markets, Competition and Consumers (DMCC) Act, published in 2024 and already set into force in 2025.

Specifically, on the DMA, it aims to establish a framework for fair and competitive markets in the digital sector. It applies to all platforms operating in the EU, regardless of their physical location, with a particular focus on 'gatekeepers.' These are large online platforms that have a significant impact on digital markets, defined by¹³⁹:

- Either with an annual turnover of at least EUR 7.5 billion in the last three financial years or a market value of at least EUR 75 billion in the previous financial year and operations in at least three member states.
- Served more than 45 million monthly active end users.
- More than 10,000 yearly active business users during the last three years on a number of core platform services, such as social network, Number-Independent Interpersonal Communication Service (N-IICS), video sharing, intermediation, video sharing, search, browser, ads and operating system.

Consequently, as of May 2024, seven companies have been considered as gatekeepers, after being assessed and found to fulfill the criteria outlined in the act. The gatekeepers are Alphabet, Amazon, Apple, Booking, ByteDance, Meta and Microsoft¹⁴⁰. The DMA has set out some specific dos and don'ts for "gatekeepers" to abide by, as below:

¹³⁹ European Commission (2023). Remarks by Commissioner Breton: Here are the first 7 potential "Gatekeepers" under the EU Digital Markets Act. https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_23_3674

¹⁴⁰ EU (2023). Gatekeepers. https://digital-markets-act.ec.europa.eu/gatekeepers_en

Dos:

- Enable third-party integration with the gatekeeper's services under specific circumstances.
- Permit business users to access the data they generate while using the gatekeeper's platform.
- Equip companies advertising on their platform with the necessary tools and information for independent verification of their advertisements.
- Allow business users to promote their goods or services and establish contracts with customers outside of the gatekeeper's platform.

Don'ts:

- Favouring the gatekeeper's own services and products in rankings over similar offerings from third parties on the platform.
- Restricting consumers from connecting to businesses outside the gatekeeper's platform.
- Preventing users from uninstalling any pre-installed software or app (for instance, on a new smartphone).
- Tracking end users outside the gatekeeper's core platform service for targeted advertising without effective consent.

While regulation aims to improve market fairness, over-regulation can sometimes lead to unintended consequences. For example, the DMA requires platforms to provide third-party developers with equal access to certain functionalities, such as Apple's AirDrop and AirPlay¹⁴¹. While this may promote fairness, it can also discourage key players from continuing

¹⁴¹ American Enterprise Institute (2025). The Digital Markets Act: Security and innovation challenges in tech regulation <https://www.aei.org/technology-and-innovation/the-digital-markets-act-security-and-innovation-challenges-in-tech-regulation/>

to innovate, creating a situation where it becomes more attractive to copy existing features rather than investing in the development of new solutions.

Furthermore, due to the extensive reach of these large companies, any regulation on them often affects other businesses as well. For instance, under the DMA, Google Search can no longer showcase its own vertical services such as Google Maps or Google Hotel Ads on search results, as these were deemed as "self-preferencing." As a result, when a Google user searches for hotels in Europe, they can no longer view key hotel details directly and easily in the search results, such as prices or locations^{142, 143}. Instead, users must click through to the preferred search result to view the information. According to Mirai¹⁴⁴, a hospitality digital marketing and technology solutions company, this change has led to an estimated 30% drop in clicks to hotel websites and a 36% decline in direct bookings.

A balanced regulatory approach is therefore essential to ensure market fairness without stifling innovation and impacting business growth.

4.5.2 Unclear jurisdictional boundaries between regulatory bodies

The legal infringement on anti-competitive or unlawful market practices in the digital market primarily fall under the purview of the MyCC. However, it may also extend to other regulatory bodies, such as the MCMC, Malaysian Aviation Commission (MAVCOM) and the Energy Commission.

While the Competition Act 2010 (Act 712)¹⁴⁵, administered by MyCC, serves as the primary law for competition issues across all sectors, other acts,

¹⁴² D-Edge (2024). The DMA is changing Google search, but not how hoteliers had hoped. <https://www.d-edge.com/the-dma-is-changing-google-search-but-not-how-hoteliers-had-hoped/>

¹⁴³ Google (2024). An update on our compliance with the DMA. <https://blog.google/around-the-globe/google-europe/dma-compliance-update/>

¹⁴⁴ Mirai (2024). DMA implementation sinks 30% of clicks and bookings on Google Hotel Ads. <https://www.mirai.com/blog/dma-implementation-sinks-30-of-clicks-and-bookings-on-google-hotel-ads/>

¹⁴⁵ The Competition Act also does not apply to the Petroleum Development Act 1974, which grants Petronas exclusive upstream rights for petroleum exploration, extraction, and initial control.

such as the Postal Services Act 2012 (PSA)¹⁴⁶ and the Communications and Multimedia Act 1998 (CMA)¹⁴⁷ under MCMC, Malaysian Aviation Commission Act 2015 under MAVCOM and Energy Commission Act 2001 under EC also address competition concerns within their respective domains.

For example, in assessing the dominant position of a licensee or player, PSA and CMA consider a market share exceeding 40% in the postal and communication market as “high”, whereas MyCC considers a market share threshold of over 60%¹⁴⁸ as an indicator of a dominant enterprise in relation to general markets.

In 2023, MyCC and MCMC signed a memorandum of understanding (MoU) to address exclusivity arrangements between telecommunications service providers and property developers or building management companies in high-rise buildings, including residential complexes¹⁴⁹. While this collaboration does not yet focus on digital platforms, there is potential for further cooperation between the two agencies, as well as with other relevant ministries and agencies (e.g., JPDP), to harmonise regulatory frameworks.

At present, such situation creates a “substantive policy multiplicity¹⁵⁰”, where different focuses or approaches address the same issue or concern. As a result, potential inconsistencies may arise in how the issue is managed or regulated, leading to inefficiencies and confusion for businesses, as well as challenges for regulators in enforcement and compliance efforts.

¹⁴⁶ MCMC (2024). Guidelines on dominant position (postal services industry). <https://mcmc.gov.my/skmmgovmy/media/General/Resources/Guidelines-on-Dominant-Position-Postal-Services-Industry.pdf>

¹⁴⁷ MCMC (2014). Guideline on dominant position. <https://mcmc.gov.my/skmmgovmy/media/General/pdf/Commission-Guideline-on-Dominance-in-a-Communications-Market-Final.pdf>

¹⁴⁸ MyCC (2012). Guidelines on abuse of dominant position. Chapter 2: Prohibition, page 4. <https://www.mycc.gov.my/sites/default/files/pdf/newsroom/MYCC%20Guidelines%20Booklet%20BOOK2-6%20FA%20copy.pdf>

¹⁴⁹ MyCC (2023). MyCC and MCMC strengthen collaboration with MOU signing. <https://www.mycc.gov.my/announcement/mycc-and-mcmc-strengthen-collaboration-with-mou-signing>

¹⁵⁰ Kovaic, W (2025). Is it true that the big tech companies are being victimised?, page 19. MyCC Competition Law Symposium.

In the realms of policies and roadmaps, the same challenges may persist where seemingly similar strategic initiatives with overlapping themes are managed or steered by different ministerial bodies, which is particularly evident when it comes to new advanced technologies.

For example, Industry4WRD: National Policy on Industry 4.0 is governed by the MITI whereas National 4IR Policy (N4IRP) is governed by the Ministry of Economy. Similarly, AI-related matters fall mainly under the Ministry of Digital as it involves data but at the same time, addressing the risks and harms of AI requires involvement from the Ministry of Science, Technology, and Innovation. Unclear boundaries are also further pronounced when policies and legislative acts are embedded or referenced by one another, potentially creating challenges for businesses navigating the competitive landscape¹⁵¹.

4.5.3 Coverage on new developing technology

The PDPA 2010 (Act 709) by JPDP, serves as the Malaysia's main form of legislation that regulates the processing of personal data in commercial transactions. However, it has faced challenges in addressing the complexities introduced by emerging technologies such as AI and ML. These technologies often function as “black box (where internal processes are not transparent or easily understood)”, which complicates compliance with PDPA's requirements for transparency and accountability, which are critical for fostering trust and competition in the digital economy.

Some of the risks involved in trying to regulate new technologies alongside PDPA include:

- Overregulation that is excessively implemented could stifle innovation and growth within the industry and hinder development for new technologies.
- Compliance burdens as companies may face significant compliance costs to meet the requirements of the act, which could deter smaller

¹⁵¹ Tech for Good Institute (2024). Shaping the digital future: Regulatory updates from Malaysia. <https://techforgoodinstitute.org/blog/expert-opinion/shaping-the-digital-future-regulatory-updates-from-malaysia/>

companies from entering the market and increase operational costs for existing businesses.

- Legal ambiguities should the definitions be unclear and misunderstood may result in additional precaution by companies to navigate these complexities and could lead to less competitive market behaviour as businesses err on the side of caution to avoid legal pitfalls.
- Flexibility challenges because as new technology continues to evolve, so will the regulations to remain effective, which requires balancing innovation with compliance to prevent market distortions.
- Implementation risks as regulation may disproportionately affect players in the industry depending on how well regulators understand the market structure and competitive dynamics.

4.5.4 Coverage on existing data protection regulation

In 2013, an additional requirement was introduced under the PDPA, mandating that specific classes of data users register as “data users”. However, this requirement excluded foreign companies from mandatory registration. While the JPDP encourages foreign companies to comply voluntarily, enforcement remains challenging due to limited resource. Furthermore, the PDPA only applies to personal data processed for commercial transactions, exempting government entities (largest data processors in Malaysia) and not covering data processed outside Malaysia. These limitations created gaps in the legal framework.

To address various gaps and align with international standards, Malaysia introduced the PDPA (Amendment) Act 2024. Key amendments include:

- **Data Transfer Abroad:** Effective 1 April 2025, data controllers can transfer personal data outside Malaysia if the destination has laws substantially like PDPA or ensures an adequate level of protection equivalent to the PDPA.

- **Mandatory Data Protection Office (DPO) Appointment:** Starting 1 June 2025, data controllers and processors engaged in large-scale data processing must appoint a DPO. The DPO will oversee compliance with PDPA requirements, ensuring the data protection measures are effectively implemented.
- **Data Portability Rights:** Effective 1 June 2025, data subjects gain the right to request the transfer of their personal data from one data controller to another, provided the transfer is technically feasible and compatible with existing data formats. This empowers individuals with greater control over their personal data.

The reliance or co-regulation alongside PDPA extends to national and digital-related policies, such as the MDEB. These policies often reference the PDPA to address data privacy and protection without elaborating on the necessary boundaries and coverage. For instance, under Strategic Thrust 4: Strengthen Cross-Border Data Transfer Mechanisms and Protection, the blueprint mandates both the Ministry of Communications and MITI to co-lead efforts in establishing cross-border data transfer provisions. This initiative aims to facilitate seamless data flows while maintaining adequate levels of protection¹⁵².

The PDPA (Amendment) Act 2024, particularly in section 129, complements this by removing the whitelist regime for cross-border transfer. While this amendment aligns the PDPA with international practices, its implementation relies heavily on collaboration between regulators, such as MCMC, MITI, and the JPDP. Furthermore, national policies often incorporate the PDPA without clearly defining its boundaries or specifying how co-regulation should function in practice. This lack of clarity can result in fragmented enforcement and inconsistent application of data protection measures, particularly when addressing emerging technologies and cross-border data transfer. The absence of unified approach could hinder Malaysia's efforts to establish itself as a secure and competitive digital economy.

¹⁵² Ministry of Economy (2019). Malaysia Digital Economy Blueprint, page 60. <https://ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf>

4.5.5 Lack of coverage on key players

Certain key players in the identified sub-sectors are not covered by the relevant regulatory framework. For example:

E-commerce (retail marketplace): Merchants on the platform are not obligated to be Suruhanjaya Syarikat Malaysia- (SSM) certified. They can register as individual sellers using a valid personal identification document, which means they are not subject to the Companies Act 2016.

OTAs: While the Tourism Industry Act 1992 mandates licensing for all travel agencies operating in Malaysia, only a few OTAs are licensed as of December 2024¹⁵³:

- Malaysia Airlines Holidays Sdn Bhd
- AirAsia.Com Travel Sdn Bhd
- Global Airlines Holiday Sdn Bhd (airpaz.com)
- Traveloka Sdn Bhd
- BEX Travel Malaysia Sdn Bhd (expedia.com)
- Klook Travel Technology Sdn Bhd
- Ctrip International Travel Malaysia Sdn Bhd (trip.com)

Furthermore, when it comes to policy and roadmap objectives and strategic initiatives, a lack of definition of relevant players has led to low adoption rates of digital adoption especially amongst SMEs and low outreach efficacy of suitable programmes by the responsible agencies. For instance, inadequate clarity regarding the obligations and rights of SMEs in relation to data governance under the PDPA may hinder their ability to comply effectively and leverage support programmes. Examples include

¹⁵³ MOTAC (2025). List of travel operating business and travel (TOBTAB). <https://www.motac.gov.my/en/check/tobtab>

the lack of awareness amongst eligible SMEs regarding schemes such as MSME Digital Grant and Smart Automation Grant under Madani policy¹⁵⁴.

4.5.6 Regulation of foreign participation in unregulated service sector

The “Guidelines on Foreign Participation in Distributive Trade Services in Malaysia 2010” introduced by the Ministry of Domestic Trade and Cost of Living (KPDN)¹⁵⁵, aims to regulate various activities in the distributive trade sector. The guidelines originally required businesses with more than 50% foreign equity to obtain prior approval from KPDN.

However, the 2020 update¹⁵⁶ to the guidelines shifted the approach from mandatory approvals to a more flexible framework, where obtaining KPDN’s approval is now encouraged and recommended rather than strictly mandatory¹⁵⁷. This change potentially allows foreign digital players to operate without formal approval, particularly if they structure their operations to avoid meeting regulatory thresholds that would trigger approval requirements.

This is particularly relevant for digital platform operators who may not have a physical presence in Malaysia but still serve Malaysian consumers.

Additionally, some local businesses can operate in Malaysia without being incorporated locally, which bypasses the Companies Act 2016. This further complicates enforcement and leaves certain sectors unregulated.

¹⁵⁴ The Malaysian Reserve (2024). Are Malaysian SMEs falling behind in the digital age? <https://themalaysianreserve.com/2024/07/10/are-malaysian-smes-falling-behind-in-the-digital-age/>

¹⁵⁵ Ministry of Domestic Trade, Co-operatives and Consumerism (2010). Guidelines on foreign participation in the distributive trade services Malaysia (Amendment) 2010. https://jkt.kpkt.gov.my/wp-content/d/sites/default/files/2022-02/Bil_3_Lampiran_1.pdf

¹⁵⁶ Ministry of Domestic Trade and Consumer Affairs (2020). Guidelines on Foreign Participation in Distributive Trade Services in Malaysia 2020. https://www.kpdnhep.gov.my/ms/images/dokumen/perdagangan/perdagangan-pengedaran/FINAL_GP_2020.pdf

¹⁵⁷ An administrative refresh of the guidelines was published in 2023, with no changes made; Ministry of Domestic Trade and Cost of Living (2023). Guidelines on foreign participation in distributive trade services in Malaysia. <https://www.kpdn.gov.my/images/muat-turun/gp-2022-1.pdf>

MCMC's Application Service Provider Class

Recognising these challenges, regulatory authorities are gradually taking steps to address the challenge of jurisdictional boundaries. For instance, in August 2024, the MCMC introduced a new regulatory framework. This requires selected locally incorporated applications service providers^{158, 159} in the areas of internet messaging (internet messaging service) and social media (content-sharing media platform) with eight million or more registered users to register for an Application Service Provider Class (ASP (C)) License by 1 January 2025. A grace period of five months from the Gazettement date (1 August 2024) was provided to all eligible providers to apply for the license and comply with the requirements. Full effect of the license took place on 1 January 2025.

The move sees selected providers required to comply with the license conditions, CMA 1998 and its subsidiary legislations (licensing regulations, licensing and exemption order and universal service provision regulations) and PDPA 2010¹⁶⁰.

It also allows the government to take proportionate measures based on risk assessments to address online harms, particularly online harms such as scams, cyberbullying, and sexual exploitation of minors. As of December 2024, the Malaysian government identified eight platforms that must obtain a license: WhatsApp, Facebook, Instagram, X, YouTube, Telegram, WeChat, and TikTok¹⁶¹. Additionally, a code of conduct outlining best practices was published¹⁶² on 20 December 2024, following the public

¹⁵⁸ Broad definition of “Applications Service Providers” under the CMA 1998 - person who provides an Applications Service

¹⁵⁹ PDP (2017). The personal data protection code of practice. <https://www.pdp.gov.my/ppdpv1/wp-content/uploads/2024/07/KOD-TATA-AMALAN-PERLINDUNGAN-DATA-PERIBADI-UNTUK-SEKTOR-KOMUNIKASI-ENGLISH-VERSION.pdf>

¹⁶⁰ MCMC (2024). Frequently asked questions (FAQ) on the regulatory framework for internet messaging service and social media service providers in Malaysia, page 3. <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf2/FAQ-for-Regulatory-Framework.pdf>

¹⁶¹ New Straits Times (2024). Govt names 8 platforms that must obtain license. <https://www.nst.com.my/news/nation/2024/12/1150721/govt-names-8-platforms-must-obtain-licence>

¹⁶² MCMC (2024). Code of conduct (best practice) for internet messaging service providers and social media service providers. https://www.mcmc.gov.my/skmmgovmy/media/General/Resources/MCMC_Code-of-Conduct-Best-Practice-for-Service-Providers.pdf

consultation report on the draft code released on 18 December 2024¹⁶³, and a public consultation session held in October 2024¹⁶⁴. The code will undergo periodic reviews to ensure its relevance and effectiveness in addressing emerging online issues¹⁶⁵.

As of 10 March 2025, three service providers have been successfully registered under the ASP(C) licence regime, namely (1) WeChat, (2) TikTok and (3) Telegram. According to MCMC, X is not required to register as its number of Malaysian users does not meet the 8 million user threshold stipulated under the regulatory framework. YouTube has contested its classification, highlighting that it functions primarily as a video-sharing platform, not a social media service¹⁶⁶.

In the case of Facebook, WhatsApp and Instagram, a ministerial notice pursuant to subregulation 23(2) of the Communications and Multimedia (Licensing) Regulations 2000 has been issued on 28 January 2025. The notice permits the two foreign companies under Meta to apply for registration as ASP(C) licensees. As of June 2025, the companies are in the process of preparing and submitting the required documents and information¹⁶⁷.

In view of the rapid evolution of technology and increasing convergence of digital services, MCMC further noted that it may expand the scope of the Regulatory Framework under the CMA 1998 to other services in the future. Naturally, prior to any such expansion, a comprehensive study taking into consideration existing legal frameworks, jurisdictional boundaries, risk assessment and potential impact on the broader digital ecosystem will take place¹⁶⁸.

¹⁶³ MCMC (2024). Public consultation report on the draft code of conduct (best practice) for internet messaging service providers and social media service providers. https://www.mcmc.gov.my/skmmgovmy/media/General/PressRelease/MCMC_Public-Consultation-Report-on-Draft-Code-of-Conduct-Best-Practice-for-Service-Providers-18122024.pdf

¹⁶⁴ Malaysia Kini (2024). MCMC releases social media code of conduct public consultation report. <https://www.malaysiakini.com/news/729345>

¹⁶⁵ The Star (2024). MCMC publishes code of conduct for internet and social media providers. <https://www.thestar.com.my/news/nation/2024/12/20/mcmc-publishes-code-of-conduct-for-internet-and-social-media-providers>

¹⁶⁶ Written response from MCMC.

¹⁶⁷ Written response from MCMC.

¹⁶⁸ Written response from MCMC.

As Malaysia continues to navigate the complexities of the digital economy, it is essential for regulators, businesses, and other stakeholders to collaborate in creating a competitive, fair and secure digital environment that benefits all Malaysians. Thus, addressing these regulatory gaps, enhancing cooperation among regulatory bodies, and focusing on the regulation of emerging technologies will further strengthen the framework, ensuring it remains robust and responsive to the dynamic digital landscape.

4.6 Digital economy-related taxation

Taxation of digital economy companies in Malaysia is governed by four main regimes:

Table 11: Digital economy-related tax regimes in Malaysia

Tax	Applicable party	Rate as of June 2025	Responsible ministry/agency
Service tax on digital services (SToDS) ¹⁶⁹	Foreign digital service providers with > MYR 500,000 annual sales to Malaysian consumers (known as Foreign Registered Person - FRP)	8%	Royal Malaysian Customs Department (RMCD)
Withholding tax (WHT) ¹⁷⁰	- Malaysian businesses paying non-resident entities or individuals (e.g., foreign companies). - Payments specified to following areas only: Contract payments: services performed outside Malaysia under contract Interest payments Royalty payments: Intellectual Property (IP) rights, software, and digital advertising	10-15%	LHDN

¹⁶⁹ RMCD (2025). MySToDS. <https://mystods.customs.gov.my/about-mystods>; RMCD (2018). Service tax (Rate of digital services tax) (Amendment) order 2024. <https://mystods.customs.gov.my/storage/app/media/pdf/legislation/7-pua-67-2024-service-tax-rate-of-digital-services-taxamendment-2024.pdf>

¹⁷⁰ LHDN (2025). Withholding tax. <https://www.hasil.gov.my/en/legislation/withholding-tax/>

Tax	Applicable party	Rate as of June 2025	Responsible ministry/agency
	– Special classes of income: Services, technical advice, or rental of movable property performed in Malaysia – Non-resident public entertainers: Remuneration paid to public entertainers – Others: All other payments to non-resident individuals)		
Sales & service tax (SST) ¹⁷¹	• Service: applies to imported B2B services if not already covered under SToDS • Sales: applies to imported digital goods (e.g., electronics) or digital hardware.	5-10%	RMCD
Sales tax - Low Value Goods (LVG) ¹⁷²	• Foreign sellers of imported goods < MYR 500 per shipment to Malaysian consumers (sold online and delivered via land, sea or air mode)	10%	

Source: MyCC analysis

¹⁷¹ RMCD (2025). FAQs services tax. <https://mysst.customs.gov.my/FAQServicesTax>; RMCD (2025). Guidelines for the transition of sales tax rate changes effective on 1 July 2025. <https://mysst.customs.gov.my/assets/document/Industry%20Guides/GI/GUIDELINES%20FOR%20THE%20TRANSITION%20OF%20SALES%20TAX%20RATE%20CHANGES.pdf>

¹⁷² RMCD (2023). Sales tax on low value goods. <https://mylvg.customs.gov.my/Home?utm>

While the overall framework is comprehensive, including provisions for cross-border transactions, several broad issues are observed:

4.6.1 Unclear enforcement

While Malaysia has legislated digital tax rules through mechanisms such as the SToDS, enforcement remains unclear, especially against non-resident digital platforms. As of 2021, there are no reported SToDS-related matters¹⁷³.

Foreign service providers with no physical presence in Malaysia can choose to not comply with local tax obligations, knowing enforcement is logistically difficult. Should this occur, this will leave local businesses the burden to absorb the tax.

At present, voluntary registration remains the primary compliance approach for foreign service providers. In cases of non-compliance, experts have recommended that authorities to block access to non-compliant platforms through Internet Protocol (IP) restrictions as a potential enforcement measure¹⁷⁴.

4.6.2 SME compliance

SMEs may face complex and fragmented compliance obligations, dealing with multiple layers of indirect taxes: SToDS (paid by foreign vendors), withholding tax (borne by SMEs), and SST (on local services). Many SMEs may lack the internal tax expertise or financial capacity to correctly classify digital transactions, determine taxability, and manage cross-border withholding and service tax obligations¹⁷⁵.

¹⁷³ International Tax Review (2021). The evolving world of Malaysia's digital services tax <https://www.internationaltaxreview.com/article/2a68rfy5bw2ycq1zyexto/the-evolving-world-of-malaysias-digital-services-tax>

¹⁷⁴ The Edge (2019). The state of the nation: The digital tax conundrum. <https://theedgemaalaysia.com/article/state-nation-digital-tax-conundrum>

¹⁷⁵ Business Today (2024). SMEs warned of tax compliance issues amid digital waves. <https://www.businesstoday.com.my/2024/12/08/smes-warned-of-tax-compliance-issues-amid-digital-waves>

4.6.3 Profit taxation gap

Despite the introduction of indirect tax mechanisms such as the SToDS and WHT, Malaysia currently lacks a direct tax regime that effectively captures the profits earned by foreign digital companies from Malaysian consumers. Under existing income tax framework, a non-resident entity is only subject to Malaysian income tax if it has a permanent establishment (PE) in the country¹⁷⁶.

To address this gap, Malaysia has joined the global tax reform effort under the OECD's Base Erosion and Profit Shifting (BEPS) 2.0 initiative¹⁷⁷, which consists of two pillars:

- **Pillar One** aims to reallocate taxing rights to market jurisdictions, allowing countries to tax a share of the profits of large multinational enterprises, even if those companies have no physical presence in the country. As of June 2025, Malaysia has yet to enact legislation to implement Pillar One's digital nexus and profit reallocation rules.
- **Pillar Two** introduces a global minimum effective tax rate of 15% for large MNEs (those with annual global revenues exceeding EUR 750 million¹⁷⁸) to discourage profit shifting to low- or no-tax jurisdictions. As of January 2025, Malaysia has implemented the Global Minimum Tax (GMT) regime, reflecting the core elements of Pillar Two¹⁷⁹.

¹⁷⁶ LHDN (2025). Non-resident company. <https://www.hasil.gov.my/en/company/non-resident-company/>

¹⁷⁷ OECD (2025). Base erosion and profit shifting (BEPS). <https://www.oecd.org/en/topics/policy-issues/base-erosion-and-profit-shifting-beps.html>

¹⁷⁸ OECD Pillars (2023). Minimum tax implementation handbook (Pillar Two), page 9. <https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/global-minimum-tax/minimum-tax-implementation-handbook-pillar-two.pdf>

¹⁷⁹ LHDN (2025). What is Malaysia's position on GloBE Rules? <https://www.hasil.gov.my/en/international/global-minimum-tax-gmt/what-is-malaysia-s-position-on-gmt/>

4.7 Malaysia's digital economy and competition

Similar to the global landscape, anti-competitive cases and allegations are on the rise in Malaysia. Since 2023, a number of public complaints were raised to MyCC, of which majority is related to unfair trading conditions on suppliers and customers, such as inability to choose courier providers, unreasonably withholding or releasing money, and unfair operational policies.

Additionally, complaints related to limiting market access such as restricting users who favour overseas sellers in e-commerce and restricting access to the platform despite having required documentation were raised.

Aside from public complaints, various formal allegations and actions have been taken in recent years:

Table 12: Digital economy-related anti-competition cases in Malaysia

#	Year	Relevant sub-sector	Parties	Details
1	2015	Online trade	• MyCC • Dagang Net	MyCC investigated and found that Dagang Net had abused its dominant position in the provision of trade facilitation services in Malaysia under the National Single Window (NSW) system. The abuse involved imposing an exclusivity clause in the MyChannel Partner Agreement (MCPA) with software providers over 2015 - 2016, preventing them from providing similar services for the upcoming uCustoms system and by refusing to supply electronic mailboxes to non-complaint end users. In the end, the MyCC, pursuant to section 40(4) of the Competition Act 2010 imposed a financial penalty of MYR 12,878,094.97 (later reduced to MYR 10,302,475.98 in consideration of COVID-19) for an infringement period of October 2015 to November 2017. It also directed Dagang Net to cease its anti-competitive practices and required its directors and senior

#	Year	Relevant sub-sector	Parties	Details
				management executives to enrol in in a competition law compliance program ¹⁸⁰ .
2	2016	Government services	• MyCC • MyEG	MyCC found MyEG guilty of abusing their dominant position in the sale of mandatory insurance for online <i>Pas Lawatan Kerja Sementara</i> (PLKS) renewal applications in Peninsular Malaysia by imposing different conditions on equivalent transactions, thereby harming competition in the downstream market for such insurances. MyEG made it mandatory for employers to purchase Foreign Workers Insurance Guarantee (FWIG) through its platform and induced them to buy other mandatory insurances from MyEG by creating additional steps and delays for those who chose other insurers. This led to significant increase in MyEG's market share and commissions, putting competitors at a disadvantage. As a result, MyEG was fined a total of MYR 9,644,700 and directed to cease these anti-competitive practices immediately, provide an efficient gateway for all

¹⁸⁰ MyCC (2024). Case. <https://www.mycc.gov.my/case>

#	Year	Relevant sub-sector	Parties	Details
				competitors within 60 days, and comply with General Insurance Association of Malaysia's (PIAM) rules and regulations or risk paying higher penalties ¹⁸¹ .
3	2021	E-commerce (retail marketplace)	• The Federation of Malaysian Consumers Associations (FOMCA) • Consumers' Association of Penang (CAP) • MyCC • Shopee	In 2021, FOMCA and CAP urged MyCC to investigate Shopee for allegedly offering MYR 3,000 in vouchers to sellers for discounts on service fees to close their Lazada stores during the 9/9 sale event, arguing that this stifles competition and unfairly attracts sellers to Shopee. The allegations were based on a leaked WhatsApp conversation from 2020¹⁸².
4	2022	E-commerce (retail marketplace)	• MyCC • Shopee	MyCC engaged with Shopee in response to escalating complaints from consumers and merchant's about Shopee's practices concerning dissatisfaction with its first and last mile delivery services. The engagement

¹⁸¹ MyCC (2024). Case. <https://www.mycc.gov.my/case>

¹⁸² FOMCA (2021). Consumer groups call on MyCC to probe e-commerce giant. <https://www.fomca.org.my/v1/index.php/fomca-di-pentas-media/fomca-di-pentas-media-2021-21/1350-consumer-groups-call-on-mycc-to-probe-e-commerce-giant>

#	Year	Relevant sub-sector	Parties	Details
				aimed to gain a better understanding of the online marketplace and logistics industries and to inquire into Shopee's practices that raised concerns. Shopee was required to justify its conduct and provide a detailed plan by the end of October 2022 on how it will address these issues without further jeopardising user interests. This has led to MyCC to continue monitoring other industry players in the relevant market and consider enforcing legal action if necessary to ensure a conducive environment for users in the digital economy¹⁸³.

Source: MyCC and FOMCA

¹⁸³ MyCC (2022). Shopee to respond to MyCC's enquiries. <https://www.mycc.gov.my/sites/default/files/pdf/newsroom/NEWS%20RELEASE%20-%20SHOPEE%20TO%20RESPOND%20TO%20MyCC%E2%80%99S%20ENQUIRIES.pdf>

On data privacy and protection-related cases, several recent accounts of data breach allegations and investigations (data protection related) in Malaysia have been made over the past few years including:

Table 13: Data privacy and protection-related cases in Malaysia

#	Year	Relevant sub-sector	Parties	Details
1	2022	E-commerce (retail marketplace)	Shopee online user	An online user claimed that there were various listings on Shopee offering personal data for sale. One listing allegedly offered a million phone numbers for MYR 18, while another offered phone numbers of ‘online shopping addicts’ for MYR 15, among several others. Shopee had responded and stated that it is planning to take action against these sellers and has removed and blacklisted these listings as a start ¹⁸⁴ .
2	2022	E-commerce (C2C marketplace)	- Carousell - Online users	Around 2.6 million Carousell users from Malaysia and Singapore were subjected to a data breach where the stolen data was sold online for USD 1,000. Information relating to usernames, full names, email addresses, phone numbers, and more were publicly listed posted online by the hackers.

¹⁸⁴ The Star (2024). Netizens express concern over online sales of Malaysian phone numbers (Updated with Shopee’s response). <https://www.thestar.com.my/tech/tech-news/2022/03/18/netizens-express-concerns-over-online-sales-of-malaysian-phone-numbers>

#	Year	Relevant sub-sector	Parties	Details
				As a result, Carousell contacted all affected users and advised them to look for phishing emails or Short Message Service (SMSes) and to ignore any communications that request for sensitive information ¹⁸⁵ .
3	2022	Payment gateway	• iPay88 • Online users	Payment gateway iPay88 for e-commerce and retail encountered a cybersecurity incident after its customers' card data from online transactions was compromised. As a result, banks were notified to immediately notify affected cardholders of the additional protective measures that will be taken to further protect them against risks of fraudulent or unauthorised transactions¹⁸⁶.

Source: MyCC, The Star, Malay Mail and The Straits Times

¹⁸⁵ The Straits Times (2022). Data of alleged 2.6m Carousell users being sold on Dark Web, hacking forums. <https://www.straitstimes.com/singapore/data-of-alleged-26m-carousell-accounts-being-sold-on-dark-web-hacking-forums>

¹⁸⁶ Malay Mail (2022). Major data breaches in Malaysia in the past 24 months. <https://www.malaymail.com/news/malaysia/2022/12/31/major-data-breaches-in-malaysia-in-the-past-24-months/47722>

As the local digital economy continues to evolve, the need for a deeper understanding of market dynamics by regulators will grow. This, in turn, will require more efficient governance to effectively address emerging anti-competitive challenges specific to each sub-sector, as demonstrated by the above cases or allegations.

5. Sub-sector deep dive

5.1 Mobile operating & payment system

5.1.1 Study scope

This review will focus on three key components within this sub-sector: mobile OS, app stores and integrated payment systems. Mobile OS is the software platforms that facilitate the operation of smartphones and similar devices, app stores are the distribution platforms of apps used by app developers, and integrated payment systems refer to payment mechanisms embedded within mobile applications. These payment systems, which are facilitated through APIs, allow for seamless in-app transactions, such as the purchase of digital goods and services.

Additionally, the study will concentrate on app stores and payments made within app stores, such as Apple Pay within Apple App Store or Google Play billing within Google Play. It will not consider payments made outside of these platforms (e.g., external e-wallets or any payment gateways).

The focus will be strictly on smartphones, excluding other devices such as desktop computers, tablets or smartwatches.

The activities of the mobile operating & payment system sub-sector impact the following Malaysia Standard Industrial Classification (MSIC) industries:

Table 14: MSIC codes relevant to the mobile operating and payment system sub-sector

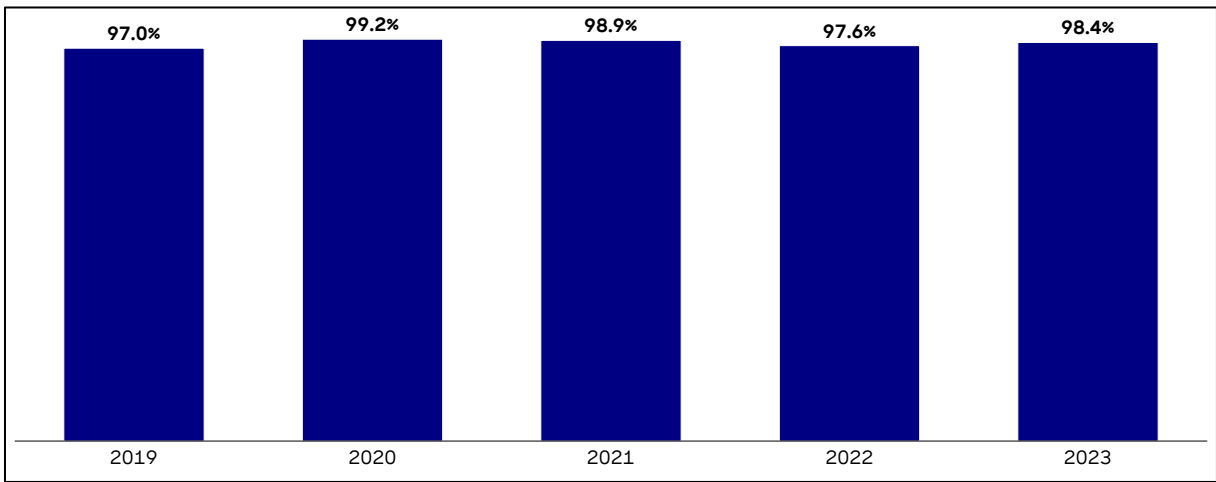
MSIC Code	MSIC Industry Description
26300	Manufacture of communication equipment
58201	Business and other applications
58202	Computer games for all platforms
58203	Operating systems
63111	Activities of providing infrastructure for hosting, data processing services and related activities

Source: MSIC 2008, DOSM

5.1.2 Market structure and supply chain

5.1.2.1 Market structure

Figure 24: Adult population with smartphones in Malaysia, 2019-2023 [%]

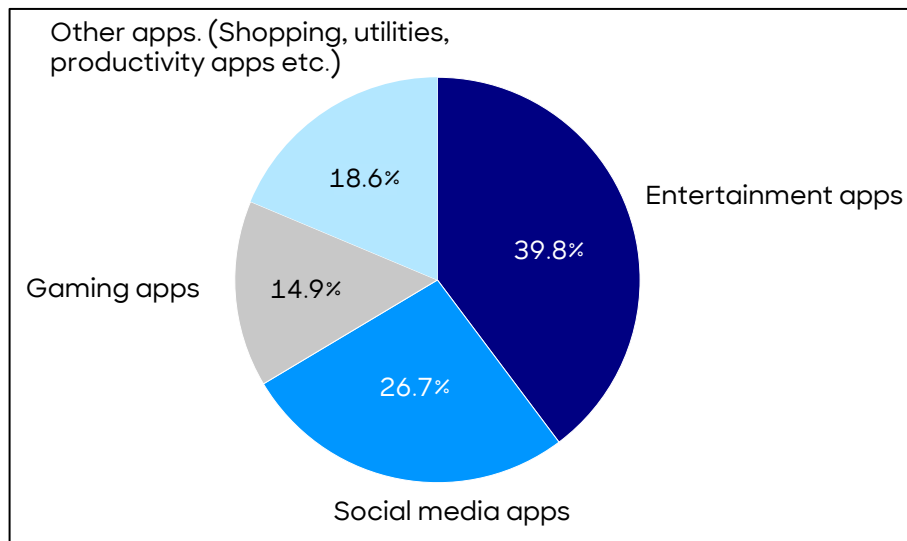


Source: DataReportal

In the past decade, smartphones have emerged as a cornerstone of daily life globally and in Malaysia, underscoring its increasing importance. From 2019 to 2023, smartphone ownership in Malaysia has remained high, consistently at or above 97%. As of 2023, the ownership rate has reached 98.4%¹⁸⁷.

¹⁸⁷ DataReportal (2024). Digital 2024: Global overview report. <https://datareportal.com/reports/digital-2024-global-overview-report>.

Figure 25: Malaysian's average daily time spent on smartphones, by app type, May 2024 [%]



Source: Meltwater

The growth in smartphone use has directly contributed to an increase in digital content and services. In May 2024, Malaysians spent an average of five hours and six minutes per day on their smartphones. Most of this time is spent on entertainment apps such as YouTube and TikTok (39.8%), social media (26.7%), and mobile gaming (14.9%). The remaining 18.6% of usage is dedicated to shopping, utilities, and productivity apps¹⁸⁸.

Additionally, the rise of adjacent products continues to enhance the significance of smartphones, thanks to the APIs provided by OS developers. These APIs enable access to various functions and data on smartphones, further integrating them into users' daily lives. Key functionalities include Bluetooth, Near Field Communication (NFC), camera, and Global Positioning System (GPS), all of which facilitate seamless interactions between smartphones and other devices.

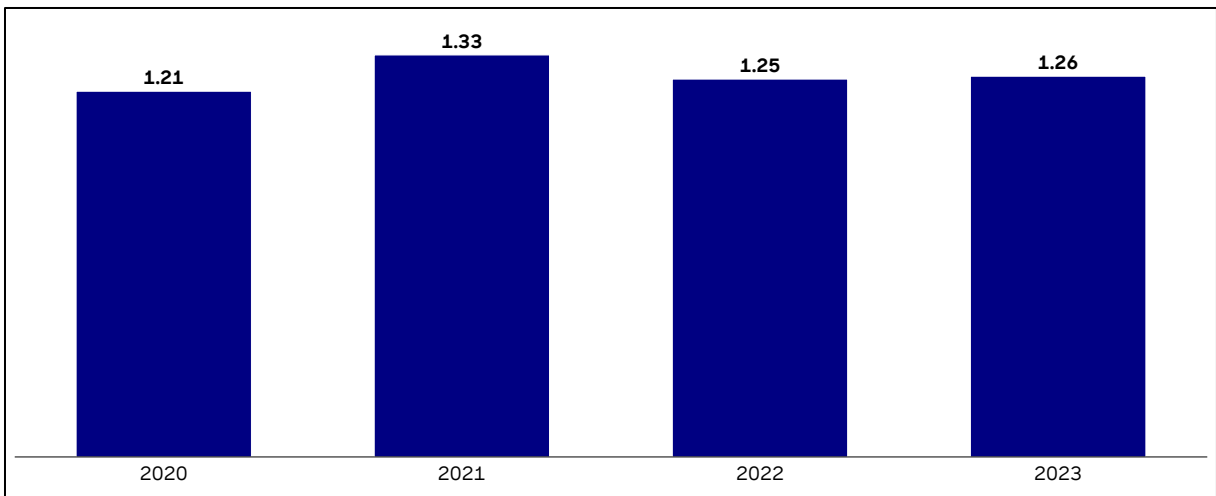
One of the more prominent adjacent products is smartwatches (e.g., Apple Watch, Google Pixel Watch, Samsung Galaxy Watch). These devices not only offer health tracking features but also provide notifications, music control and remote camera operation via Bluetooth. Smart tags (e.g., AirTag, Galaxy SmartTag) are another innovative addition to the

¹⁸⁸ Meltwater (2024). Social media statistics for Malaysia (Updated 2024). <https://www.meltwater.com/en/blog/social-media-statistics-malaysia>

ecosystem. These devices can be attached to personal belongings, helping users locate items through their smartphones using technologies like Wi-Fi, GPS, Bluetooth and ultra-wideband (UWB). Some smart tags leverage a "search network" to find lost items by connecting with other users' devices.

Smart home devices also play a crucial role in this ecosystem, enhancing the functionality of smartphones. Devices such as smart speakers, including Amazon's Alexa, Google Nest and Apple HomePod, allow users to control various aspects of their home environment using voice commands. These smart speakers serve as hubs for managing other connected devices, such as smart lights, temperature and security cameras, all of which can be controlled through a smartphone app.

Figure 26: Mobile app downloads in Malaysia, 2020-2023 [billion of downloads]

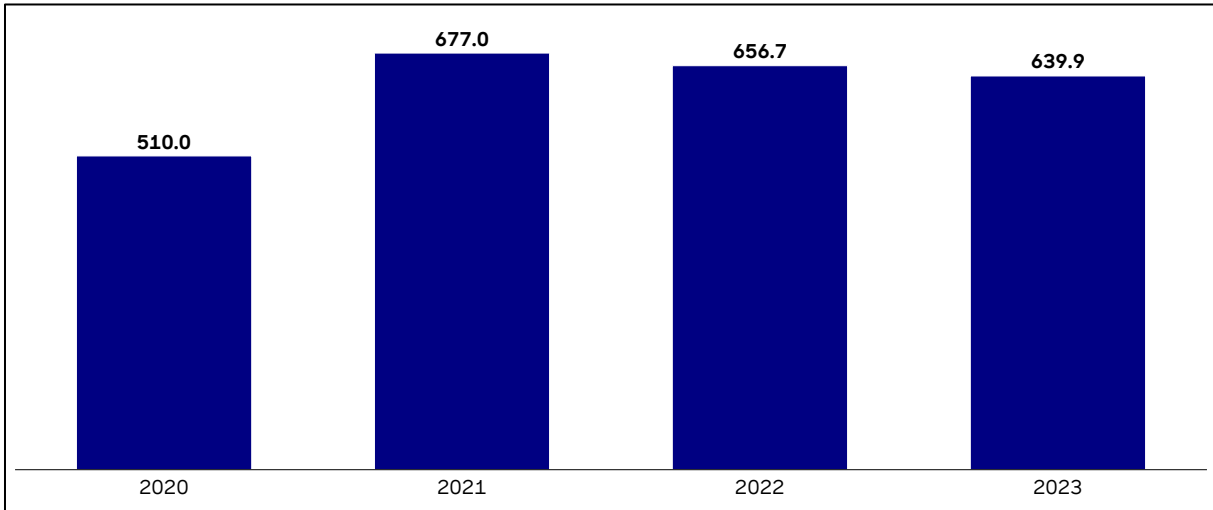


Source: DataReportal

Apps, which are software designed to perform specific tasks, are a critical component in this growing ecosystem, providing functionality across various domains. In Malaysia, app downloads have soared, with a total of 1.26 billion downloads in 2023 as seen in Figure **26**. This marks an increase

from 1.21 billion in 2020, with a spike (~9.9%) in 2021 driven by the pandemic as people spent more time at home¹⁸⁹.

Figure 27: Consumer spending on mobile apps in Malaysia, 2020-2023 [USD million]



Source: DataReportal

On the payment system side, in-app systems such as Apple Pay, Google Wallet and Samsung Pay are increasing in usage. In 2023, total spending on apps in Malaysia reached USD 639.9 million, reflecting a 7.9% CAGR since 2020¹⁹⁰. Despite the increased usage, overall app payment market is still observed to be marginal. As of 2025, Apple reports that approximately 1.5 million apps are available for download via the Malaysian Apple App Store. Among these, only 851 apps (< 0.1% of total available apps) offer IAP functionalities¹⁹¹.

¹⁸⁹ DataReportal (2024). Digital 2024: Malaysia. <https://datareportal.com/reports/digital-2024-malaysia?rq=digital%20malaysia>

¹⁹⁰ DataReportal (2024). Digital 2024: Malaysia. <https://datareportal.com/reports/digital-2024-malaysia?rq=digital%20malaysia>

¹⁹¹ Input from industry players.

5.1.2.2 Supply chain

The mobile operating and payment systems in Malaysia are characterised by a multifaceted supply chain involving several key players, each contributing distinctively to the overall framework:

Figure 28: Supply chain of the mobile operating and payment system sub-sector¹⁹²



Source: Interaction with industry players and MyCC analysis

¹⁹² MyCC's analysis and interaction with industry players.

Device manufacturers: Invest in R&D to produce hardware. These companies such as Apple, Samsung, Oppo, Vivo, design smartphones that not only incorporate the latest technology but also support the latest mobile OS. To ensure compatibility and optimise user experience, manufacturers frequently enter licensing agreements with OS developers. This collaboration allows them to implement new features and updates, ensuring their devices remain competitive. Device manufacturers generate revenue primarily through the direct sale of smartphones and accessories.

OS players: Play the crucial role in establishing the foundational software that powers smartphones. They are responsible for crafting the overall architecture of the mobile OS, which includes essential components such as the kernel (the central module of the OS), user interface (UI) and application framework. This architectural design aims to ensure that apps can run smoothly and efficiently on devices.

Key players in this space include Google, which develops Android as an open-source platform, allowing manufacturers to customise the OS for their devices. This flexibility results in a wide variety of Android devices featuring different interfaces (e.g., Samsung's One UI, Xiaomi's MIUI, Oppo's ColorOS), capabilities and performance levels, as manufacturers can modify the Android experience to align with their brand identity. At a broad level, the Android OS can be categorised into three variants:

- (a) Licensed:** Android OS versions officially licensed by Google. These include stock Android, Android One, and custom versions like Samsung One UI or Xiaomi MIUI, which are built on top of the Android Open-Source Project (AOSP) and incorporate Google's proprietary services (e.g., Play Store, Google Maps).
- (b) Compatible:** Android versions that are designed to be compatible with the official Android ecosystem. Example includes Android Go¹⁹³, which adheres to Google's guidelines and ensure seamless integration with Google services.

¹⁹³ Android (2025). Android Go. <https://www.android.com/versions/go-edition/>

- (c) **Forked:** A version where a device manufacturer modifies the AOSP without using Google's proprietary services. An example is Amazon's Fire OS, which is based on AOSP but lacks Google services like the Play Store.

In contrast, Apple operates within a closed system, tightly controlling the design and functionality of iOS. This approach aims to provide a uniform user experience across all its devices, as updates are released uniformly for all compatible models, maintaining a high level of performance and security.

Application (app) stores: Serve as key distribution platforms within the mobile ecosystem, facilitating access to native apps for users and managing the processes surrounding app downloads and updates. They enforce a set of processes and policies, particularly regarding quality, security and privacy, that all app developers must adhere to in order to list their apps. In return, app stores provide developers with global user access, developer tools and support, security features, performance insights, and a secure payment system.

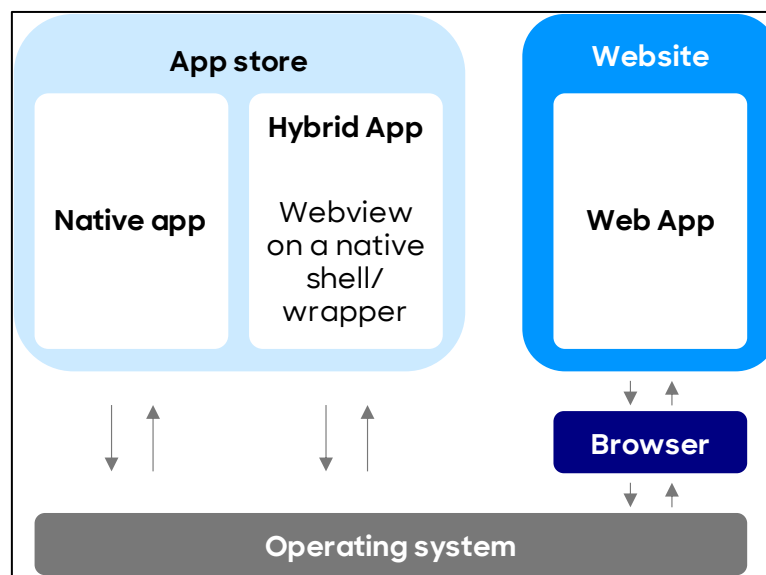
Additionally, app stores control the payment systems that govern financial transactions between developers and users. They often charge commissions on these transactions (specifically on digital goods). In return, the collected payments help sustain the platform, offering app developers access to a wide audience and valuable insights into users' app usage behaviour.

The availability of app stores can vary depending on the OS. In the Android ecosystem, users can install multiple app stores, including but not limited to the Google Play Store, Huawei AppGallery, Samsung Galaxy Store, F-Droid, TapTap, APKPure, SlideME, Epic Games Store (gaming-specific), etc.

Separately, iOS devices only have access to Apple's App Store due to Apple's vertically integrated approach. Additionally, there is an app store called TestFlight, designed specifically for app developers to distribute beta versions of their apps to testers. There are also third-party app stores, such as AltStore and Cydia, that only work on jailbroken iOS devices.

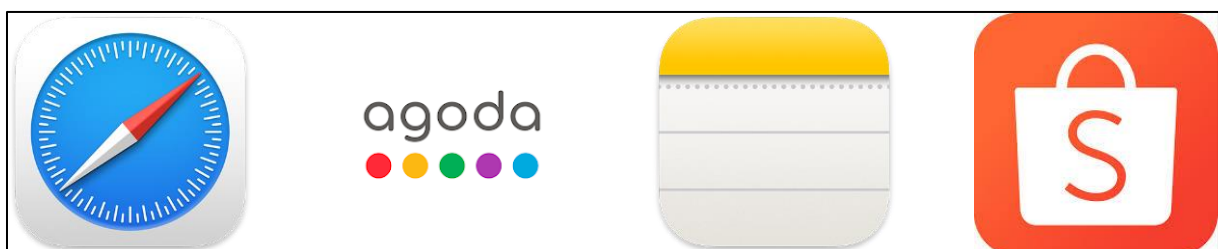
App developers: Design apps to perform specific tasks on devices. Apps can be created by the OS, independent developers or by dedicated app development companies. App developers generate revenue through various monetisation strategies, including direct app sales, IAPs, subscriptions, and advertising within their apps. These revenue models are entirely controlled by the developers, allowing them to choose the most suitable strategy based on their app's goals, target audience, and market dynamics. Apps on smartphones can be categorised into three primary types:

Figure 29: Difference between a native, hybrid and web app



Source: MyCC's analysis

Figure 30: Native app examples (from left to right, Safari, Agoda, Notes and Shopee)



Source: MyCC analysis

- (a) Native Apps:** Specifically developed for a particular OS, allowing them to fully utilise the device's hardware and software features (e.g., face recognition to login). This results in optimised performance, enhanced user experience (especially for gaming-related native apps) and seamless access to device functionalities like the camera and GPS. Native apps often offer offline capabilities and benefit from the security measures of their OS, making them faster and more responsive.

These apps are generally preferred over web apps because they align more closely with current user preferences and trends, offering a more tailored and engaging experience. Furthermore, growing emphasis on cybersecurity makes native apps more appealing, as they typically benefit from the robust security features built into the OS. This ensures better data protection and user privacy compared to web apps, which can be more vulnerable to security breaches and may not offer the same level of control over user data.

Native app developers navigate the app approval processes set by OS and app stores, often adjusting their designs to comply with specific guidelines and restrictions. Such requirements can lead to added costs for developers, as they may need to invest time and resources to meet the guidelines and prepare for the approval process. Developers may also need to continuously refine their apps based on user feedback.

- (b) Web Apps:** Function through the internet. They offer platform independence, require an internet connection and are designed to be responsive for different screen sizes. Updates are made on the server side, ensuring users always access the latest version. Web apps do not require app store reviews, which can lower overall development costs.

Web apps are only accessible through a browser app. These apps (browser) use rendering engines (like WebKit, Blink, or Gecko) to process web content and display it visually. The choice

of engine can affect performance, compatibility and rendering quality.

Depending on their default settings, such as being pre-installed as the default browsing app on devices, they can significantly influence users' search behaviour.

Within the iOS system, the Safari browser app is pre-installed. The app uses the WebKit engine for content rendering, with the same engine also required for all other web browsers if they wish to operate on iOS. Separately, in the Android ecosystem, the Google Chrome browser app comes pre-installed. However, Google's open-source Chromium project offers the Blink engine but does not require developers to use a specific browser engine, providing them with greater flexibility.

While web apps are device-agnostic, meaning they can be accessed across different platforms and devices through a web browser, they lack the credibility of native apps. This is because web apps are not listed in app stores, which means users cannot rate and review them, making it harder to assess their reliability and quality. Furthermore, due to the limitations of browser-based APIs, web apps cannot access many hardware functions, such as biometric authentication (e.g., Face ID or fingerprint recognition) or more advanced device capabilities (e.g., NFC, GPS). While basic features like camera access or geolocation can still be utilised, these restrictions can limit the user experience.

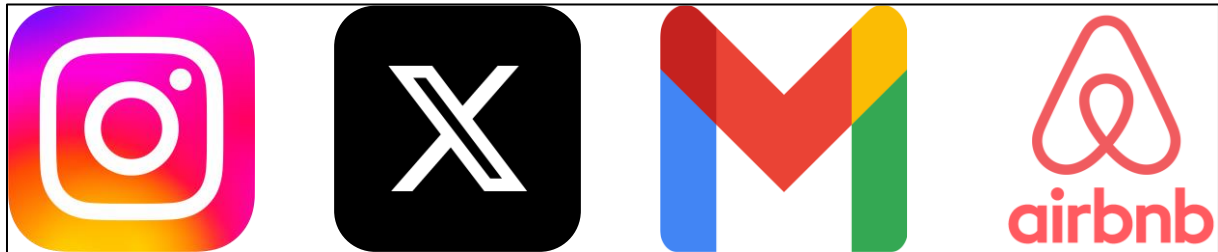
Additionally, web apps are often considered less secure than native apps because they operate over the internet and can be more easily targeted by hackers. According to CyCognito¹⁹⁴, a cybersecurity company, an estimated 70% of web apps assessed have security gaps, including the absence of web application firewall (WAF) protection¹⁹⁵ or an encrypted connection like

¹⁹⁴ CyCognito (2024). 2024 state of web application security testing, page 2. <https://www.cycognito.com/documents/reports/CyCognito-State-of-Web-Application-Seucirty-Testing-2024.pdf>

¹⁹⁵ Security system designed to protect web applications by filtering and blocking malicious traffic.

Hypertext Transfer Protocol Secure (HTTPS)¹⁹⁶. Furthermore, 25% of all web apps lacked both¹⁹⁷.

Figure 31: Hybrid app examples (from left to right, Instagram, X, Gmail and Airbnb)



Source: MyCC analysis

- (c) **Hybrid Apps:** Combine elements of both native and web applications, allowing developers to leverage the benefits of both approaches. They are essentially native apps that contain a significant component known as a "webview."

A webview is a lightweight embedded web browser that lacks its own navigation controls or borders. This allows it to display web content seamlessly within the app, enabling users to access online resources without leaving the application. The webview can load content from within the app itself or retrieve data from the internet, functioning similarly to conventional browsers like Chrome or Safari.

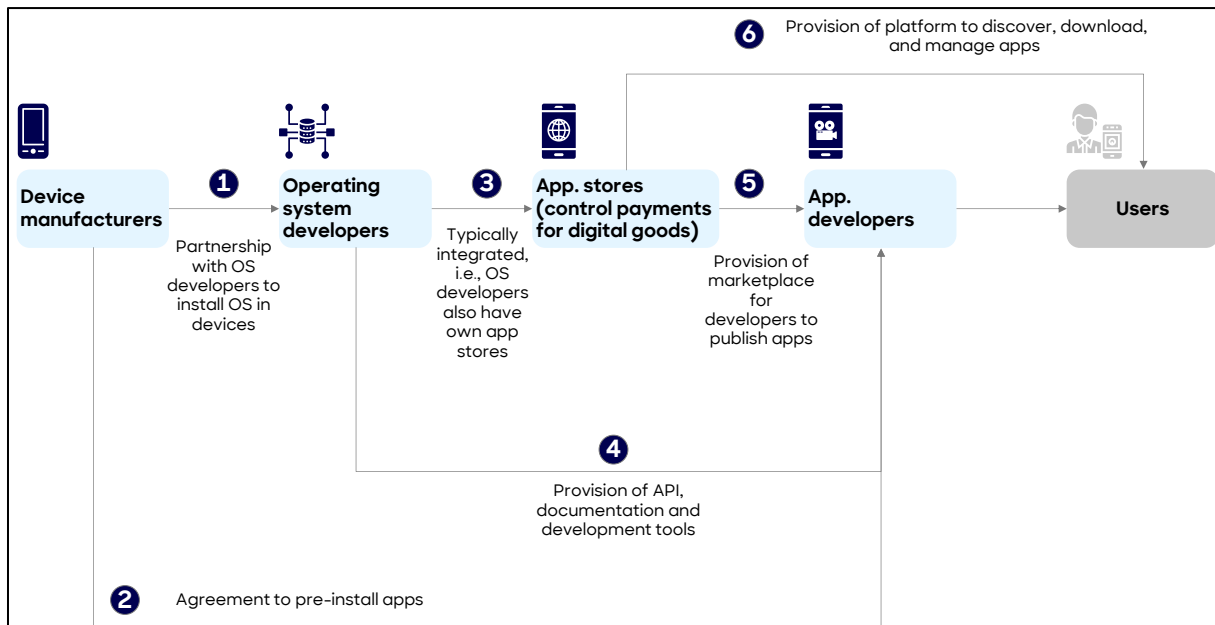
By integrating webviews, hybrid apps can offer a responsive and interactive user experience while also benefiting from the device's native capabilities, such as accessing the camera, GPS and other hardware features. This combination allows for faster development cycles and easier updates, as changes to the web content can be made without needing to update the entire app.

¹⁹⁶ Secure transfer protocol that encrypts data exchanged between a web browser and a server.

¹⁹⁷ Cycognito Magazine (2024). 2024 state of external exposure management report. <https://www.cycognito.com/resources/reports/cycognito-state-of-external-exposure-management-2024/>

5.1.3 Market practices

Figure 32: Key relationships along the mobile operating and payment system supply chain



Source: Interaction with industry players and MyCC analysis

1. Device manufacturers and OS developers

Market practices between device manufacturers and OS developers involve a complex dynamic of collaboration and dependency. Device manufacturers rely on OS developers for the software that powers their devices, with user experience heavily influenced by the integration of hardware and software. However, the dynamics vary significantly between open and closed systems. Android, as an open system, partners with multiple manufacturers, creating an expansive ecosystem with broad market reach. This provides both Original Equipment Manufacturer (OEMs) and developers flexibility and control over the device and software design. In contrast, Apple operates a closed system, tightly controlling its hardware and software to maintain exclusivity and a uniform user experience.

Table 15: Key agreement points in Google’s Mobile Application Distribution Agreement (MADA)¹⁹⁸

Key agreement terms	Description
Pre-installation Requirement	Manufacturers to pre-install non-optional GMS apps or none at all on their devices. These apps are provided on a royalty-free basis.
Default Search Engine	Google Search must be set as the default search provider on the device.
Placement of Google Apps on home screen	Google Search widget, Google Play icon, and a folder with certain GMS apps must be placed on home screen. However, users are provided the option to move them off the home screen.
Google Play Store Access	Access to Google Play Store is conditional upon compliance with MADA terms.
Branding Requirements	Devices must comply with Google’s branding and compatibility requirements.
Revenue Sharing	Potential revenue-sharing agreements for pre-installed Google services.
Compliance and Audit	Google retains the right to audit compliance with MADA terms.
Termination Rights	Google can terminate the agreement for non-compliance with the terms.

Source: MADA agreement by Google

Android OS: Device manufacturers first enter into the Android Compatibility Commitment (ACC) with Google. This agreement requires manufacturers to maintain compatibility with the official Android ecosystem, as defined in the Android Compatibility Definition

¹⁹⁸ Google (2008). Mobile Application Distribution Agreement (MADA) between Google Inc. and Motorola Inc.
<https://www.sec.gov/Archives/edgar/containers/fix380/1495569/000119312510271362/dex1012.htm>

Document (CDD). It also prohibits the development or distribution of incompatible, "forked" versions of Android¹⁹⁹.

Following that, a key agreement known as MADA will be executed. This agreement is a software license between the two parties, allowing device manufacturers to preinstall and distribute Google Mobile Services (GMS) suite of Google's proprietary mobile apps and services. Under the agreement, OEMs may choose not to install any GMS apps. However, should an OEM decides to include GMS apps on a particular device, it must install the full suite of required GMS apps on that device, excluding any optional apps²⁰⁰.

- **Pre-installed GMS apps:** Google Search (widget), Google Play, Gmail, Chrome, Google Maps, YouTube, YouTube Music, Google Meet, Google Photos, Google Drive, Google TV.
- **Optional GMS apps:** Google Calendar, Google Translate, Calculator and Google Hangouts.

According to Google, the rationale for the MADA is to provide users with a consistent and functional "out-of-the-box" Android experience. The royalty-free nature of this suite is intended to reduce OEM development burdens, enabling them to focus on hardware innovation and software differentiation, particularly for low-cost devices thus promoting broader access to affordable smartphones and stimulating developer reach through expanded user adoption²⁰¹.

Manufacturers may also enter into a separate Revenue Sharing Agreement (RSA) with Google. Under this agreement, they receive a portion of the advertising revenue generated through specific search access points on their devices, such as the search widget and

¹⁹⁹ National Company Law Appellate Tribunal (2023). Google LLC & Anr. V. The Competition. Commission of India. https://nclat.nic.in/display-board/view_order

²⁰⁰ Written response from key players.

²⁰¹ Written response from key players.

Chrome browser, in exchange for meeting certain promotional and placement requirements for Google apps²⁰².

Additionally, Google is observed to offer payments to selected partners, typically contingent on meeting specific integration or placement conditions. In 2025, Google was reported to have paid Samsung to pre-install its Gemini AI assistant on Samsung devices²⁰³.

Google also provides manufacturers with several resources to support in their app development, including:

- **Android Software Development Kit (SDK):** Offers tools and libraries needed to develop applications for Android devices. Manufacturers also use this SDK to create custom apps or system-level features that integrate with the Android ecosystem.
- **Android APIs:** Offers a wide range of APIs that allow manufacturers to integrate specific hardware features, such as the camera, GPS, sensors, or Bluetooth, into the Android system. These APIs ensure that devices can use Android's software to leverage their hardware capabilities in a standard way, providing consistency for both app developers and users.

While Android is the core OS, manufacturers sometimes implement exclusive features. For example, Samsung has developed its own UI, One UI, which includes proprietary features such as advanced multitasking, Samsung DeX (a desktop experience), and Samsung Pay. These features differentiate Samsung devices but can create inconsistencies within the broader Android ecosystem and add complexity for app developers. Similarly, Amazon's Fire OS is a heavily modified version of Android that removes Google services entirely and replaces them with Amazon's Appstore and Alexa

²⁰² Competition Commission of India. (2022). CCI imposes a monetary penalty of Rs. 1337.76 crore on Google for anti-competitive practices in relation to Android mobile devices. <https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1869748&utm=®=3&lang=1>

²⁰³ The Verge (2025). Google is paying Samsung an 'enormous sum' to preinstall Gemini. <https://www.theverge.com/news/652746/google-samsung-gemini-default-placement-antitrust-trial>

integration. This modification makes Fire OS incompatible with apps that rely on Google Play services.

- (a) **iOS:** Apple operates within a closed ecosystem, where it tightly controls both hardware and software (both being developed by Apple only), ensuring tight integration across all its products. At the heart of this ecosystem is iOS, Apple's OS, which runs exclusively on Apple devices such as iPhone and iPad.

Unlike other manufacturers, Apple does not allow iOS to run on non-Apple hardware, which means no other device maker can use this OS. This closed nature of iOS is reinforced by Apple's custom-built hardware, such as the A Series chip²⁰⁴ and Graphics Processing Units (GPUs), which are specifically designed to work seamlessly with iOS.

Additionally, apps like Face ID, iMessage, and AirDrop are all designed to function exclusively on Apple hardware and software, creating a system where everything is connected and works only within the Apple ecosystem.

Although the apps come pre-installed, users can easily uninstall or remove most of them, including Mail, Maps, and Music. sages, Safari, and the App Store cannot be deleted, and they can only be removed from the Home Screen.

Table 16: Comparison between Android's open system and iOS' closed system for device manufacturers

Key aspect	Open system (Android)	Closed system (iOS)
Ownership & licensing	Google licenses it openly (AOSP) to device manufacturers. Multiple OEMs (Samsung, Oppo, Xiaomi, etc.) use it, modify it, and build their own devices.	Used exclusively on Apple's own hardware. No licensing to third parties.

²⁰⁴ A type of System on a Chip (SoC) - a single integrated circuit that combines multiple components of a computer or electronic system into one chip.

Key aspect	Open system (Android)	Closed system (iOS)
Pre-installed and alternative apps	Under MADA, OEMs commonly pre-install Google proprietary apps (Play Store, Chrome, Search, YouTube, Gmail). Device manufacturers are also allowed to install their apps.	Only Apple can pre-install apps. App distribution tightly controlled through the Apple App Store.
Revenue models & agreements	Manufacturers may enter into RSA with Google, earning a share of advertising revenue.	No separate agreements available as Apple controls both hardware & OS directly.
APIs and hardware integration	Android has wide range of APIs that allow manufacturers to integrate hardware components.	Apple's ecosystem only allows limited access to hardware, which is solely designed exclusively for Apple's ecosystem.

Source: Android, Apple and MyCC analysis

2. Device manufacturers and app developers

The relationship between device manufacturers and app developers is shaped by agreements that govern the pre-installation of third-party apps, granting these apps immediate access to large user bases. In return, app developers often engage in revenue-sharing models, where manufacturers receive a portion of earnings from IAPs, advertisements, or subscriptions. Additionally, these agreements may include terms for exclusive app availability, preferred placement on home screens, or enhanced visibility in app stores, strengthening the competitive positioning of selected apps. For instance, Android OEMs such as Samsung, Xiaomi, and Oppo pre-install a variety of third-party apps under separate agreements that are not restricted by MADA. Selected pre-installed apps include:

Table 17: Selected pre-installed third-party apps on Samsung, Xiaomi and Oppo devices

Device	Pre-installed third-party apps (selected) ²⁰⁵
Samsung	Facebook, Amazon, Prime Video, Spotify, Outlook, LinkedIn
Xiaomi	Facebook, Amazon, LinkedIn, Netflix, Spotify
Oppo	LinkedIn, Amazon, Snapchat

Source: The Gadgets Now by the Times of India

Such agreements also enable third-party app developers to offer exclusive deals to users. In 2021, Samsung and Spotify entered into a partnership where the Spotify app is pre-installed on select Samsung smartphones and tablets. As part of the deal, Spotify offers exclusive promotions, such as a free three-month trial of Spotify Premium for Samsung users. This subscription provides benefits like ad-free music listening, offline podcast downloads, on-demand song access, and more²⁰⁶.

In addition to third-party apps, Android device manufacturers also pre-install their own first-party apps and app stores. For example, Samsung devices commonly come with pre-installed apps such as Samsung Internet, Samsung Wallet, Samsung Calendar, and Samsung Health.

3. OS developers and app stores

The relationship between OS developers and app stores is crucial to the digital marketplace. OS developers, such as Google and Apple, create the software that powers devices, while their app stores are the primary distribution channels for apps. These app stores provide users access to a

²⁰⁵ Gadgets Now (2022). Pre-installed apps on Xiaomi, Oppo, Samsung and other phones: What you can install and what you can't. <https://gadgetsnow.indiatimes.com/featured/pre-installed-apps-on-xiaomi-oppo-samsung-and-other-phones-what-you-can-install-and-what-you-cant/articleshow/93106987.cms>

²⁰⁶ Spotify (2021). Check out the latest Samsung devices with Spotify preinstalled - and find out if you're eligible for 3 months free. <https://newsroom.spotify.com/2021-06-14/check-out-the-latest-samsung-devices-with-spotify-preinstalled-and-find-out-if-youre-eligible-for-3-months-free/>

wide variety of apps, which enhances the functionality of the OS. Additionally, app stores act as a communication channel between OS developers and app developers, ensuring that apps comply with OS requirements through updates, guidelines, and feedback mechanisms. This ensures compatibility, security, and user satisfaction.

Apple's iOS is a closed system, requiring all apps to be distributed exclusively through its App Store, giving Apple complete control over app distribution and payment processing.

In contrast, Android offers better distribution flexibility. While the Google Play Store remains the default app store on most Android devices, other first-party and third-party app stores (e.g., Samsung Galaxy Store, Amazon Appstore, Oppo App Market) are also available, often pre-installed by device manufacturers and limited to brand-specific devices. For example, Samsung and Xiaomi devices come with their respective proprietary app stores alongside the Google Play Store. However, users typically cannot download alternative app stores via the Google Play Store, as platform rules restrict apps from facilitating or promoting alternative distribution channels²⁰⁷. Instead, they can directly download and install other app stores from external websites such as Epic Games Store, Aptoide and Tencent Appstore.

Beyond these, Android devices also support sideloading, which allows users to download apps directly from a developer's website or install HTML5-based web apps. For example, users can download the WhatsApp APK file directly from the official WhatsApp website, bypassing the Play Store. However, this openness introduces potential privacy and security risks. Sideloaded apps from unofficial or unverified sources may expose users to malware. Google reported that apps installed via sideloading are over 50 times more likely to contain malware compared to those downloaded from Google Play. To address this, Google has implemented multiple layers of protection, including Google Play Protect, which scans apps from all sources for harmful content, and the Advanced Protection Program, designed to safeguard high-risk users²⁰⁸.

²⁰⁷ Google (2024). Google Play developer distribution agreement. <https://play.google/developer-distribution-agreement.html>

²⁰⁸ Input from industry players.

Both Apple and Google collect various types of data, including personal information, usage data, and device data, for purposes like improving services, personalising ads, and enhancing security. OS developers have access to this data, and while Apple restricts app developer's access to sensitive data, Google provides more access depending on app permissions. App developers are limited to the data users provide directly to their apps, with both platforms having strict rules in place to protect privacy.

4. OS developers and app developers

OS developers provide the foundational software that supports apps, offering essential components. The objective is to maintain a stable, secure and efficient platform to ensure apps can function across various devices. However, changes or updates in the OS often place the burden of adaptation on app developers, requiring significant effort to maintain compatibility.

Following are the key software and areas provided by OS developers to app developers:

(a) Technical tools

- **APIs and SDKs:** Provision of APIs and SDKs that app developers use to access device features like storage, camera, and GPS.
- **Developer tools:** Offer platforms such as Xcode (iOS), TestFlight (iOS) and Android Studio (Android), which provide the necessary environment to build, test, and optimise apps.

(b) Standards

- **Security standards:** Enforces security policies to ensure apps meet certain standards for user data protection, including but not limited to encryption, data storage, and app communication protocols.
- **Privacy regulations:** Initiate and enforce privacy policies (e.g., App Tracking Transparency in iOS) that require app developers to adjust

their apps to handle user data with transparency and obtain user consent.

(c) **System performance**

- **Background operations:** Manages system resources like Central Processing Unit (CPU), memory, and battery life. OS updates may change the way background apps are handled (e.g., battery-saving protocols), requiring app developers to adjust their apps to maintain optimal performance.

To access the tools mentioned above and gain the right to distribute apps through official OS channels (such as app stores), major platform providers like Apple and Google offer dedicated developer programs.

For Apple, this is managed through the Apple Developer Program, a membership-based initiative that provides developers with the necessary tools, resources, and access to build, test, and distribute apps across Apple platforms. The annual membership fee is USD 99²⁰⁹.

For Google, access is provided via the Google Play Console, which serves as the platform for developers to manage their apps and games, access distribution tools, and grow their business on Android. Google charges a one-time registration fee of USD 25 for developers to enroll²¹⁰.

5. **App stores and app developers**

App stores, such as the Apple App Store and Google Play, act as gatekeepers for app distribution, offering developers access to audiences through centralised platforms. These stores provide essential tools for app submission, marketing and updates, which can help developers increase visibility and acquire users. App stores also support developers by facilitating global reach in a secure and efficient manner. Several practices are involved between app stores and app developers:

²⁰⁹ Apple (2025). Membership details. <https://developer.apple.com/programs/whats-included/>

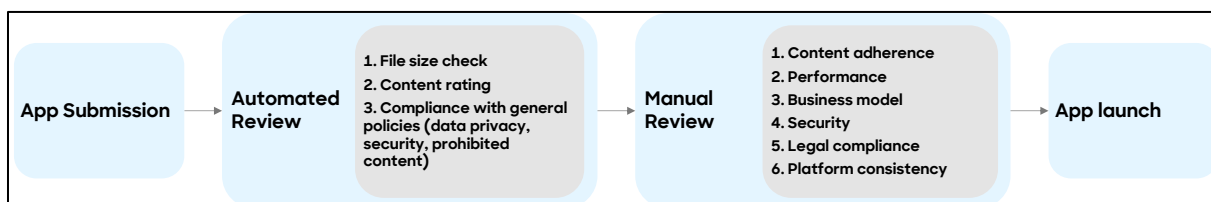
²¹⁰ Google (2025). Google Play Console. <https://play.google.com/console/signup>

(a) App review:

Both Apple and Google require app developers to submit their apps for review through dedicated platforms: the App Store Connect and Google Play Console. Once submitted, developers are notified of any status updates related to their app's review process.

Although the specific review guidelines are not fully disclosed, the review process generally follows a set of publicly known criteria²¹¹:

Figure 33: App Review Process from submission to launch



Source: Interaction with industry players and MyCC's analysis

- I. **Automated Review:** The first step in the process is an automated review, which happens immediately after the app is submitted. During this stage, the app undergoes an automated check for basic requirements such as file size, content rating, and compliance with both Apple and Google's general policies. The automated system ensures that the app does not exceed size limits, is rated appropriately for its intended audience, and adheres to rules related to data privacy, security, and prohibited content. This stage helps quickly identify apps that fail to meet the minimum criteria before moving to the next review phase.
- II. **Manual Review:** If the app passes the automated checks, it moves on to the manual review stage. This process involves human reviewers who make objective decisions based on the platform's respective policies. The manual review focuses on the following key areas:

²¹¹ Based on IDI input and secondary research.

- **Content adherence:** Must comply with the stores' content policies, which prohibit illegal activities, hate speech, intellectual property infringement, and any content that may be offensive, insensitive, or in exceptionally poor taste.
- **Performance:** To function as intended, without crashes or critical bugs. It should be the final version of the app, with all required metadata and fully operational Uniform Resource Locators (URLs).
- **Business model:** Developers must clearly define the business model, especially if the app includes IAPs.
- **Security:** Free from malware, phishing scams, or any other security vulnerabilities.
- **Legal compliance:** Must comply with legal regulations in the countries where it is made available.
- **Platform consistency:** Adhere to the design and UI guidelines of the respective app store, ensuring a consistent and user-friendly experience.

To ensure fairness in the review process, Apple noted that it maintains a unified App Review team that applies a globally consistent set of App Review Guidelines. These guidelines are intended to promote uniformity across app submissions and are updated regularly to reflect changes in laws, industry norms, and developer practices²¹².

On the other hand, Google noted that it uses both automated tools and human reviewers to check for violations of its Developer Distribution Agreement (DDA) and Developer Program Policies (DPP) which are uniformly applied to all apps and are publicly available online²¹³.

According to both app stores, the standard review duration takes approximately one to two days²¹⁴. For Google, while they do not list a fixed

²¹² Input from industry players.

²¹³ Input from industry players.

²¹⁴ Input from industry players.

turnaround timeline, Google notes that most app reviews are completed within seven days. However, for apps requiring extended reviews (e.g., those with access to hardware or high-security features such as financial services-related apps), the review time may be longer²¹⁵. According to input from interviewed app developers, overall review time may also be longer during festive seasons (e.g., Chinese New Year, Christmas). Communication between developers and the platform's review team occurs through the app developer platforms and the platform's help centers, with no specific or dedicated personnel assigned to individual app submissions.

Figure 34: iOS (Apple) app submission for review²¹⁶



Source: Apple

If an app is not approved within the app developer's timeframe, they can appeal to the platform for an expedited review process.

If the app is rejected, the platform will provide feedback and the rationale behind the decision. The reasons for rejection can include, but are not limited to:

²¹⁵ Apple (2025). App Review. <https://developer.apple.com/distribute/app-review/> and Google (2025). Publishing your app. <https://support.google.com/googleplay/android-developer/answer/9859751>

²¹⁶ Apple (2025). Submit for review. https://developer.apple.com/help/app-store-connect/manage-submissions-to-app-review/submit-for-review/images/AppReview-confirm-submission_2x.png

- **Violation of content and/or privacy policies:** e.g., offensive material, harmful content, absence of data privacy policy.
- **Technical issues:** e.g., app crashes, performance issues, inaccurate declarations, unable to meet OS' application programming interface, incomplete app.
- **Inadequate business model clarity:** e.g., vague IAP details, directing users to external payment systems.
- **Poor design and UI issues:** e.g., cluttered or inconsistent design.

According to Apple, common reasons for rejection among Malaysia-based developers include non-compliance with specific sections of the App Review Guidelines, notably on app completeness, data collection and storage, accuracy of metadata or spam-related²¹⁷.

In the rejection communication, the platform will provide details on the steps developers must take to resolve the issues. Only after the issues are addressed and the app is approved by the app store will the app be published. For apps that are seeking an update, the rejection will not result in the removal of the existing approved app. However, only the outdated version will remain available on the app store.

In some cases, an app may be deemed in violation of app store policies after its launch. This can occur if platform policies change (e.g., introduction of App Tracking Transparency - ATT by Apple) or new restrictions are introduced (e.g., the implementation of GDPR). When such changes occur, app stores generally provide a sufficient timeline for developers to comply.

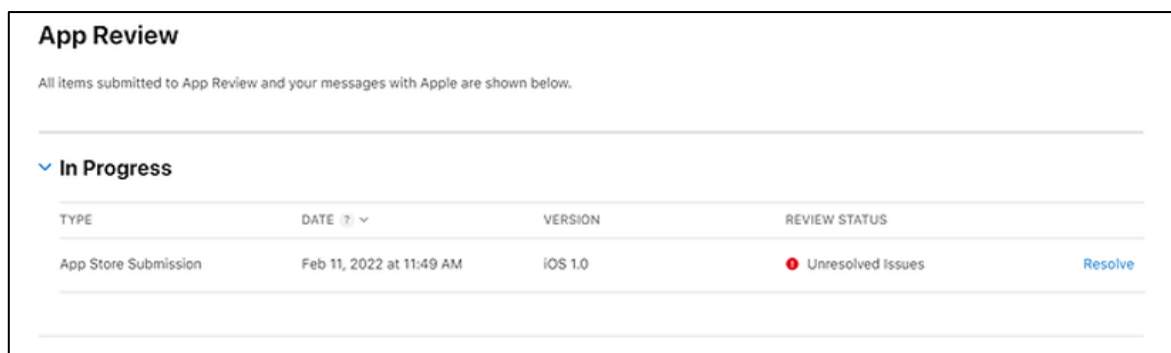
In 2024²¹⁸, Apple received 36,428 app submissions from Malaysia-based developers, of which 12,479 were rejected, representing a rejection rate of

²¹⁷ Input from industry players.

²¹⁸ Input from industry players.

approximately 34%. For Google, while no specific rejection rate was provided, it reported rejecting a total of 2.28 million apps in 2023²¹⁹.

Figure 35: iOS (Apple) app submission review failed (resolution needed)



The screenshot shows the 'App Review' section of the Apple Developer portal. It indicates that all items submitted to App Review and messages with Apple are shown below. Under the 'In Progress' tab, there is a table with one entry: 'App Store Submission' with a date of 'Feb 11, 2022 at 11:49 AM' and version 'iOS 1.0'. The 'REVIEW STATUS' column shows a red dot icon and the text 'Unresolved Issues', with a blue 'Resolve' link next to it.

TYPE	DATE ? v	VERSION	REVIEW STATUS
App Store Submission	Feb 11, 2022 at 11:49 AM	iOS 1.0	Unresolved Issues Resolve

Source: Apple

During the review process, several types of data may be shared²²⁰, including:

- **App metadata:** Includes the app's name, description, screenshots, and any provided promotional material.
- **Backend service-related data:** Includes access to databases or cloud services, which are required to test the app's operability during the review process.
- **App functionality:** Includes details about the app's features and functionality. The developer must ensure the app works as intended, including the demonstration of in-app features, login credentials, and any specific hardware or software resources required for proper testing.

²¹⁹ Google Security Blog (2024). How we fought bad apps and bad actors in 2023. <https://security.googleblog.com/2024/04/how-we-fought-bad-apps-and-bad-actors-in-2023.html>

²²⁰ Apple (2025). App review guidelines. <https://developer.apple.com/app-store/review/guidelines/> ; and Google (2025). Developer policy center. <https://play.google/developer-content-policy/>

- **Compliance documents:** Developers may be required to provide documentation proving compliance with local laws, such as data protection laws (GDPR, California Consumer Privacy Act - CCPA) or age restrictions.

(b) Integration with OS' ecosystem

App stores encourage developers to integrate their apps with the respective operating system's ecosystem to ensure a seamless user experience. For example, Apple mandates that apps offering third-party or social login services²²¹ (e.g., Facebook Login, Google Sign-In, Sign in with LinkedIn) must also provide Sign in with Apple (SIWA) as an option. This policy helps maintain privacy and consistency across iOS apps. On the other hand, Google offers Google Sign-In as an authentication option²²², allowing users to log in quickly using their existing Google accounts. These integrations enhance convenience, improve user retention, and provide a more consistent experience across platforms.

By incorporating these services, apps can align better with the OS's ecosystem, making it easier for users to interact with the app while maintaining a uniform look and feel across both iOS and Android.

(c) App visibility

Both Apple and Google use a combination of factors ("algorithm") to determine how apps are ranked within their respective app stores. According to Apple, the same algorithm applies equally to both Apple and third-party apps.

While both companies do not disclose the exact details of their ranking algorithms, publicly available information²²³ indicates several factors that influence app ranking.

²²¹ Apple (2025). App review guidelines. <https://developer.apple.com/app-store/review/guidelines/>

²²² Google (2025). Integrate Google Sign-In into your Android app. <https://developers.google.com/identity/sign-in/android/legacy-sign-in>

²²³ Yellowhead (2025). What are the real app store ranking factors? <https://www.yellowhead.com/blog/what-are-the-real-app-stores-ranking-factors/>

- **Number of downloads:** Apps with more downloads are considered popular. A high download count shows that many users find the app useful.
- **App ratings and reviews:** High ratings and strong reviews signal user satisfaction and are likely to contribute positively to visibility.
- **User engagement:** High interaction by users (e.g., time spent using it) indicate higher satisfaction, reliance on the app.
- **App stability and performance:** Apps that crash less and run smoothly indicate stronger stability.
- **Update frequency:** Regular updates show that developers are maintaining and improving the app.
- **App store optimisation (ASO):** Metadata elements like app title, subtitle, keywords, and categories are critical for discoverability.
- **Relevance to users' search queries:** Apps that closely match what users are searching for (keywords matching) will rank more favourably.
- **Revenue generation:** Apps that generate more revenue through IAPs.
- **Content localisation:** Apps that are available in multiple languages and tailored to specific regions demonstrate a stronger connection to local users.

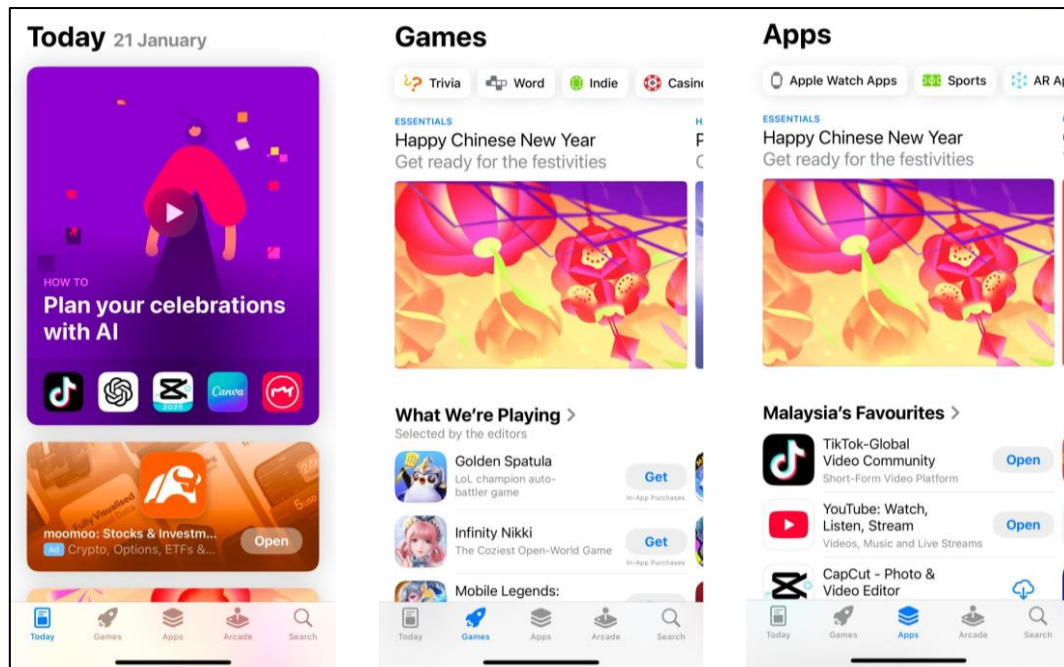
Aside from the above-mentioned, app discoverability may also be influenced by editorial curation, which features apps selected by app store's editorial team based on internal guidelines rather than algorithmic ranking²²⁴.

According to discussions with app developers, app stores are ultimately business-driven and typically rank apps that generate substantial revenue for the store, particularly those with IAP. In line with that, they may also

²²⁴ Input from industry players.

promote selected new apps if they believe there is high potential for monetisation and significant revenue.

Figure 36: App featuring locations in Apple App Store



Source: Apple Mobile App Store

On the Apple App Store, there are two main areas where app can be visible²²⁵:

- **Today Tab:** Landing page of the app, which highlights curated apps, featuring premiers, new releases, highlights, feature apps for the week etc. Curated by Apple's editorial team based on value-added sentiment to users and refreshed on a daily basis²²⁶.
- **Games and Apps Tabs:** Showcases app collections by category or genre. Also features app preview videos that autoplay.

According to Apple, seven criteria are assessed when featuring the apps. Below highlights the criteria:

²²⁵ Apple (2025). Discovery on the app store and Mac app store. <https://developer.apple.com/app-store/discoverability/>

²²⁶ Input from industry players.

Figure 37: App store featuring considerations of Apple²²⁷

Featuring considerations

The App Store is dedicated to showcasing high-quality apps and games across all categories and business models. While there's no checklist of requirements for getting featured on the App Store, our team considers the following factors:

User experience. Cohesive, efficient, and valuable functionality that's helpful and easy to use.

UI design. Great usability, appeal, and overall quality, such as beautiful visuals or intuitive gestures and controls.

Innovation. New technologies that solve a unique problem and provide an enhanced user experience.

Uniqueness. A fresh approach to a familiar category that stands out from the crowd or defines a new genre.

Accessibility. A great experience for a broad range of users with well integrated features.

Localization. High-quality support for multiple languages with culturally relevant and appropriate content.

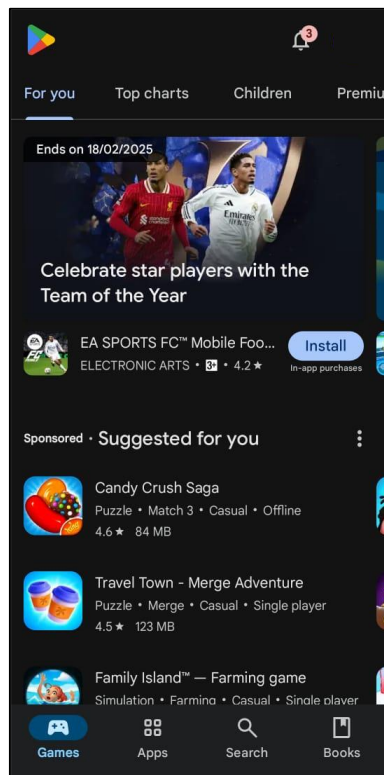
App Store product page. Compelling screenshots, app previews, and descriptions, as well as positive ratings and reviews.

Source: Apple App Developers website

In the Google Play Store, apps are categorised into two main tabs - Games and Apps. Within these tabs, users can find additional categories that help further customise their search and discovery experience:

²²⁷ Apple (2025). Getting featured on the app store. <https://developer.apple.com/app-store/getting-featured/>

Figure 38: App featuring locations in Google Play Store



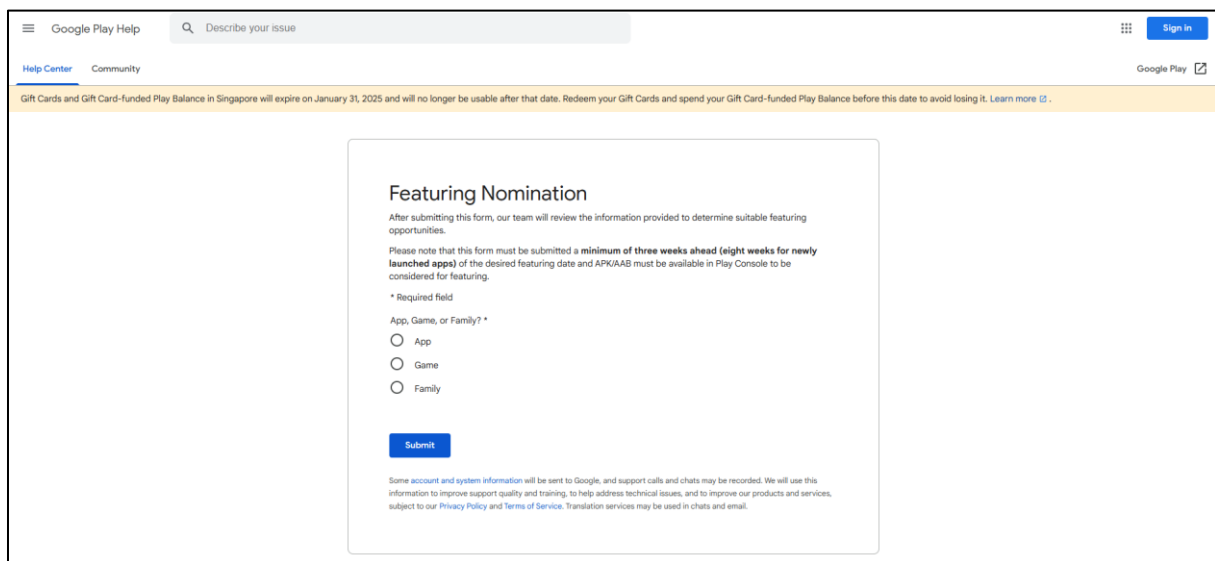
Source: Google Mobile Play Store

- **For You:** Personalised based on the user's preferences, previous downloads, and interactions with apps.
- **Top charts:** Showcases the most popular apps and games on the Play Store.
- **Children:** Designed to help parents and guardians find age-appropriate apps for kids.
- **Premium:** Features apps and games that require a paid download or IAPs.
- **Categories:** Allows users to explore apps and games based on their specific interests or needs.

According to Google, four criteria are assessed when featuring the apps. Below highlights the criteria²²⁸:

- **Core value:** Able to deliver value by being “useful, fun or both”.
- **User experience:** Apps are intuitive and easy to use, offering an engaging experience.
- **Technical quality:** Works well on all the devices it supports, able to provide smooth transition to different devices.
- **Privacy and security:** Protects user privacy and provides a safe and secure environment.

Figure 39: App nomination form by Google

The image is a screenshot of the Google Play Help website, specifically the 'Featuring Nomination' form. The page has a clean, white background with a light blue header. The header includes the 'Google Play Help' logo, a search bar with the placeholder text 'Describe your issue', and a 'Sign in' button. Below the header, there are links for 'Help Center' and 'Community'. A yellow banner at the top of the main content area contains a message about Gift Cards and Play Balance in Singapore. The main content area features a large, light gray box with the title 'Featuring Nomination'. Inside this box, there is a paragraph explaining that after submitting the form, the team will review the information to determine suitable featuring opportunities. It also includes a note that the form must be submitted a minimum of three weeks ahead (eight weeks for newly launched apps) of the desired featuring date and that the APK/AAB must be available in Play Console. Below this text, there is a section for a required field: 'App, Game, or Family?'. This section has three radio button options: 'App', 'Game', and 'Family'. At the bottom of the form box is a blue 'Submit' button. Below the form box, there is a small disclaimer: 'Some account and system information will be sent to Google, and support calls and chats may be recorded. We will use this information to improve support quality and training, to help address technical issues, and to improve our products and services, subject to our Privacy Policy and Terms of Service. Translation services may be used in chats and email.'

Source: Google Play Help

A unique feature of the Google Play Store is that it allows app developers to nominate their apps for specific promotional placements through a nomination form²²⁹. This process enables developers to submit their apps for consideration in various featured sections of the Play Store, such as the

²²⁸ Google (2025). Getting featured on Google Play. <https://play.google.com/console/about/guides/featuring/>

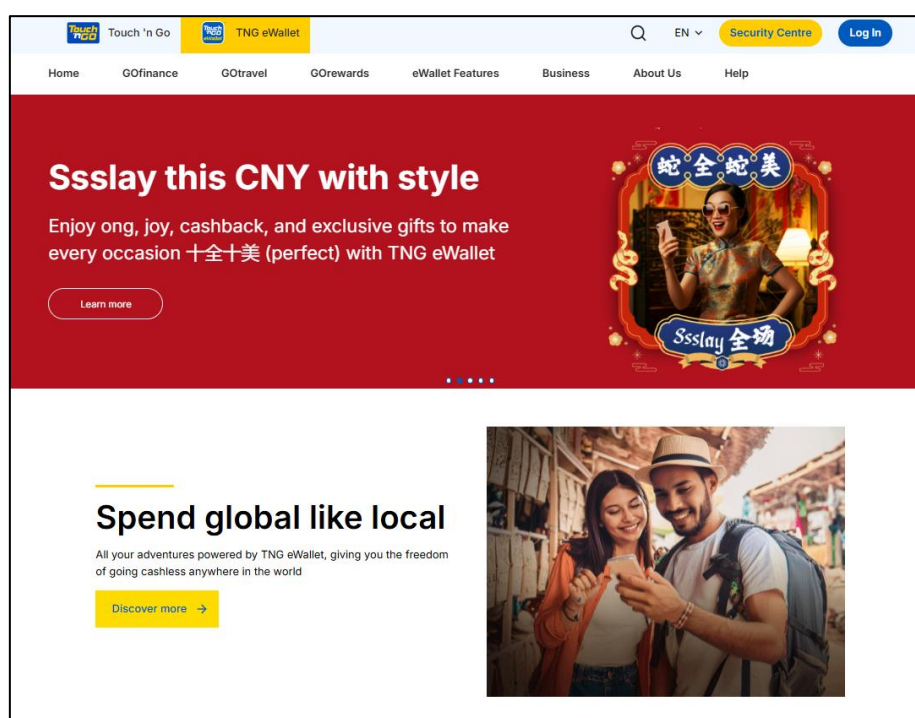
²²⁹ Google (2025). Featuring nomination. https://support.google.com/googleplay/contact/featuring_review?hl=en

"Top Charts," "For You," or "Categories" sections. There is however no guarantee that the store will feature/promote the app on the app store.

Both platforms also allow paid advertising to help developers increase visibility, for instance:

- **Apple Search Ads**²³⁰: Developers can use this program to promote their app. The ad may appear on the app store page, search results, or product pages.
- **Google Ads**²³¹: Developers can use Google Ads to run ads across Google's network, including within the Google Play Store.

Figure 40: Promotions within Touch 'n Go (TNG) eWallet website²³²



Source: TNG website

²³⁰ Apple (2025). Search ads. <https://searchads.apple.com/>

²³¹ Google (2025). Find people who will love your app. https://ads.google.com/intl/en_sg/home/campaigns/app-ads/

²³² Touch 'n Go (2025). Principal: Ssslay into prosperity campaign. <https://www.touchngo.com.my/promotion/principal-ssslay-into-prosperity-campaign/>

Apart from paid advertising, many app developers choose self-promotion through various social media platforms; for instance, Touch 'n Go promotes its services through its own website. Developers may also collaborate with content creators or celebrities to increase the app's visibility. For example, Shopee partnered with celebrities like Jackie Chan ²³³ and Cristiano Ronaldo²³⁴ to boost visibility during major shopping events.

(d) App pricing

App stores provide structured app pricing tiers to help developers set prices based on regional market conditions while ensuring consistency and accessibility for users. The pricing tiers across major app stores in Malaysia are as follows:

- Apple app store: MYR 4.90 – MYR 4,799.90²³⁵.
- Google: Malaysia: MYR 0.30 – MYR 4,800.00²³⁶

(e) App payment

App stores typically categorised payment into two categories, non-digital goods and digital goods. For non-digital goods, payments can be processed through the app store's payment system or via external payment gateways like iPay88 or Razer Merchant Services. Additionally, developers can direct users to external websites for payment processing, though this is subject to app store guidelines.

²³³ Campaign Asia (2021). Jackie Chan fights through a third Shopee ad. <https://aws1.campaignasia.com/video/jackie-chan-fights-through-a-third-shopee-ad/474469>

²³⁴ The Straits Times (2019). Football: Cristiano Ronaldo unveiled as Shopee's latest brand ambassador. <https://www.straitstimes.com/sport/football/football-cristiano-ronaldo-unveiled-as-shopees-latest-brand-ambassador>

²³⁵ Apple (2022). Apple announces biggest upgrade to app store pricing, adding 700 new price points. <https://www.apple.com/my/newsroom/2022/12/apple-announces-biggest-upgrade-to-app-store-pricing-adding-700-new-price-points/>

²³⁶ Google (2025). Supported locations for distribution to Google Play users. <https://play.google.com/supported-locations/?hl=en&sjid=10548044899152396005-AP>

Table 18: Selected types of Integrated Payment Systems (IPS) for non-digital goods

Types	Description	Examples
Device-hardware integrated payment systems	Embedded capabilities in smartphones that enable contactless or proximity-based payments through physical interfaces. Commonly done through technology such as NFC technology and Bluetooth Low Energy (BLE).	• Google Pay • Apple Pay • Samsung Pay
EMIs (non-bank) applications	App-based payment instruments that store prepaid value or link to cards/bank accounts, frequently enabling payments via quick-response (QR) code scanning.	• Touch 'n Go eWallet • GrabPay • Boost • Google Wallet
Payment system operator (PSO) networks	Transfer-based payment instrument that facilitates real-time money transfers between bank accounts.	• Financial Process Exchange (FPX) by PayNet
Merchant acquirers & gateways	Financial institutions or payment service providers that facilitate merchant acceptance of diverse payment instruments (cards, bank transfers, e-wallets) through integrated acquiring and processing platforms.	• iPay88 • Razer Merchant Services (RMS)

Source: BNM and MyCC analysis

For digital goods or “IAPs”, app stores operate on a revenue-sharing model and impose a commission on sales. These transactions typically involve virtual items and can be broadly classified into four types²³⁷:

- **Consumable content:** Items such as lives or gems in a game.
- **Non-consumable content:** Premium features such as access to exclusive articles, ad-free browsing, or advanced functionalities.
- **Auto-renewable subscriptions:** Ongoing access to virtual content, services, and premium features.
- **Non-renewing subscriptions:** Time-limited access to services or content, such as an in-game battle pass.

As of September 2024, the commission rate for app payments²³⁸ in Malaysia ranges between 15% and 30%, which aligns with global standard rates (see below). However, commission rates vary across different countries and regions, including the EU, India, Netherlands, and South Korea.

- **Apple App Store (standard commission fee):** 30%
- **Apple App Store (Global App Store Small Business program, initiated in 2020²³⁹):** 15%, but only for developers earning up to USD 1 million across all their apps. Developers exceeding this threshold are subject to the standard 30% commission for the remainder of the year. Developers whose earnings fall below USD 1 million in a future year can become eligible again for the 15% rate.

²³⁷ Apple (2025). In-app purchases. <https://developer.apple.com/design/human-interface-guidelines/in-app-purchase/> ; and Google (2025). Make in-app purchases in Android apps. <https://support.google.com/googleplay/answer/1061913?hl=en>

²³⁸ Apple (2025). Distributing apps in the European Union. <https://developer.apple.com/help/app-store-connect/distributing-apps-in-the-european-union/commissions-fees-and-taxes/> ; and Google (2025). Service fees. <https://support.google.com/googleplay/android-developer/answer/112622?>

²³⁹ Apple (2020). Apple announces app store small business program. <https://www.apple.com/newsroom/2020/11/apple-announces-app-store-small-business-program/>

According to Apple, over 90% of Malaysia-based developers were eligible for the 15% Small Business Program rate in 2024²⁴⁰.

- **Google Play Store (standard commission fee):** 30%
- **Google Play Store (15% service fee tier, initiated in 2021²⁴¹):** 15% for the first USD 1 million in earnings. Earnings above USD 1 million are charged at the standard 30% rate. To qualify, developers must maintain a valid developer account and comply with the DDA and related policies. Only applies to developers who opt to monetise on the platform.
- **Google Play Store (subscriptions):** 15% for automatically renewing subscriptions, regardless of the developer's annual earnings.
- **Google Play Store (other):** As low as 10% for eligible developers under specific programs, such as the Play Media Experience Program²⁴². Key eligibility criteria include offering video, audio, or books for purchase, having over 500,000 monthly active installs, a high user rating, and integration with specific Google platforms and APIs based on the type of media content.

According to key app stores, collected fees are used to cover platform services, including transaction processing, infrastructure maintenance²⁴³, and providing access to a large user base. Moreover, according to Google²⁴⁴, globally, developers who sell digital products through IAP represent about 3% of all developers. Of the 3%, 99% qualify for a commission rate of 15% or less.

Despite this, app developers are observed to apply different approaches in bypassing in-app payment rules, such as:

²⁴⁰ Input from industry players.

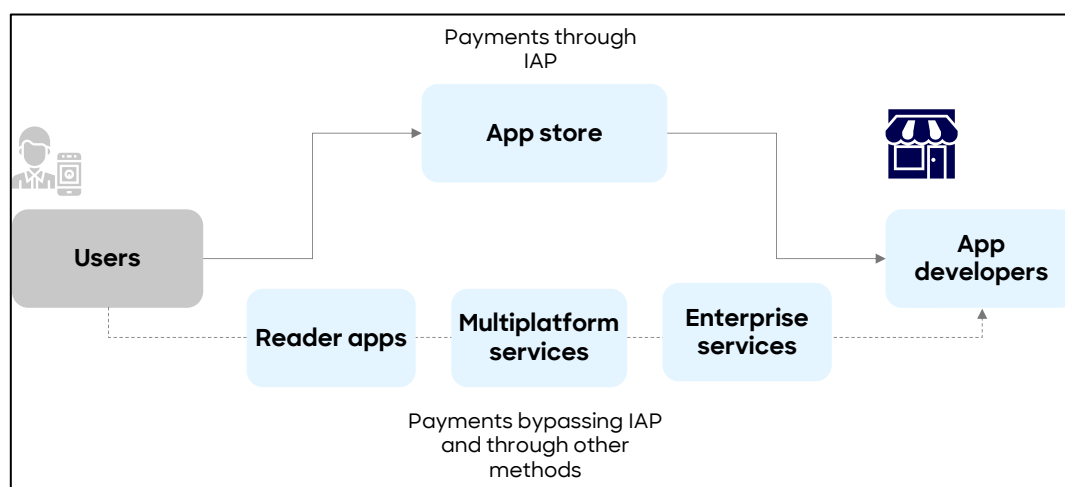
²⁴¹ Google (2021). Changes to Google Play's service fee in 2021. <https://support.google.com/googleplay/android-developer/answer/10632485>

²⁴² Google (2025). Play media experience program. <https://play.google.com/console/about/programs/mediaprogram/>

²⁴³ Input from industry players.

²⁴⁴ Input from industry players.

Figure 41: Illustration of app developers bypassing in-app payments



Source: MyCC analysis

- **Reader apps:** Apps that serve as a platform for content like newspapers, music, and books. Users purchase content on the company's website and access it via the app. Instances such as users purchase e-books on Amazon's website, then read them through the Kindle app without in-app purchasing. Subscriber for newspapers such as The Star would make payment for their subscription services on the website and then access the digital newspaper via the app without paying through IAPs, thus bypassing platform fees.
- **Multiplatform services:** Apps allowing users to buy content outside the app while still granting access within the app. This bypasses App Store fees if payments are made elsewhere. Subscribers pay for Astro's satellite or broadband television (TV) packages via Astro's website or retail channels, then use the Astro GO app to stream the same content on mobile devices without any in-app payment, effectively bypassing app store transaction fees.
- **Enterprise services:** Developers sell directly to organisations, rather than individual consumers, allowing external content purchases. Example of a Malaysian Human Resource (HR) and payroll platform, Kakitangan.com that sells subscription services directly to businesses. Companies pay outside of app stores, and employees

access payroll slips, leave balances, and HR tools via the app without any IAPs.

In recent years, several app stores have adopted strategies to expand their market share and strengthen their presence. For example, in March 2025, Samsung announced that it will reduce the commission rate on its Galaxy Store from 30% to 20% starting May 2025, with subscription services seeing a further reduction to 15%²⁴⁵. Other app stores offering competitive rates include:

- **Epic Games Store:** 12% commission²⁴⁶
- **Huawei AppGallery:** 15% commission²⁴⁷

There has also been growing regulatory pressure on both Android and iOS platforms to support alternative billing systems. As a result, alternative payment methods for IAPs have been introduced in select countries following legal rulings. However, despite the reduced commission rates offered by platform owners, developers may still end up paying similar overall fees, as the savings are often offset by charges from third-party payment processors. Google has confirmed this outcome, noting that alternative billing systems can result in comparable costs for developers due to these additional processing fees²⁴⁸.

The table below outlines the status of alternative billing on Android and iOS as of March 2025:

²⁴⁵ Samsung Developer (2025). New revenue share model for Galaxy Store. <https://developer.samsung.com/sdp/news/en/2025/03/13/new-revenue-share-model-for-galaxy-store>

²⁴⁶ Epic Games (2025). Frequent asked questions. <https://store.epicgames.com/en-US/distribution>

²⁴⁷ Huawei (2024). Huawei AppGallery connect distribution service agreement for paid apps. <https://developer.huawei.com/consumer/en/doc/AGInterService>

²⁴⁸ The Verge (2023). Google won't say if companies beyond Spotify got secret special app store deals. <https://www.theverge.com/2023/11/9/23954376/google-spotify-user-choice-billing-deal-bumble-epic>

Table 19: Alternative billing systems by iOS and Android

OS	Country/region	Details
iOS - Alternative payment options	• EU • South Korea	In EU, app developers are given a reduced commission of either 10% that is applicable to developers and for subscriptions after their first year, or 17%²⁴⁹. For South Korea, developers are to pay a commission of 26% for any IAP using alternative payment methods²⁵⁰.
Android - User choice billing (UCB)	• European Economic Area • Australia • Brazil • Indonesia • Japan • South Africa • United Kingdom • United States	For purchases made through an alternative billing system, the standard service fee that the developer pays will be reduced by 4% (of the existing rate)²⁵¹. However, with UCB, app developers are responsible for managing customer complaints and fraud related to the

²⁴⁹ Apple (2025). Alternative payment options on the App Store in the European Union. <https://developer.apple.com/support/alternative-payment-options-on-the-app-store-in-the-eu?utm>

²⁵⁰ CNBC (2022). Apple opens up third-party app payments in South Korea, will still take 26% cut. <https://www.cnbc.com/2022/06/30/apple-opens-up-third-party-app-payments-in-korea-will-take-26percent-cut-.html>

²⁵¹ Google (2024). Enrolling in the user choice billing pilot. <https://support.google.com/googleplay/android-developer/answer/12570971?hl=en>

OS	Country/region	Details
		alternative payment method. They must also ensure their systems are regularly updated to comply with technical and design requirements. Additionally, developers are required to submit transaction reports to Google for accurate commission calculation and maintain two separate payment systems: UCB and Google Play Billing²⁵².

Source: Apple, Google

6. App stores and users

Relationship between app stores and end users revolve around two areas:

(a) App discovery and payments

App stores are the primary platform for users to discover and manage applications. They provide various methods for app discovery, including browsing, searching, and personalised recommendations based on user behaviour. App stores also feature curated lists and categories to help users find relevant apps based on their interests.

App stores provide a streamlined process for downloading apps, making it easy for users to acquire apps. The process typically involves a few taps or clicks, and users can authenticate their downloads using methods like fingerprint scanning or facial recognition.

²⁵² Input from industry players.

IAPs are another key function of app stores provided to users. Many apps offer additional content, features, or upgrades through IAPs. These purchases, which are only applicable to “digital goods” are processed through the app stores' payment systems.

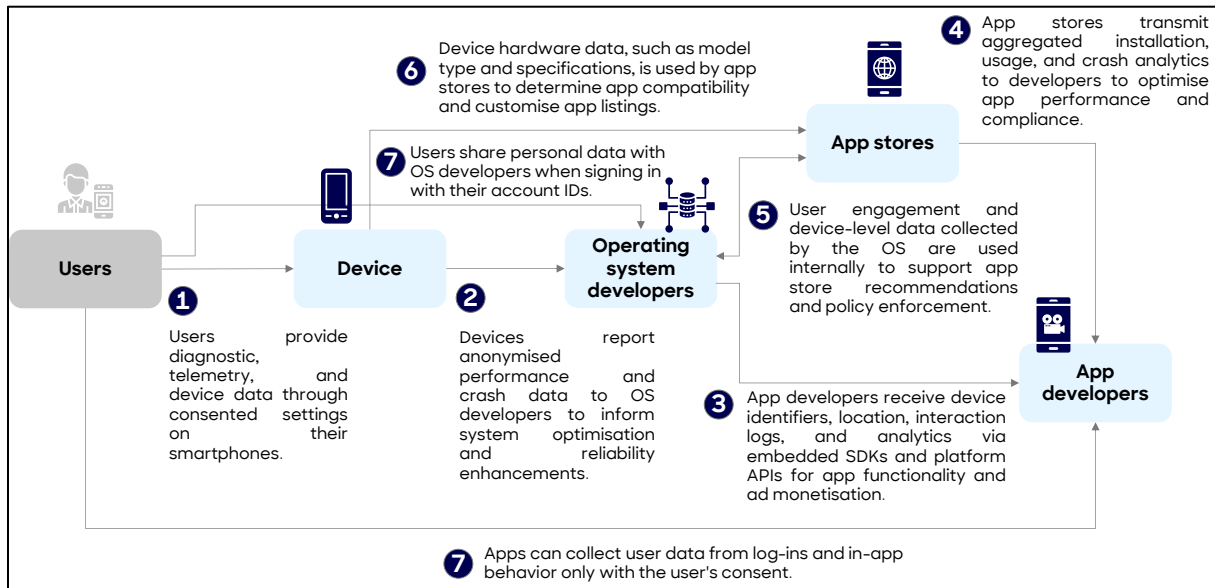
(b) App usage and review

App stores also manage app updates and notifications (though app developers). They provide users with the ability to update their apps automatically, ensuring the latest bug fixes, security patches, and features are applied. Updates are typically installed automatically, which minimises user effort and keeps apps functioning properly.

Separately, users can rate and review apps they have downloaded, providing feedback to other users and developers. Ratings and reviews help users make decisions about which apps to download and allow developers to receive input on areas for improvement.

5.1.4 Data privacy and protection

Figure 42: Data practices across the OS ecosystem



Source: MyCC analysis

User data in the mobile OS ecosystem flows through several interconnected players, from hardware-level interactions to app-specific services. Key players such as device manufacturers, OS developers, app stores, and app developers each collect and utilise different types of personal and behavioural data. These flows enable core functionalities including personalised user experiences, advertising, service optimisation, and crash diagnostics.

Key user data collected by each player along the supply chain include:

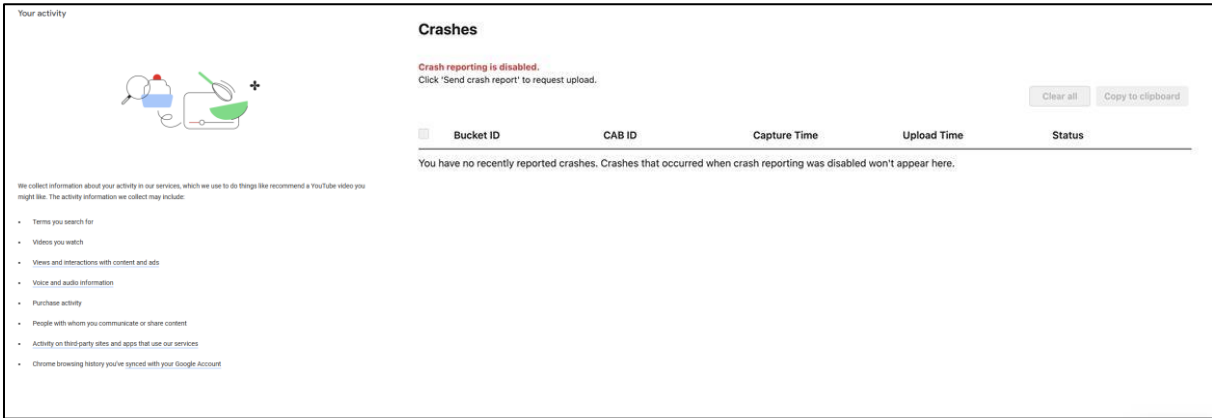
Table 20: Types of key data collected by key players along the supply chain

	 Device manufacturers	 Operating system developers	 App. stores Payment system	 App. developers
Personal data collected	• Device identifiers • Hardware metrics • Telemetry data • Location data • User accounts • Biometric data	• Location data • Advertising IDs • Diagnostic data • System settings	• User account info	• Personal identifiable information • Device information
Behavioural data collected	• App usage for pre-installed apps	• App activity	• Purchase history' • Search and browsing history • Download history	• Location data • App usage data • Contacts • Photos and files • Hard and software access

Source: MyCC analysis

Specific for key OS players, collection of data is largely focused on service interaction and usage, advertising and analytics and system monitoring and performance optimisation-related:

Figure 43: Google data collection (from left to right, behavioural data collection and Google’s crashes report)



Source: Google Privacy and Terms

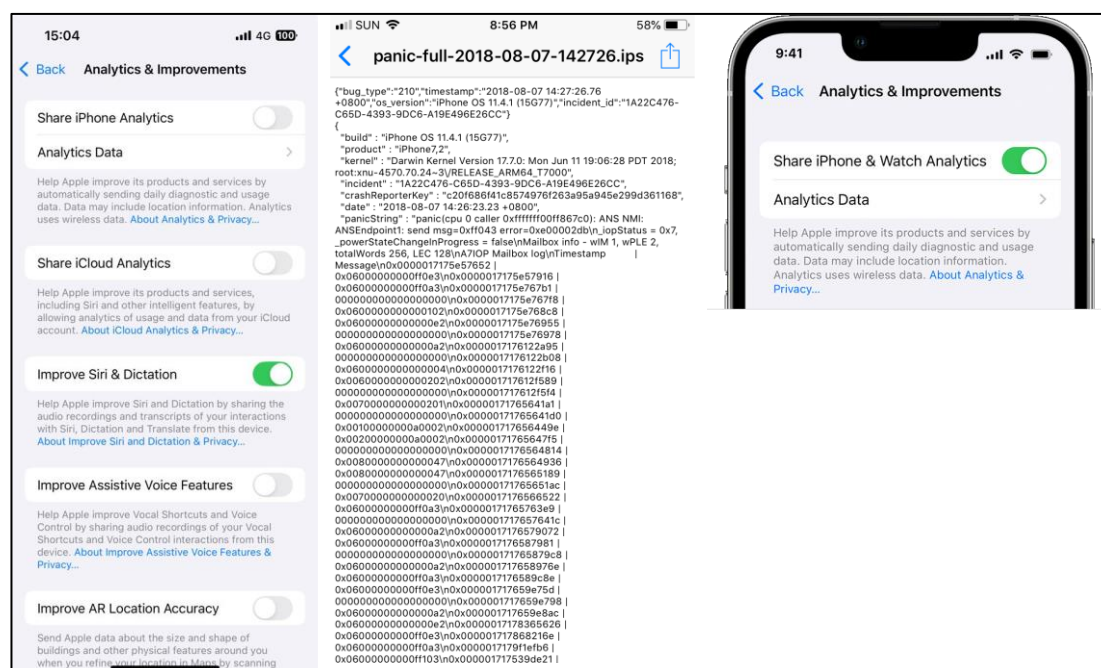
Google collects various types of users’ data at different stages of its services to enhance functionality, provide personalised experiences and improve service quality. The types of data collected can be categorised as

personal data (e.g., phone numbers or email addresses) and behavioural data (e.g., browsing patterns or app usage)²⁵³. Below are details of the type of data collected and used:

- I. **Service interaction and usage:** As users use Google services like Search and YouTube, Google collects personal data like device info and IP address, which helps it to optimise services for the users' location. It also collects behavioural data, such as search queries and app interactions, to provide relevant results or suggestions based on activities.
- II. **Advertising and analytics:** Uses personal data like age, gender, and language preferences to show targeted ads. This could include promotions for local businesses or tourism. Behavioural data, such as clicks on ads, helps refine ad targeting.
- III. **System monitoring and performance optimisation:** Collects technical data to monitor and fix issues. This includes device identifiers for troubleshooting and crash reports to improve app functionality, such as resolving frequent crashes in specific areas.

²⁵³ Google (2025). Privacy policy. <https://policies.google.com/privacy?hl=en-US>

Figure 44: Apple data collection (from left to right, Siri data collection, Apple's crashes report, user consent for sharing crash analytics to Apple)



Source: Apple Privacy and Terms

On the other hand, Apple also collects different types of user data at various stages of its services to improve functionality, personalise experiences, and enhance overall service quality. Similar to Google, the data collected can be categorised into personal data (e.g., Apple ID, email address, and device information) and behavioural data (e.g., app usage, browsing activity in Safari). Below are the key areas where Apple collects and uses data:

- I. **Service interaction and usage:** When users interact with Apple services such as Siri, Safari, or Apple Maps, Apple collects personal data such as device information and location to provide relevant services (e.g., personalised search suggestions, route optimisation, etc.). Behavioural data, such as app usage patterns and interaction history, is also collected to improve recommendations and user experience across Apple services.
- II. **Advertising and analytics:** Apple uses personal data such as age, gender (if provided), and device preferences to deliver relevant ads

within its ecosystem, such as in the App Store and Apple News. Behavioural data, such as app download history and interaction with ads, is collected to refine ad targeting and measure ad performance. Apple’s advertising platform follows a privacy-focused approach, offering users control over personalised ads through settings like “Limit Ad Tracking”.

- III. **System monitoring and performance optimisation:** Apple collects technical data to maintain and enhance device and service performance. This includes device identifiers, diagnostic reports, and crash logs, which help Apple identify and resolve system issues. Data collected in this area allows Apple to improve software stability and ensure a smooth user experience across devices.

5.1.4.1 Data privacy and protection assessment

Apple and Google take fundamentally different approaches to data management. These differences do not only reflect their business models but are also strategically leveraged to strengthen their positions.

Table 21: Positioning of Google and Apple’s data management approach

Company	Approach
Google	Relies on extensive user data collection to both enhance user experience and support its advertising business
Apple	Emphasises user privacy and security

Source: MyCC analysis

Google relies heavily on extensive data collection as the foundation of its business. In 2023, the majority of its revenue (~77%) came from advertising²⁵⁴, which depends on access to rich user data. Google achieves this through offering a comprehensive suite of apps that deeply integrate into users’ daily lives, spanning from search (Google Search), communication (Gmail), entertainment (YouTube), and location services

²⁵⁴ Google (2024). Annual report pursuant to Section 13 or 15 (d). <https://abc.xyz/investor/sec-filings/annual-filings/2024/>

(Google Maps). These services enable Google to collect data at scale, which can be used to power its advertising ecosystem.

In contrast, Apple positions itself as a privacy-focused company, using the slogan “What happens on your iPhone, stays on your iPhone” in one of its advertisements²⁵⁵. This aligns with its closed ecosystem, which has become a key part of its branding. Key data protection efforts undertaken by Apple include:

- **ATT:** Requires apps to obtain user consent before tracking across other apps and websites. This framework gives users the ability to opt out of being tracked, and developers must respect this decision. In this case, especially for apps that rely heavily on user data for operations (e.g., navigation-related apps, weather apps, fitness trackers), developers must manage these limitations by offering alternatives or notifying users of potential issues if permissions are denied. Apple also has strict rules regarding third-party advertising, developers' marketing, analytics, product personalisation, and app functionality, ensuring user privacy is maintained across these processes²⁵⁶.
- **NFC access restriction:** Limits use of the iPhone's NFC chip to Apple Pay only.
- **App Store Privacy Labels:** Informs users about how apps handle their data.

Despite the contrasting strategies, both companies use their respective models to entrench their market power. For Google, this is done through its widespread data collection across its services, while for Apple, through its ecosystem control and restrictive platform policies.

Below details Google and Apple's data privacy and protection policies, and its alignment against PDPA's core principles.

²⁵⁵ Business Insider (2019). Apple's CES ad in Las Vegas is misleading. <https://www.businessinsider.com/apples-ces-ad-las-vegas-misleading-2019-1#>

²⁵⁶ Apple (2025). App privacy details on the app store. <https://developer.apple.com/app-store/app-privacy-details>

Table 22: Assessment of Google and Apple’s alignment to PDPA principles

PDPA principle	Player	Data privacy and protection policies ²⁵⁷
General	Google	- Provides a clear mechanism for obtaining user consent, particularly on consent related to data collection in services such as Google Search, Gmail, and Google Maps. - Consent is sought consent explicitly through pop-ups and privacy checkups.
	Apple	- Privacy policies highlight that consent is requested prior to the collection of any personal data from users. - Users also have options to manage consent preferences.
Choice	Google	- Privacy policy lists the types of data collected, the purposes of the collection and the user’s preferences for sharing. - Its "Privacy Checkup" tool ²⁵⁸ provide users information on the type of data saved in Google Account and choice to opt-out of, and modify, data collection.
	Apple	- Privacy policy provides users with information on how data is being collected. - Furthermore, users are allowed to manage their data collection through the privacy settings on Apple devices.
Disclosure	Google	- Policy details when personal data can be shared with third parties. This includes sharing for legal reasons, advertising, and website analytics. - Also states that personal data will not be shared without permission, with the

²⁵⁷ Google (2025). Privacy policy. <https://policies.google.com/privacy>; and Apple (2025). Apple customer privacy policy. <https://www.apple.com/legal/privacy/>

²⁵⁸ Google (2025). Privacy checkup. <https://myaccount.google.com/intro/privacycheckup>

PDPA principle	Player	Data privacy and protection policies ²⁵⁷
		exceptions being when the law requires it or for certain service-related needs.
	Apple	• States that it will not sell personal data to third parties. • Also explains that data might be shared in certain cases, such as to meet legal requirements.
Security	Google	• Implements device encryption (Advanced Encryption Standard - AES-256 encryption) and employs Transport Layer Security (TLS) protocols to secure data while in transit and at rest. • Uses sandboxing, user biometric authentication, and security patches for Android devices.
	Apple	• Uses Secure Enclave for biometric data and transaction tokens. • Apple Pay does not store or share actual card numbers, with each transaction using a dynamic security code.
Retention ²⁵⁹	Google	• Users are allowed to control how long data retention is kept via auto-delete settings. • Users are able to delete web, location and search activity data on the privacy dashboard.
	Apple	• Apple Pay transaction details not stored on servers. • Provides users with full control to delete personal data via the Data & Privacy portal/page.

²⁵⁹ While enabling users to delete or control the retention period of their personal data can support compliance with the Retention Principle, the ultimate responsibility lies with the data controller. It is the controller's duty to take reasonable steps to ensure that all personal data is securely destroyed or permanently deleted once it is no longer required for the original purpose for which it was processed.

PDPA principle	Player	Data privacy and protection policies ²⁵⁷
Data integrity	Google	• Allows users to update personal data via Google Account and Google Pay settings. • Uses real-time syncing to keep data updated across various services.
	Apple	• Personal and payment information can be changed through the iOS settings and Apple ID management. • Uses on-device processing to reduce data distortion and limit dependence on server-side profiling.
Access	Google	• Users are able to view, change, or remove their personal data through their Google Account settings. • Company also offers tools like "Google Takeout," which helps users download a copy of their data easily²⁶⁰.
	Apple	• Offers tools for users to view and update their data, change personal details, and delete their accounts through iCloud and device settings. • Users can also ask to get a copy of their data or have it removed completely.

Source: Google, Apple

While both Apple and Google demonstrate strong alignment with Malaysia's PDPA on paper, there are instances where actual practices have diverged from its stated policies. In terms of the General Principle, in 2022, Google was fined USD 85 million by the U.S. State of Arizona for allegedly collecting users' location data even after they have disabled location tracking. The State also highlighted that the information was used to target users with ads that generated ~USD 130 billion in revenue in

²⁶⁰ Google (2025). Google Takeout. <https://takeout.google.com/>

2019²⁶¹. Separately for Apple, it was fined EUR 8 million in 2023 by the French National Commission on Informatics and Liberty (CNIL) for failing to obtain users' consent for personalised ads on their devices²⁶².

Separately, on the notice and choice principle, Apple had faced criticisms for its inconsistent implementation of its ATT policy. While it requires all third-party developers to display such prompt, Apple itself is not subjected to the same requirement²⁶³.

On the disclosure principle, in 2018, an Indian digital payment company, Paytm, alleged that Google Pay had disclosed/shared consumer data with its affiliated companies, including third party-users, for purposes including targeted advertising. It noted that while Google Pay's policy permitted access to users' navigation, logs, and correspondence data, the use of such data for advertising was not disclosed and that additional user consent was not sought²⁶⁴.

On the security principle, in 2014, Apple experienced a security breach where private photos of celebrities were being leaked, exposing vulnerabilities in its system²⁶⁵.

Despite the above-mentioned cases highlighting market failures in the mobile operating and payment systems sub-sector, they do not imply such occurring in Malaysia. Instead, they illustrate potential patterns and recurring challenges that may be faced in Malaysia as it continues to develop its digital economy.

²⁶¹ Arizona Attorney General (2022). Attorney general Mark Brnovich achieves historic 85 million settlement with Google. <https://www.azag.gov/press-release/attorney-general-mark-brnovich-achieves-historic-85-million-settlement-google>

²⁶² CNIL (2022). Rapport annuel, page 81. https://www.cnil.fr/sites/cnil/files/2023-05/cnil_-_43e_rapport_annuel_-_2022.pdf

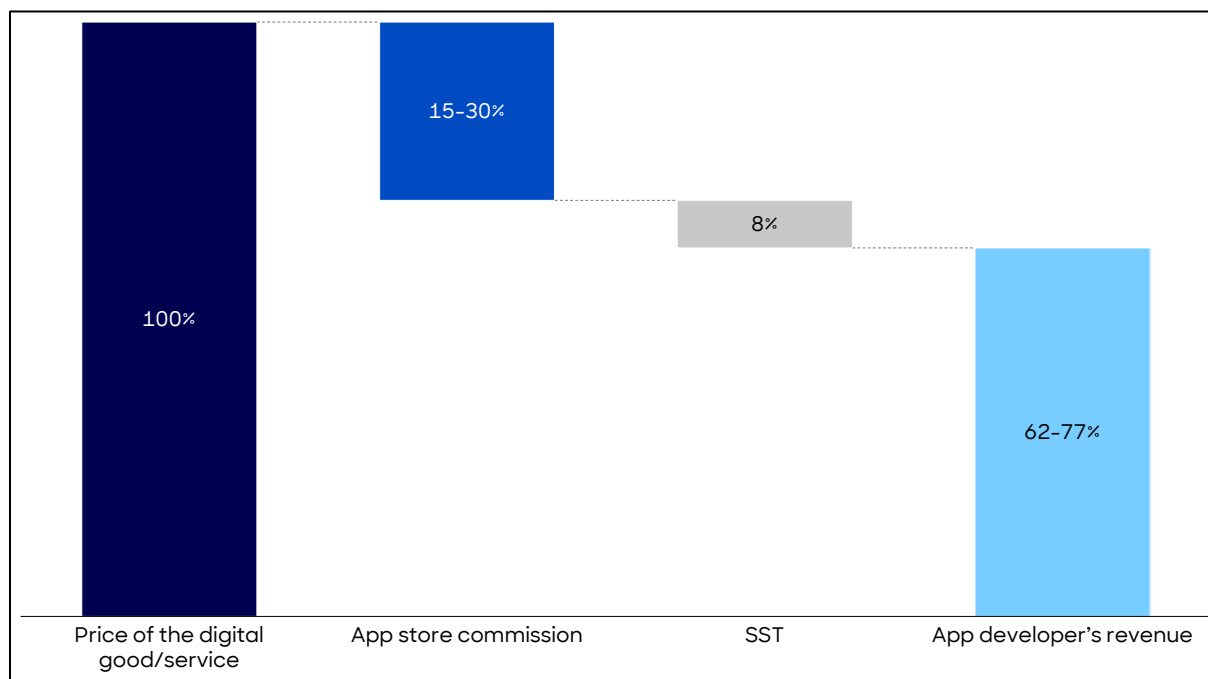
²⁶³ CMA (2021). Appendix J: Apple's and Google's privacy changes. https://assets.publishing.service.gov.uk/media/62a229c2d3bf7f036750b0d7/Appendix_J_-_Apple_s_and_Google_s_privacy_changes__eg_ATT__ITP_etc_-_FINAL_.pdf

²⁶⁴ Business Today (2018). Paytm picks a fight with Google, alleges internet giant shares data with third parties. <https://www.businesstoday.in/latest/corporate/story/paytm-accuses-google-pay-of-sharing-customer-data-with-affiliates-third-party-users-110289-2018-09-21>

²⁶⁵ Forbes (2014). Apple admits celebrity photos were stolen in targeted hack. <https://www.forbes.com/sites/briansolomon/2014/09/02/apple-admits-celebrity-photos-were-stolen-in-targeted-hack/>

5.1.5 Supply chain take rates and approximate earnings by supply chain players

Figure 45: Mobile operating and payment system sub-sector take rates (for local Malaysian app developers), June 2025 [%]



Source: Interaction with industry players and MyCC analysis

Take rates within the mobile operating and payment system sub-sector in Malaysia are relatively straightforward, involving only two main parties - the app store and the government (RMCD).

At the outset (2008), both Google Play Store and the Apple App Store imposed a standard commission rate of 30%. Over time, this rate has been adjusted in response to pressure from app developers, resulting in varying terms based on specific regions and circumstances. Examples include:

- **2020:** Globally, Apple launched the App Store Small Business Program, reducing its commission rate to 15% for developers earning up to USD 1 million annually. Google followed suit in 2021.
- **2021:** In South Korea, following the enactment of the Telecommunications Business Act, the government mandated that

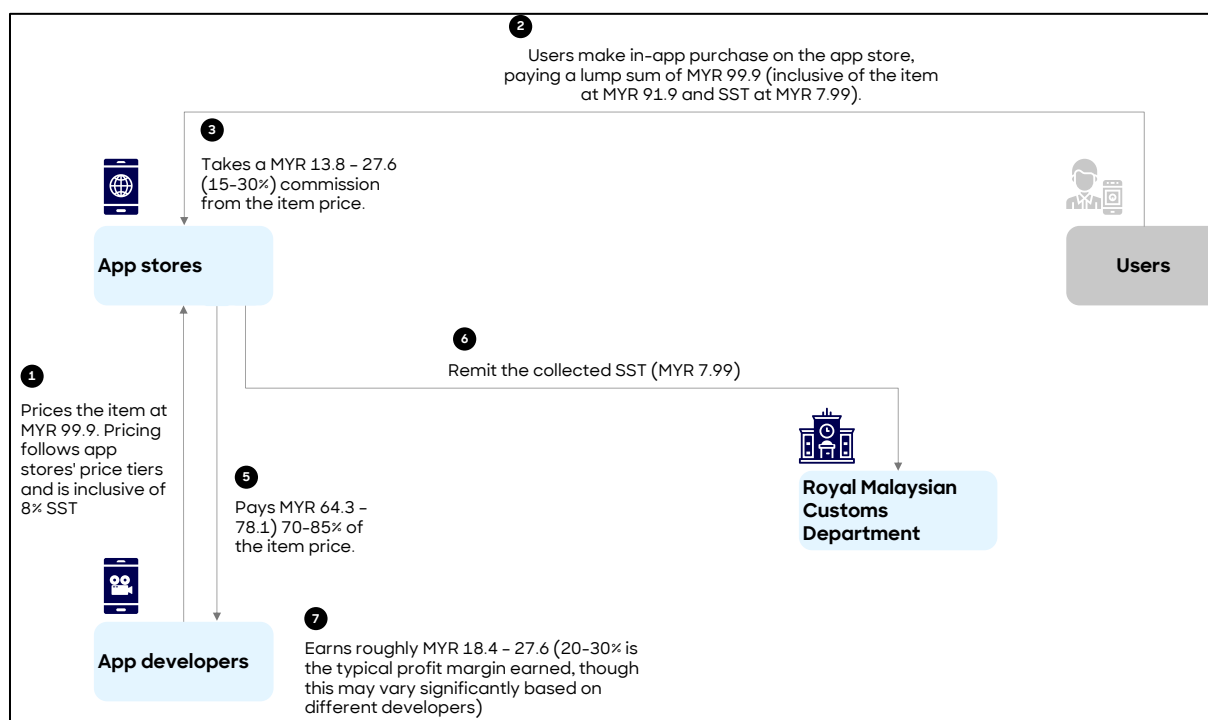
both Google and Apple allow developers to use third-party payment systems. Apple subsequently reduced its commission to 26% (from 30%) for developers using these alternative systems.

- **2021:** In Netherlands, The Netherlands Authority for Consumers and Markets (ACM) ruled that Apple's 30% commission and mandatory payment system for dating apps violated competition law. Apple was subsequently required to allow alternative payment systems for dating apps, imposing a 27% commission on these transactions.

In addition to the app store commission, an 8% SST is applied to the transaction. This tax is collected by the app store and subsequently remitted to the government. For foreign, non-Malaysian app developers, an additional Digital Service tax of 6% is imposed by the RMCD²⁶⁶.

²⁶⁶ Foreign registered persons who provide digital services to consumers in Malaysia; RMCD (2021). Guide on: Digital services by foreign service provider (FSP), page 3. https://mystods.customs.gov.my/storage/app/media/pdf/guide/Guide%20on%20Digital%20Service_V2.1_01022021.pdf

Figure 46: Approximate earnings by supply chain players (example)



Source: Interaction with industry players and MyCC analysis

While it can vary significantly, the typical profit margin for an app developer is usually around 20–30%²⁶⁷. Costs include fees to external parties (commission fees to app stores) and app operational expenses (including development, hosting and server costs, customer support, and maintenance).

²⁶⁷ UXCam (2024). Top 4 strategies for low cost mobile app development. <https://uxcam.com/blog/low-cost-mobile-app-development/>

5.1.6 Sub-sector regulations

Although there is no specific regulation overseeing the sub-sector, seven regulations, guidelines, and industry codes are considered relevant to the mobile operating and payment systems in Malaysia.

5.1.6.1 Relevant regulations

#	Acts	Description	Relevance to competition	Relevance to data privacy and protection
1	Anti-Money Laundering, Anti-Terrorism Financing and Proceeds of Unlawful Activities Act 2001 (Act 613) by <i>BNM</i>  BANK NEGARA MALAYSIA CENTRAL BANK OF MALAYSIA	Provides for offences relating to money laundering and terrorism financing, and sets out measures for their prevention and detection. The Act confers investigative powers on enforcement agencies and allows for the forfeiture of property connected to, or derived from,	No explicit mention of matters related to competition.	Regulate data handling to prevent financial crime. Provisions not exclusive to mobile operating and payment systems. Key provisions include: • Section 11: Prohibited disclosure • Section 14A: Prohibition against disclosure of reports and related information

#	Acts	Description	Relevance to competition	Relevance to data privacy and protection
		money laundering and terrorism financing offences, including terrorist property, proceeds of unlawful activities, and instrumentalities of offences.		

5.1.6.2 Relevant guidelines

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
1	Standards, Policies and Guidelines - Malaysian Government Interoperability Framework (MyGIF) by Malaysian Administrative Modernisation and	MyGIF does not introduce new standards but adopts internationally recognised open and de facto ICT standards as well as technical specifications to promote interoperability across five (5) key areas: interconnection,	No explicit mention of matters related to competition.	No explicit mention of matters related to personal or private data privacy and protection. While Section 5.2.11 refers to a “Privacy Policy” under recommended

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
	<i>Management Planning Unit (MAMPU) under the Ministry of Digital</i> 	data integration, information access, security and metadata. It aims to establish a seamless, efficient, and secure digital ecosystem by ensuring that government systems and applications, both within government and external to the public sector can communicate and interoperate effectively.		security standards, it is focused more on system interoperability and standardisation than on the protection of personal data under dedicated privacy legislation.
2	Malaysian Public Sector Open-Source Software (OSS) Initiative: The Malaysian Government Interoperability Framework for Open Source Software (MyGIFOSS) by MAMPU	MyGIFOSS is a supplementary guideline to MyGIF. It provides comprehensive guidance for government agencies on the adoption and migration to OSS within their ICT framework. The framework addresses issues concerning the use of	No explicit mention of matters related to competition.	No explicit mention of matters related to personal or private data privacy and protection.

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
	<i>under the Ministry of Digital</i> 	OSS and proprietary software, integration of OSS with proprietary and legacy systems, information and data exchange between heterogeneous systems, and adherence to internationally recognised open standards, where applicable. The core objective is to enhance system interoperability while promoting openness, vendor neutrality, and cost-effectiveness across public sector ICT implementations.		
3	Policy Document on Electronic Money (E-Money) by BNM	Sets out regulatory guidelines for the issuance, operation, and oversight of EMIs in Malaysia.	No explicit mention of matters related to competition.	The policy contains several specific provisions on data confidentiality and protection, particularly in

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
	 BANK NEGARA MALAYSIA CENTRAL BANK OF MALAYSIA	The policy aims to ensure the safety and reliability of e-money issued by e-money services and to maintain public confidence in using e-money for payment of goods and services. It also provides standards on governance, capital requirements, operational risk management, and technology risk management for EMIs.		relation to outsourcing and technology risks. Key paragraphs include: - Paragraphs 18.15 (Protection of data confidentiality): EMIs must ensure appropriate and effective controls are in place to safeguard the security, confidentiality, and integrity of information shared with service providers. In meeting this requirement, an EMI shall ensure that: - Information disclosed to the

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
				service provider is limited to the extent necessary to provide the contracted service, and only on a need-to-know basis; – all locations (e.g. city and country) where information is processed or stored by the service provider, including back-up locations, are made known to the EMI; – where the service provider is located, or performs the outsourced activity

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
				outside Malaysia, the service provider is subject to data protection standards that are at a minimum comparable to Malaysia; – where the service provider provides services to multiple clients, the EMI's information must be segregated from the information of other clients of the service provider; – the service provider maintains compliance with applicable security

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
				requirements and established security standards at all times; and – the service provider undertakes measures to safeguard customer information of the EMI at all times and reports any customer information breach to the EMI within an agreed timeframe. • Appendix 8: Sets out control measures for securing mobile applications and

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
				devices, emphasising secure design, development, authentication, and monitoring to protect customer data and services delivered via mobile channels.
4	Risk Management in Technology (RMiT) Exposure Draft by BNM  BANK NEGARA MALAYSIA CENTRAL BANK OF MALAYSIA	Outlines updated regulatory requirements for financial institutions to strengthen the management of technology risks, improve the resilience of financial services, and enhance sector-wide cyber defence. The Exposure Draft also seeks to improve the supervisory review of emerging technologies to better support	No explicit mention of matters related to competition.	The Exposure Draft contains multiple detailed provisions to safeguard data, including personal identifiable information (PII) and transaction data, against cyber-attacks and unauthorised access. Key paragraphs include:

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
		the digitalisation of the financial system.		• Part B, Paragraph 11: Cybersecurity Management - Requires a cyber resilience framework (CRF) to identify, protect, detect, respond to, and recover from cyber threats, covering both internal and third-party systems. • Appendix 5, Part B: Data Security - Lists specific control measures to protect data and system infrastructure from unauthorised access, including

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
				logging, monitoring, and endpoint protection. • Appendix 10, Part B, Paragraph 12: Data Loss Prevention - Details technical and governance requirements for protecting data hosted on cloud platforms, including encryption key management and multi-tenancy risks.

5.1.6.3 Relevant codes

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
1	Malaysian Communications and Multimedia Content Code 2022 by the <i>Communications and Multimedia Content Forum of Malaysia (CMCF)</i> under <i>Malaysian Communications and Multimedia Commission (MCMC)</i> 	Serves as the principal source of industry self-regulation, establishing governing standards and best practices for content dissemination within the communications and multimedia industry in Malaysia. Although it does not specifically address mobile operating systems or payment systems, it covers various aspects of online content	Promotes fair competition in advertising practices. Key paragraphs include: - Part 3, Paragraph 3.1(d): All advertisements shall respect the principles of fair competition generally accepted in business, however, the Code is not intended to suppress free and vigorous competition. - Part 3, Paragraph 4.8(a) (Comparisons): Advertisements containing	Requires compliance with existing data protection laws and encourages responsible handling of personal information. Key paragraphs include: Part 1, Paragraph 6.4: Notwithstanding this Code and apart from the relevant legislation under the Act, all applicable Malaysian Laws including but not limited to sedition, pornography, defamation, data protection, protection of intellectual property and other related legislation are to be complied with.

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
		dissemination, which could indirectly affect mobile applications and digital services.	comparisons with other advertisers, or other products are permissible in the interest of vigorous competition and public information, provided they comply with the terms of the Code.	Part 2, Paragraph 11.1: Code Subjects shall respect the privacy of individuals with due regard to the requirements under the Personal Data Protection Act 2010. There shall be no intrusion into an individual's privacy except where required by law and/or necessary in the interest of the public. Any references to the Personal Data Protection Act 2010 will include any subsequent amendments made to the said Act.
2	Technical Code: Internet of Things (IoT) - Device Security Requirements by	Establishes mandatory security requirements for IoT devices to ensure network	No explicit mention of matters related to competition.	The Technical Code places emphasis on data security across the IoT device lifecycle. It includes protections for transmission data, data

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
	<i>MCMC under the Ministry of Communications</i> 	interoperability and enhance the safety of network facilities. The Technical Code focuses on protecting interconnected IoT devices, particularly in critical industrial sectors such as manufacturing, transportation, and healthcare. It addresses device-level threats and prescribes security controls across five key dimensions: authentication, cryptography, data security, device		protection at rest, information flow control, secure session management, and the handling of PII. Key paragraph includes: Paragraph 6.3 (Data security): Specifies encryption requirements for data in transit and at rest, secure deletion, network segregation, secure session management, and encryption and authentication for PII.

#	Regulation	Description	Relevance to competition	Relevance to data privacy and protection
		platform security, and physical security.		

Source: MyCC analysis

5.1.6.4 Issues and gaps relevant to the mobile operating and payment system regulatory environment

1. Imbalance regulatory framework

The existing legal and policy landscape for mobile operating and payment systems in Malaysia is imbalanced, with attention skewed largely towards payment systems, while oversight of mobile operating systems being nonexistent.

Sub-sector's key regulatory instruments, such as the Financial Services Act 2013 and the Islamic Financial Services Act 2013, provide oversight of financial transactions, including electronic payment systems. However, these legislations are broad in scope and lack tailored provisions for emerging digital financial services. The rapid rise of mobile wallets, QR code-based payments, and digital currencies, alongside ongoing fintech innovation, has outpaced the specificity and responsiveness of current regulations. Instead, new codes and frameworks such as the Policy Document on Electronic Money (E-Money) are introduced respectively by relevant parties such as Securities Commission Malaysia (SC) and BNM. As a result, these technologies operate in a regulatory grey zone, with no dedicated framework to protect users and market participants.

More notably, mobile OS are currently not being monitored thoroughly and may require closer oversight moving forward. This is despite the growing global scrutiny over the control exerted by large platform owners like Apple and Google over app distribution, payment methods, and device functionalities. Apple's iOS and Google's Android OS feature the firms' own "app stores", which act almost exclusively as distribution channels for smartphone and tablet apps. The UK's CMA concluded that they "have an effective duopoly in the provision of operating systems that run on mobile devices", as well as "substantial and entrenched market power over the users of their mobile operating systems" and "in the distribution of native apps within their ecosystems"²⁶⁸.

²⁶⁸ CMA (2022). Interim report, executive summary. <https://www.gov.uk/government/publications/mobile-ecosystems-market-study-interim-report/interim-report>

By contrast, selected developed countries are observed to have crafted specific legislation to address these gaps:

In the EU, the DMA was introduced in 2020 that directly targets the dominance of large digital platforms. One of the key provisions is Article 6(4), which mandates that “gatekeepers” such as Apple and Google must allow the installation of third-party apps and app stores²⁶⁹. This provision aims to dismantle anti-competitive restrictions by ensuring:

- Users can download apps from outside official stores
- Developers can use alternative payment systems (e.g., Spotify and Netflix can bypass App Store commissions)
- Access to core hardware features (like NFC) is available to third-party apps, enabling competition in services like tap-to-pay from providers such as PayPal, Revolut, or local banks

Similarly, in Japan, the 2024 Act on Promotion of Competition for Specified Smartphone Software ²⁷⁰ takes a similar ex-ante approach, directly regulating the mobile operating ecosystem. Among its key provisions :

- Platform operators cannot block or restrict third-party app stores
- They are prohibited from giving preferential treatment to their own apps in search or visibility rankings
- Developers are free to integrate third-party billing systems, avoiding platform-imposed fees and limitations

JFTC commenced implementation of the Act by executing the explicit process mandated under Article 3, Paragraph 1. This provision requires that operators of critical smartphone software covering basic operating systems, application stores, browsers, and search engines whose scale enables them to exclude or control the business activities of others, be formally designated based on metrics such as user numbers or other business indicators as prescribed by Cabinet Order. Acting on this statutory mandate, the JFTC conducted its assessment and on March 2025,

²⁶⁹ European Commission (2025). The Digital Markets Act. https://digital-markets-act.ec.europa.eu/index_en

²⁷⁰ JFTC (2024). Designation of specified software operators under the act on promotion of competition for specified smartphone software. <https://www.jftc.go.jp/en/pressreleases/yearly-2025/March/250331.html>

designated Apple Inc. (for its iOS, App Store, and browser), iTunes K.K. (for the App Store in Japan), and Google Limited Liability Company (LLC) (across Android OS, Google Play, Chrome, and Search). This designation triggers the application of the Act's core compliance obligations and prohibitions on specified anti-competitive conduct, along with annual reporting requirements²⁷¹.

In parallel, South Korea, the Telecommunication Business Act ²⁷² was passed on 31 August 2021 by the Korean National Assembly and went into effect in October 2021. It was in response to growing concerns from app developers about the monopolistic practices of major app store operators, particularly Google and Apple. In effect, the legislation prevents Google as well as Apple from forcing app developers to use their in-app billing systems when building apps for their two market-dominating app stores. Therefore, app users in Korea will now be allowed to use the payment system of their choice. In addition, app operators in Korea will not be required to pay the app market operators commissions.

In summary, Malaysia's current regulatory framework does not adequately address the far-reaching influence of mobile operating system providers, revealing critical gaps that leave the digital ecosystem exposed to unchecked market power. While regulatory oversight has evolved in relation to payment systems, no comparable scrutiny has been extended to mobile operating systems, despite their central role in shaping access to digital services, controlling app distribution channels, and dictating in-app payment mechanisms. This imbalance may create a structural vulnerability where dominant platforms can impose restrictive terms on app developers, limit consumer choice, and stifle innovation.

By contrast, international regulators have taken clearer and more proactive measures. The EU's DMA, Japan's amendments to the Act on Promotion of Competition for Specified Smartphone Software, and South Korea's Telecommunications Business Act all signal a clear pivot toward ex-ante regulatory models. These initiatives aim to pre-empt anti-

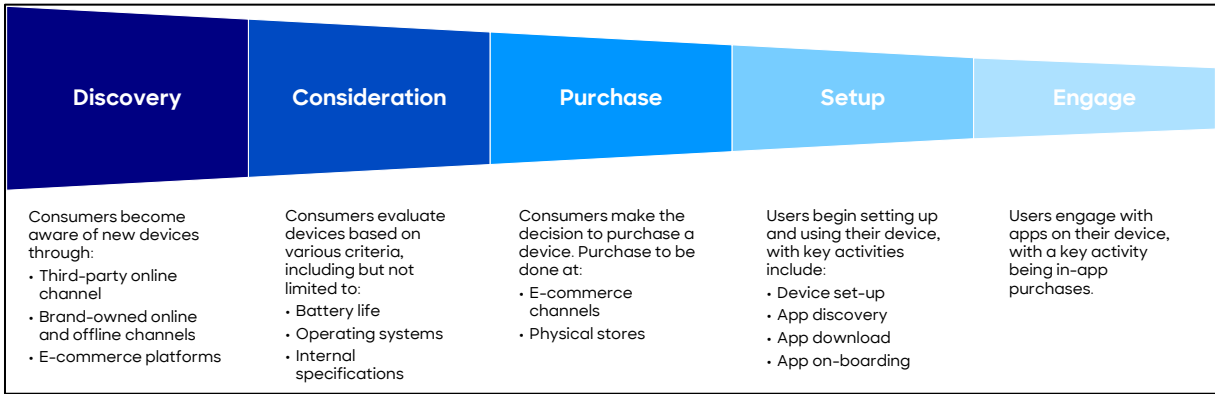
²⁷¹ JFTC (2025). Designation of specified software operators under the act on promotion of competition for specified smartphone software. <https://www.jftc.go.jp/file/250331.pdf>

²⁷² Statute of the Republic of Korea (2021). Telecommunications business act. https://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=25944&type=new&key=

competitive conduct, enhance interoperability, and rebalance power between platform operators, developers, and end-users. Without similar reforms, Malaysia risks lagging behind global efforts to create a fair, open, and competitive digital marketplace.

5.1.7 Consumer behaviour

Figure 47: Mobile operating and payment system consumer journey



Source: MyCC analysis

The consumer journey in the mobile operating and payment system typically begins with the “discovery” phase, where consumers actively seek information about their desired devices. In the “consideration” phase, consumers dive deeper, comparing factors such as battery life, OS and internal specifications. “Purchase” follows, often done through e-commerce channels or physical stores. Once acquired, the “Setup” phase introduce users into the OS environment, where data migration tools, app ecosystems, and default settings are configured. Finally, during the “Engagement” phase, consumers interact regularly with the OS, increasingly reliant on its ecosystem of apps, services, and subscriptions.

The following outlines each phase of a consumer's journey in the mobile operating and payment system sub-sector:

5.1.7.1 Discovery

Malaysians take a highly proactive approach in their smartphone purchase journey, with 94% of consumers actively seeking information before making a decision²⁷³. During this initial phase, consumers typically engage in an average of 8.3 product research activities. These include watching

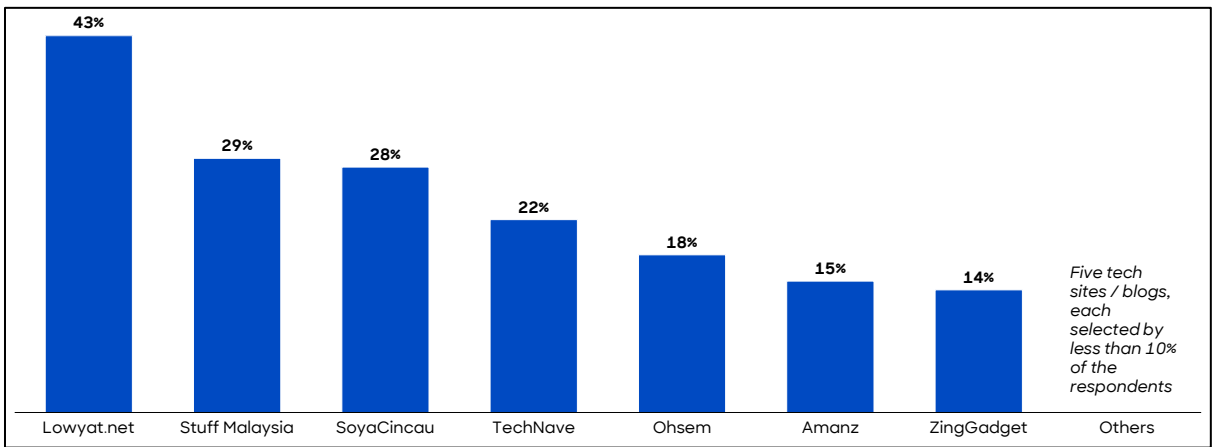
²⁷³ New Straits Times (2019). Factors Malaysians look at when buying phones. <https://www.nst.com.my/lifestyle/bots/2019/11/538195/factors-malaysians-look-when-buying-phones>

advertisements, conducting online research, and visiting both physical stores and brand websites.

Consumers typically rely on three primary channels to discover smartphone options:

- **Third-party online channels:** Four out of five Malaysians use online touchpoints to guide their purchasing decisions. These consumers frequently turn to third-party platforms such as technology blogs, review sites, and YouTube to access unbiased opinions. Moreover, 59% identify online reviews as the most important activity in forming a purchase decision²⁷⁴. These reviews often highlight real-world usage scenarios, focusing on aspects such as durability, performance, and user experience. Popular local platforms are Lowyat.net, Stuff Malaysia and SoyaCincau.

Figure 48: Top sites consumers access for tech-related news, June 2025
[%]²⁷⁵



Source: Vase.ai

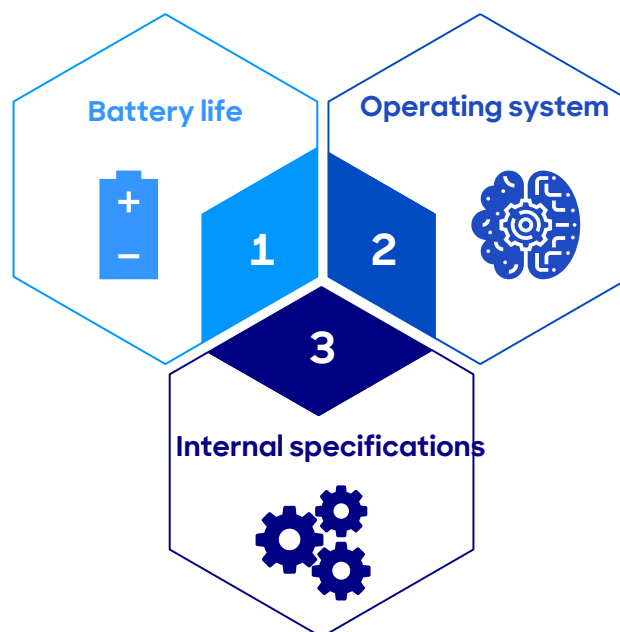
²⁷⁴ New Straits Times (2019). Factors Malaysians look at when buying phones. <https://www.nst.com.my/lifestyle/bots/2019/11/538195/factors-malaysians-look-when-buying-phones>

²⁷⁵ Vase (2019). Mobile data & broadband. <https://vase.ai/data-trust/projects/mobiledatabroadband/summary?cues=1>

- **Brand-owned offline channels:** While online channels offer convenience, 49% of Malaysian consumers still visit physical stores to experience devices firsthand²⁷⁶. In-store visits allow them to:
 - Interact with the latest smartphone models
 - Test features and evaluate design
 - Speak directly with brand representatives for clarification on specifications and personalised recommendations
- **E-commerce platforms:** Another channel where consumers turn to during the discovery phase, which allows them to explore a wide range of smartphone models across various brands. These platforms provide a centralised hub for detailed product information, including product specifications, pricing, user reviews, and promotional offers.

5.1.7.2 Consideration

Figure 49: Top consideration factors in mobile device selection among Malaysian consumers



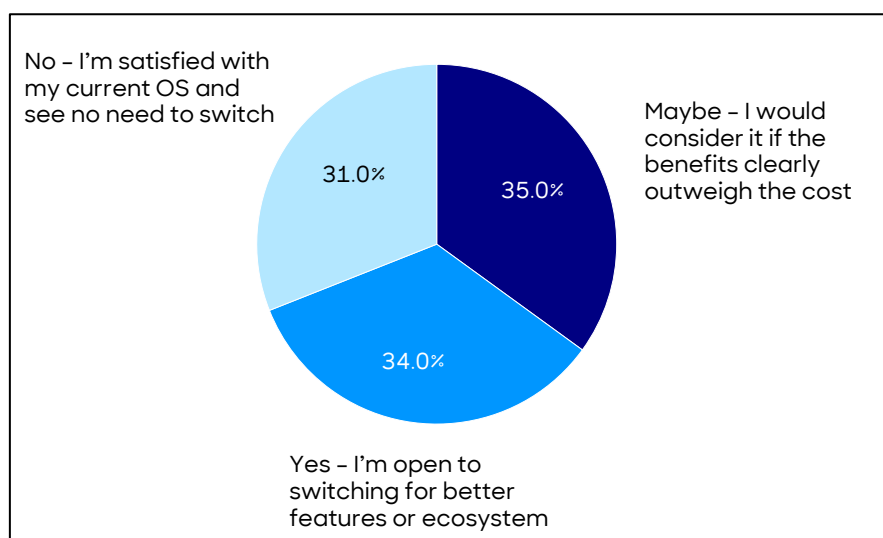
Source: Google

²⁷⁶ New Straits Times (2019). Factors Malaysians look at when buying phones. <https://www.nst.com.my/lifestyle/bots/2019/11/538195/factors-malaysians-look-when-buying-phones>

After gaining a general understanding of the market, consumers move into the consideration stage, narrowing their choices based on specific preferences. At this point, they perform more detailed comparisons across brands and models. Key evaluation areas for consumers include²⁷⁷:

- **Battery life:** Top priority for Malaysian consumers. Battery performance, including longevity and fast-charging capabilities, is a critical deciding factor.
- **Operating systems:** OS remains a significant consideration, with many preferring to stick with the same OS as their current device, valuing familiarity and ecosystem continuity.

Figure 50: Willingness to switch mobile OS, June 2025 [%]



Source: MyCC's survey

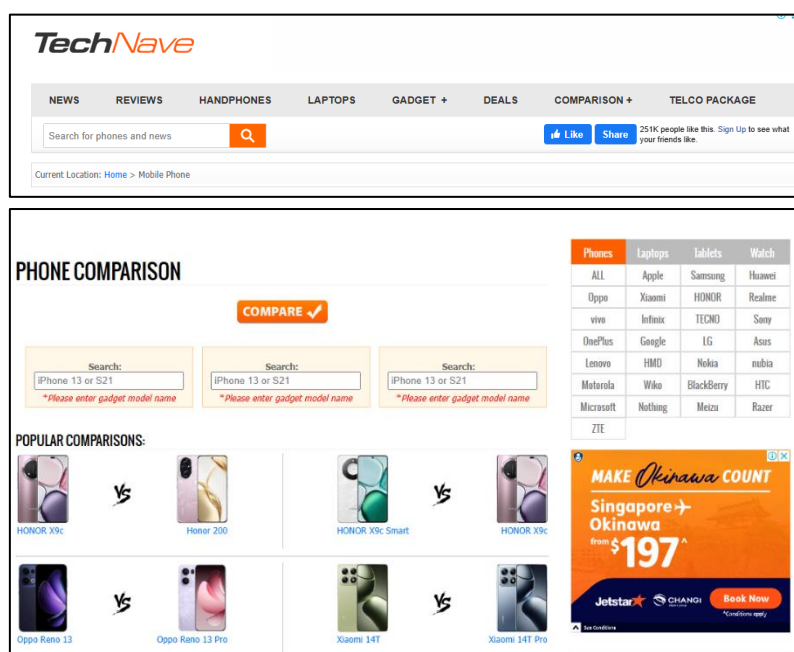
However, consumers are also observed to exercise caution when assessing OS. According to MyCC's survey, respondents indicated they might consider changing their default OS if another offered better features or a more appealing ecosystem (34%) or if the benefits (e.g., include manual data transfer, re-downloading apps,

²⁷⁷ New Straits Times (2019). Factors Malaysians look at when buying phones. <https://www.nst.com.my/lifestyle/bots/2019/11/538195/factors-malaysians-look-when-buying-phones>

reconfiguring settings, and potentially repurchasing previously acquired content or services) clearly outweighed the costs (35%)²⁷⁸. In this context, there are various tools and APIs, such as Google’s Backup and Restore APIs, Apple’s Move to iOS app, Samsung Smart Switch, being available to facilitate switching between devices. However, many consumers may still find switching challenging because these tools mainly support basic data migration and often do not transfer app data, system settings, or purchased content.

- **Internal specifications:** Covers a combination of hardware components that collectively determine the device’s speed, responsiveness, and longevity. These include device storage, random-access memory (RAM), durability and processing speed. Preferences vary based on intended usage, such as gaming, content creation, or productivity. Third-party platforms (e.g., TechNave, GMSArena) often support this evaluation through specification comparison tools and filtering options, helping consumers make more informed decisions.

Figure 51: Phone comparison feature in TechNave.com



Source: Tech Nave

²⁷⁸ MyCC’s survey.

Figure 52: Phone specifications comparison feature in GSMArena.com

The screenshot shows the GSMArena.com website's search interface. At the top, there's a search bar and navigation links for PHONES and TABLETS. The main content area is organized into sections with red headers:

- General:** Includes dropdowns for BRAND and AVAILABILITY, and sliders for YEAR (Min to Max) and PRICE (Min to Max).
- Network:** Includes dropdowns for 2G, 3G, 4G, and 5G network support.
- SIM:** Includes checkboxes for DUAL SIM and ESIM, and a dropdown for SIM SIZE.
- Body:** Includes a dropdown for FORM FACTOR, sliders for HEIGHT, THICKNESS, WIDTH, and WEIGHT (all with Min to Max ranges), and dropdowns for KEYBOARD, IP CERTIFICATE, COLOR, BACK MATERIAL, and FRAME MATERIAL.

Source: GSM Arena

Secondary Consideration Factors:

Beyond core technical specifications, consumers also weigh several secondary factors during the consideration stage. These elements, while not strictly technical, can influence the final purchase decision²⁷⁹:

- **Social Influence:** Recommendations from friends, family, and online communities play a strong role. Factors include word-of-mouth, peer validation, and even social pressures like “fear of missing out” (FOMO), image projection, or the desire to conform to trends.
- **Price:** Overall affordability and value for money.
- **Camera performance:** Especially among users who prioritise social media, content creation, or use their smartphones primarily for photography purposes. Factors such as megapixel count, low-light

²⁷⁹ New Straits Times (2019). Factors Malaysians look at when buying phones. <https://www.nst.com.my/lifestyle/bots/2019/11/538195/factors-malaysians-look-when-buying-phones>

performance, and AI-enhanced photography are commonly compared across models.

5.1.7.3 Purchase

Smartphone purchases take place through both e-commerce channels and physical retail stores, with each channel catering to different consumer preferences and priorities.

E-commerce channels: Digital platforms that enable consumers to browse, compare, and purchase smartphones online without visiting a physical store. Four types of sub-channels exist:

- **E-commerce marketplaces:** Platforms such as Shopee and Lazada are among the most popular choices for smartphone purchases. These marketplaces attract price-conscious consumers seeking competitive pricing, seasonal promotional campaigns, and exclusive discounts. The added convenience of doorstep delivery and the availability of user reviews and ratings provide social proof and help consumers make more informed decisions. For users who prefer second-hand phones, they often turn to platforms like Facebook Marketplace, Carousell, and Mudah for their purchases.
- **Brands' websites:** Consumers also purchase directly from official brand websites, such as the Apple Online Store or Samsung Official Store. These platforms appeal to those looking for exclusive online deals, product customisation options, and the assurance of authenticity, as devices are shipped directly from the manufacturer.
- **Telco-operated online stores:** Telecommunications providers such as Maxis and CelcomDigi operate e-commerce platforms where smartphones are offered bundled with data plans, contracts, or monthly instalment packages. These bundles are especially attractive to consumers seeking long-term value and convenience in managing both device and connectivity needs in a single transaction.
- **Authorised retailers' online stores:** Third-party retailers such as DirectD, Switch, and Harvey Norman also operate dedicated e-

commerce platforms. These authorised resellers are regarded as reliable sources for genuine products and often provide additional customer service and warranty support through their online stores.

Physical stores: Brick-and-mortar locations where consumers can physically inspect, test, and experience the device before committing to a purchase. This type of distribution system continues to be the dominant channel for many Malaysian consumers, as a significant portion still prefers making smartphone purchases through physical touchpoints, with 75% of Malaysian smartphone purchases are through physical channels²⁸⁰. Types of physical stores include:

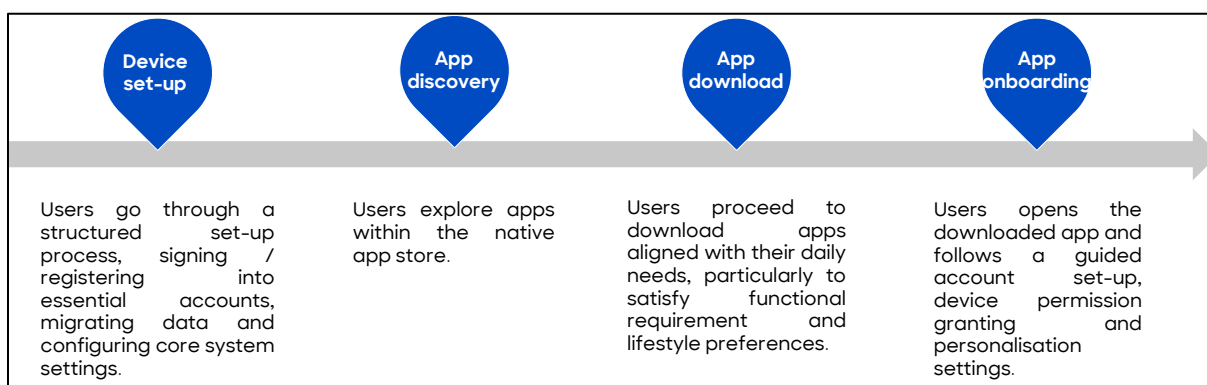
- **Branded stores:** Official retail outlets dedicated to a single brand, such as the Samsung Experience Store or Apple Store. Consumers often visit these stores to access the latest product launches, exclusive models, and personalised brand experiences. Additional services such as technical support, device setup, and accessory recommendations enhance the in-store journey. These stores are typically located in major shopping malls and urban centres.
- **Telco retail outlets:** Operated by providers like Maxis and CelcomDigi, telco outlets remain a key part of the offline purchasing network. They are particularly attractive to consumers interested in bundled smartphone and data plans, often offering instalment schemes of up to 36 months, allowing for greater financial flexibility.
- **Multi-brand consumer electronics chain:** Large retail chains such as Senheng and Harvey Norman provide a one-stop shopping experience, offering a wide variety of smartphone brands under one roof. These stores allow consumers to compare multiple brands and models side by side, assess pricing, design, and features, and benefit from the personalised advice of in-store staff.
- **Traditional independent retail stores:** Small-scale, independent stores, typically located in smaller towns or suburban areas. While

²⁸⁰ New Straits Times (2019). Factors Malaysians look at when buying phones. <https://www.nst.com.my/lifestyle/bots/2019/11/538195/factors-malaysians-look-when-buying-phones>

they may offer competitive pricing, their product range and after-sales services may be more limited. These outlets primarily serve price-sensitive consumers seeking affordable devices with fewer frills.

5.1.7.4 Set up

Figure 53: Key stages in smartphone usage after purchase



Source: MyCC analysis

Following the purchase of a smartphone, consumers enter the usage stage, where they begin interacting with their new device. Key sub-stages in this process include device set-up, app discovery, app downloads, and onboarding.

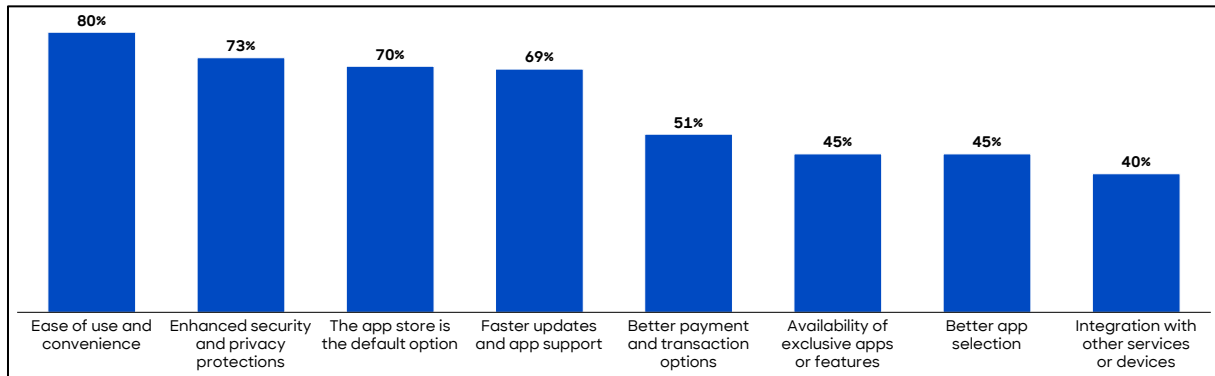
- **Device set-up**

Upon purchase, consumers typically follow a structured set-up process, initiated by the device's first boot. This phase involves signing/registering into essential accounts (such as a Google or Apple ID), migrating data from the previous device, and configuring core system settings. It often includes setting up cloud storage, syncing email accounts, and connecting with other devices in the user's ecosystem. These steps are designed to personalise the device and ensure continuity from the user's previous smartphone experience.

- **App discovery**

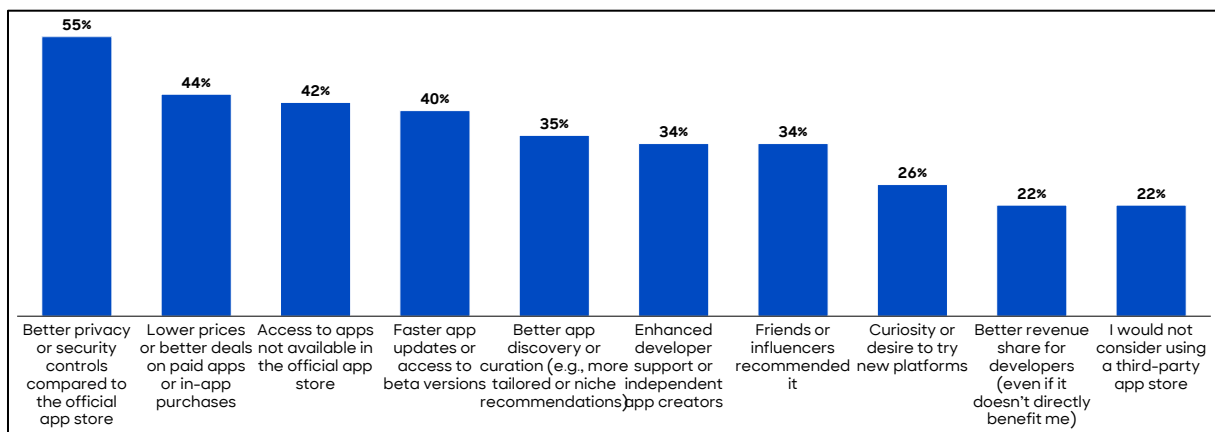
Once initial setup is complete, users begin exploring apps to populate their new device. App discovery primarily takes place via the device's pre-installed/native app stores.

Figure 54: Factors for using native Apple App Store, June 2025 [%]



Source: MyCC's survey

Figure 55: Key considerations for iOS users if alternative app stores are available, June 2025 [%]



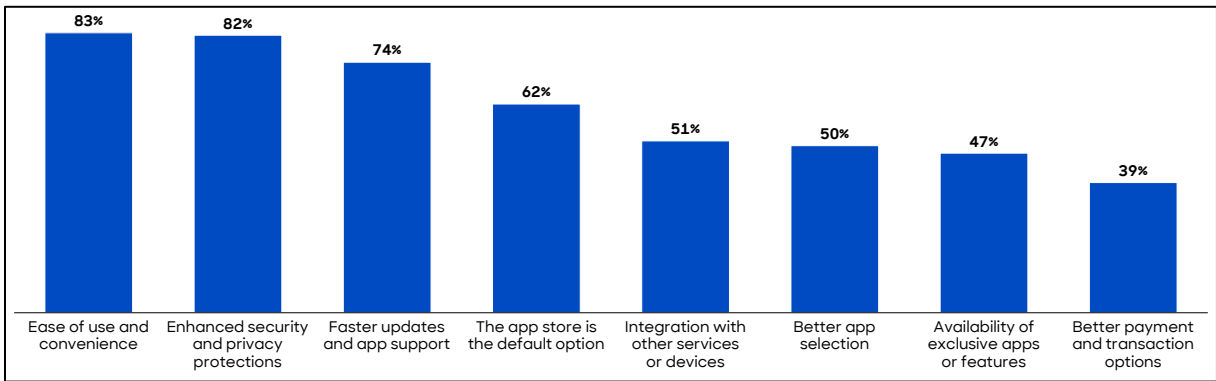
Source: MyCC's survey

iOS users: On the Apple App Store, there are approximately 1.5 million apps available for Malaysian users²⁸¹. Discovery is exclusively conducted through the Apple App Store. According to MyCC's survey respondents, the native

²⁸¹ Input from industry players.

Apple App Store provides ease of use & convenience, faster updates & app support and enhanced security & privacy protections²⁸². Even if third-party app stores were to become available, most users expressed a low likelihood of using them unless there offer better privacy or security controls, faster app updates and access to beta versions, as well as apps that are unavailable in the native app store²⁸³.

Figure 56: Factors for using native Google Play Store, June 2025 [%]



Source: MyCC’s survey

Android users: Users enjoy more flexibility, including the ability to explore third-party app stores like the Samsung Galaxy Store, Huawei AppGallery, or APKPure. However, despite this flexibility, 99% of surveyed respondents using Android reported that they will still stick to the native app store - most commonly, the Google Play Store²⁸⁴. This behaviour is primarily driven by factors such as ease of use and convenience, enhanced security and privacy protections and faster updates and app support²⁸⁵.

- **App download**

Following the app discovery phase, users proceed to download apps that are aligned with their daily needs. Malaysia records approximately 1.2 billion app downloads annually, translating to roughly 36 app downloads per capita, one of the highest in Southeast Asia. In comparison,

²⁸² MyCC’s survey.
²⁸³ MyCC’s survey.
²⁸⁴ MyCC’s survey.
²⁸⁵ MyCC’s survey.

neighbouring countries such as Vietnam, Thailand, the Philippines, and Indonesia report lower app downloads per capita²⁸⁶.

Table 23: Total app downloads per capita (Key countries within Southeast Asia)

Country	App downloads, 2023 [billion] ²⁸⁷	Population, 2023 [million] ²⁸⁸	Downloads per capita
Malaysia	1.2	33.4	35.9
Vietnam	3.4	100.3	33.8
Thailand	2.2	71.7	30.1
Philippines	3.4	114.9	29.8
Indonesia	7.6	281.2	26.9

Source: Sensor Tower, DataReportal, World Bank, DOSM

In terms of app types, users are seen gravitating toward apps that align with their functional requirements and lifestyle preferences, particularly categories of shopping, productivity, photo and video editor, finance, social networking, entertainment and communication.

²⁸⁶ DataReportal (2024). Digital 2024: Malaysia. <https://datareportal.com/reports/digital-2024-malaysia?rq=digital%20malaysia>

²⁸⁷ SensorTower (2024). State of Mobile 2024. <https://sensortower.com/state-of-mobile-2024>; DataReportal (2024). Digital 2024: Malaysia. <https://datareportal.com/reports/digital-2024-malaysia?rq=digital%20malaysia>

²⁸⁸ World Bank (2023). Population, total. https://data.worldbank.org/indicator/SP.POP.TOTL?name_desc=false; DOSM (2023). Current population estimates. <https://www.dosm.gov.my/portal-main/release-content/current-population-estimates-malaysia----2023>

Table 24: Top app ranking for Malaysian Google Play Store and Apple App Store , May 2025 ²⁸⁹

Ranking	Google Play Store ²⁹⁰		iOS App Store ²⁹¹	
	App name	App category	App name	App category
1	MyKasih	Shopping	ChatGPT	Productivity
2	ChatGPT	Productivity	MyKasih	Shopping
3	Taobao	Shopping	ShopeePay	Finance
4	CapCut	Photo & video editor	Remini	Photo & video editor
5	Temu	Shopping	Threads	Social networking
6	Touch 'n Go eWallet	Finance	Public Gold	Finance
7	TikTok	Social networking	NetShort Drama	Entertainment
8	TikTok Lite	Social networking	Taobao	Shopping
9	Loklok	Entertainment	MyJPJ	Utilities
10	Telegram	Communication	BIMB Mobile Bank Islam	Finance

Source: AppFigures

- **App onboarding**

Typically initiated by apps themselves to help users familiarise themselves with core features and ensure a smooth and personalised experience. During this process, users generally follow a guided setup with limited flexibility, as they are prompted to complete essential steps dictated by the app, such as account creation, permission granting, and personalisation settings.

²⁸⁹ AppFigures (2025). Top ranked iOS app store apps. <https://appfigures.com/top-apps/ios-app-store/malaysia/iphone/top-apps>

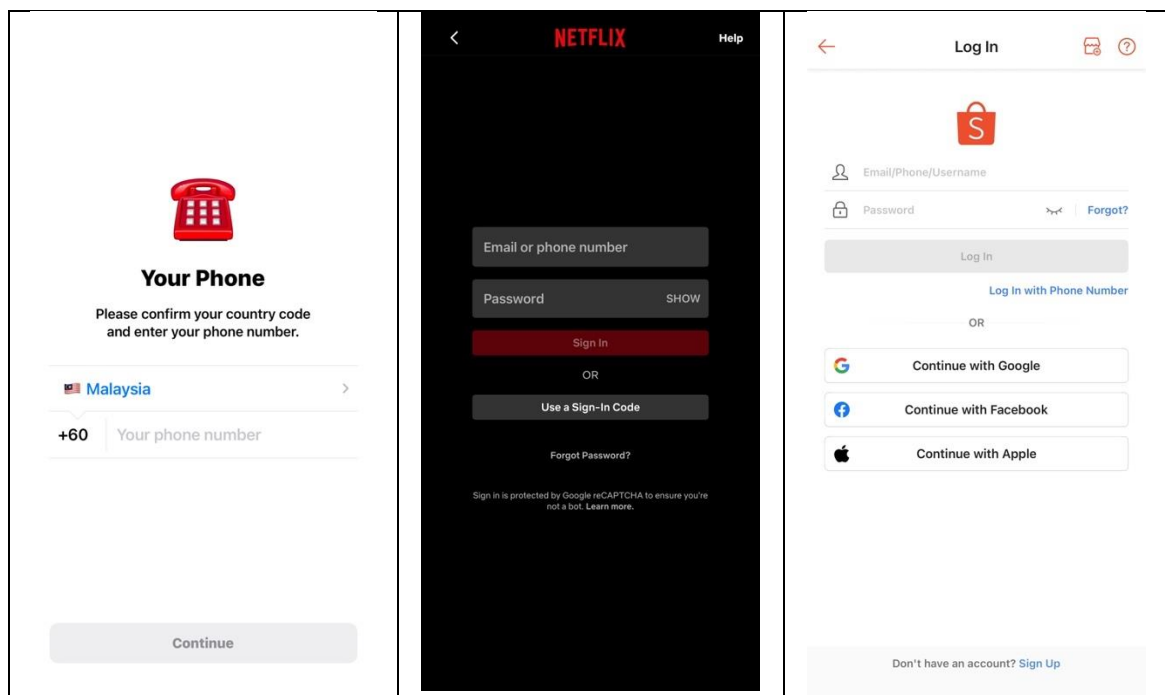
²⁹⁰ AppFigures (2025). Top ranked iOS app store apps. <https://appfigures.com/top-apps/ios-app-store/malaysia/iphone/top-apps>

²⁹¹ AppFigures (2025). Top ranked Google Play apps. <https://appfigures.com/top-apps/google-play/malaysia/top-apps>

- **Account set-up:** Users are required to set up an account before accessing key functionalities for selected apps. These are typically apps that manage personalised data, offer cloud-based services, or facilitate transactions such as messaging apps (e.g., WhatsApp, Telegram), email clients (e.g., Gmail, Outlook), streaming platforms (e.g., Netflix, Spotify), e-commerce apps (e.g., Shopee, Lazada), and productivity tools (e.g., Google Drive, Microsoft Office).

For Android users, they may do so by integrating with their Google Account. This integration allows them to automatically sync preferences, settings, and app data across Google services such as Gmail and Google Drive. On iOS, users can link the app to their Apple ID or iCloud account. This integration allows for cross-device synchronisation, ensuring their data, preferences, and purchases are available across all Apple devices.

Figure 57: Illustration of account set-up in apps

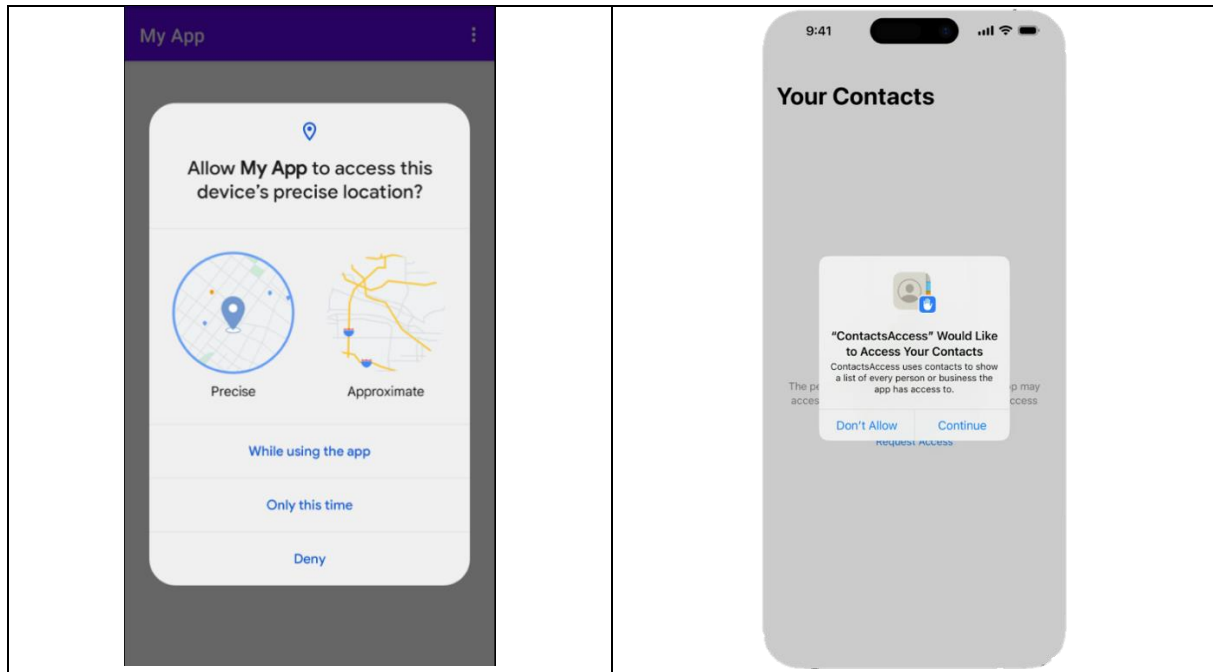


Source: Telegram, Netflix and Shopee

- **Permission granting:** Once the account is set up, users are prompted to give permission to access various features on the consumer's device, such as location, contacts, and camera. Android users generally have

more granular control, with options to allow or deny permissions individually, either during onboarding or through system settings.

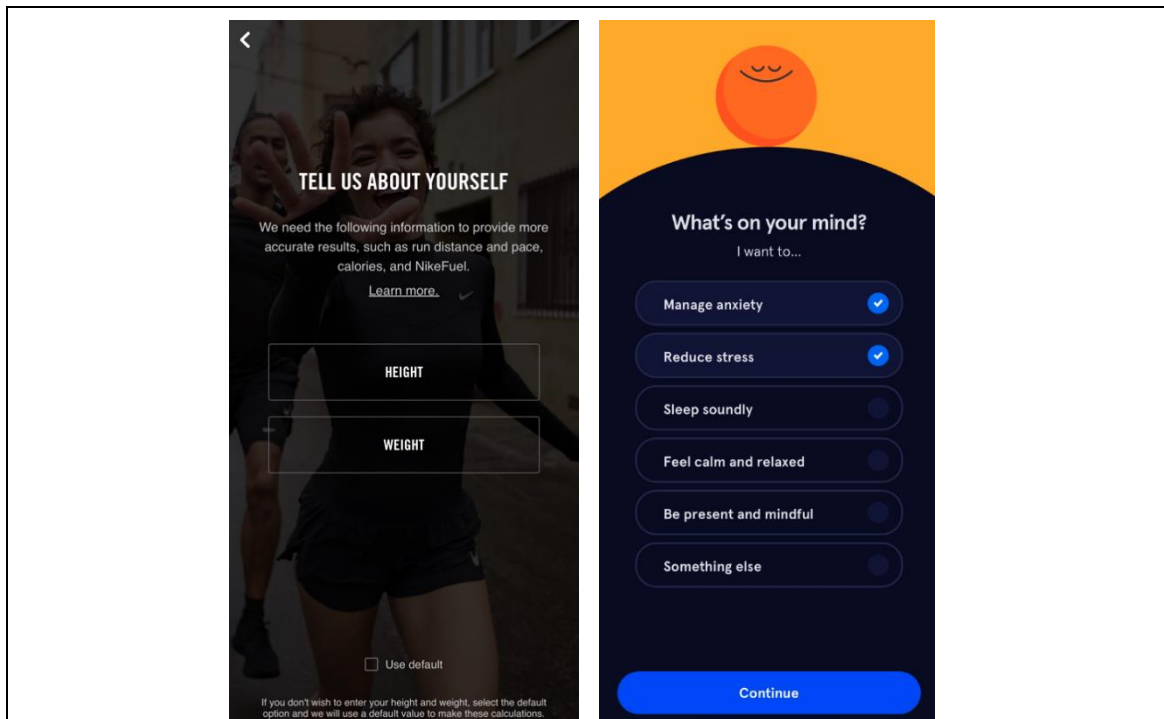
Figure 58: Illustration of permission granting prompt in apps



Source: Android and Apple

- **Personalisation setting:** Users will be further prompted to tailor app experience to individual preferences. Typical settings during this stage would be notifications, content types and visual themes. For example, fitness apps often ask consumers for their fitness goals, such as building strength or improving endurance. This allows the app to provide personalised recommendations, and workout plans that suit the consumer's objectives.

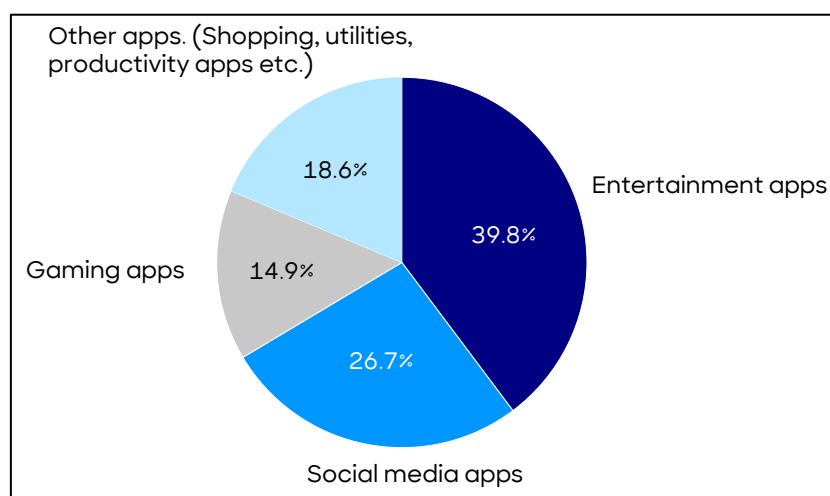
Figure 59: Illustration of app personalisation settings in apps



Source: Nike and Headspace

5.1.7.5 Engage

Figure 60: Average daily smartphone usage in Malaysia by app category, 2024 [%]

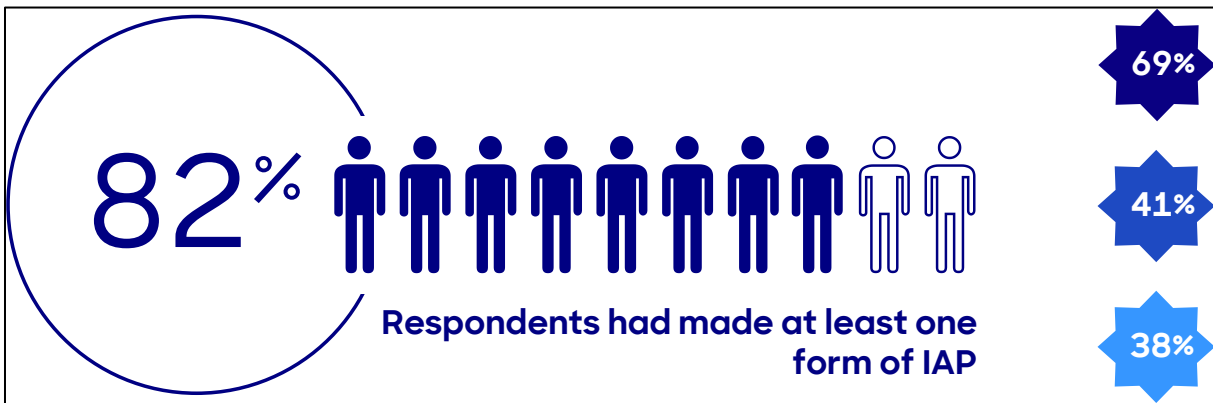


Source: DataReportal

After post-download and on-boarding, users would shift toward engagements with apps and services on the device. According to DataReportal, Malaysia’s users spend an average of 5 hours daily engaging with mobile apps, with most time spent on entertainment apps (39.8%), social media platforms (26.7%) and mobile gaming apps (14.9%)²⁹².

As engagement deepens, monetisation touchpoints emerge more prominently. During this stage, users begin to interact with the IAP ecosystems that apps have established, where premium features, additional content, or exclusive add-on services are presented to users for a fee²⁹³. In 2023, Malaysians spent approximately USD 640 million on mobile apps and IAPs²⁹⁴.

Figure 61: IAP by type, June 2025 [%]

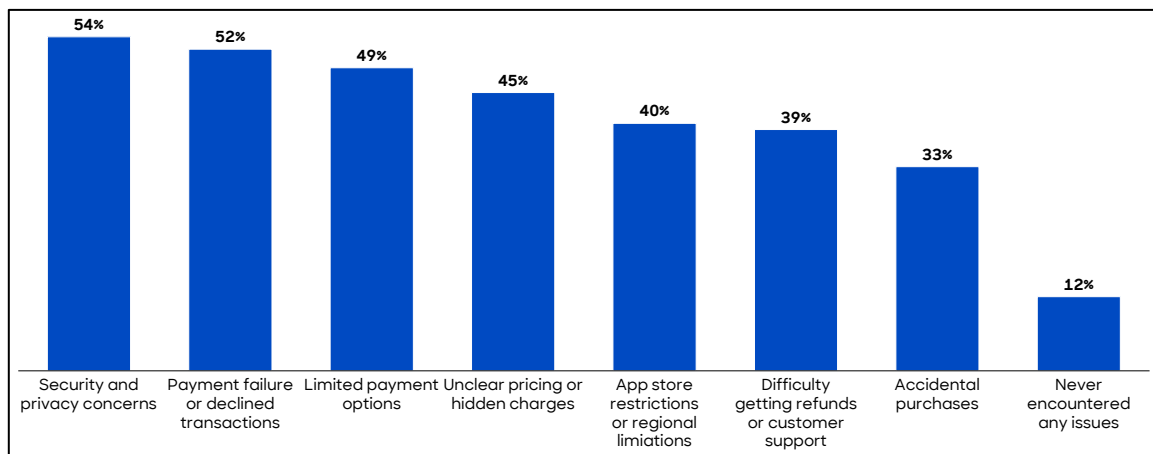


Source: MyCC’s survey

Survey data from MyCC highlighted that 82% of respondents had made at least one form of IAP, with the most common purchase being subscriptions (69%), gaming items (41%) and premium upgrades (38%) such as ad-free experiences or advanced utilities²⁹⁵.

²⁹² DataReportal (2024). Digital 2024: Malaysia. <https://datareportal.com/reports/digital-2024-malaysia?rq=digital%20malaysia>
²⁹³ IAP can also occur during the app download stage (part of the “Set up” phase).
²⁹⁴ DataReportal (2024). Digital 2024: Malaysia. <https://datareportal.com/reports/digital-2024-malaysia?rq=digital%20malaysia>
²⁹⁵ MyCC’s survey.

Figure 62: Key issues encountered when making IAP, June 2025 [%]

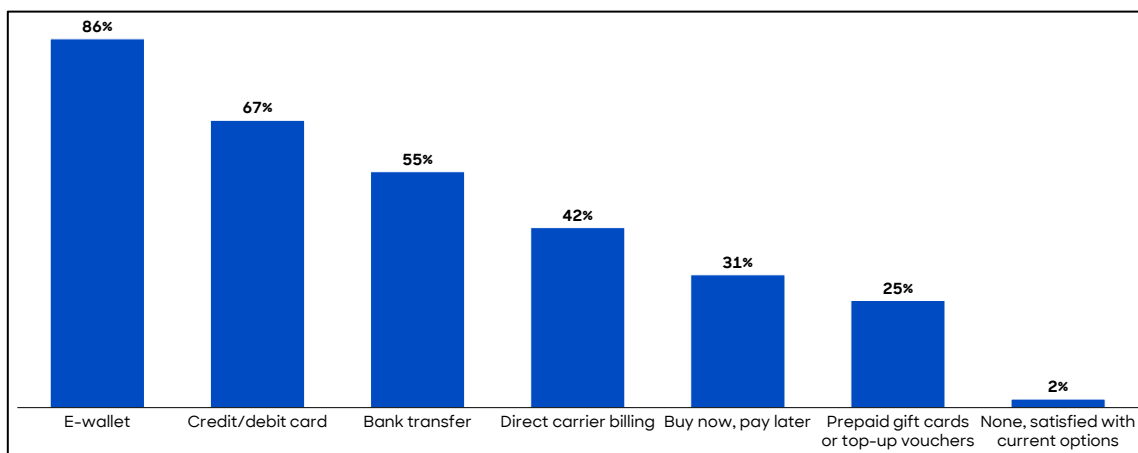


Source: MyCC's survey

However, despite this high engagement, users continue to face a range of challenges in the IAP journey. Survey findings showed that 54% of users reported security or privacy concerns, followed closely by payment failures or declined transactions (52%) and limited payment options (49%). Other notable issues include unclear pricing or hidden charges (45%), regional limitations due to app store policies (40%) and difficulty accessing refunds or customer support (39%)²⁹⁶.

²⁹⁶ MyCC's survey.

Figure 63: Preferred payment methods for IAP if third-party options were allowed, June 2025 [%]



Source: MyCC's survey

Additionally, while IAPs in Malaysia are largely facilitated exclusively through Google Pay and Apple Pay, many expressed a desire for greater flexibility in payment options. Accordingly, if third-party options were allowed, the majority of respondents would prefer local e-wallets (86%) such as Touch 'n Go eWallet, GrabPay, and Boost. Other preferred alternatives include credit/debit cards (67%), bank transfers (55%), direct carrier billing (42%) and Buy Now, Pay Later services (31%)²⁹⁷.

5.1.7.6 Implication on competition

Consumer stickiness is evident throughout the smartphone journey, starting as early as the consideration stage when the OS becomes a key factor in the device purchase decision. This indicates that consumers often prioritise familiarity with their current OS or brand, valuing continuity and consistency in their user experience.

As consumers move further along their journey, especially during device usage, the integration with the OS becomes more embedded and necessary. These integrations include but are not limited to account sign-ins (e.g., Google ID, Apple ID), data migration, and the automatic preloading of native applications, and extending to service synchronisation across

²⁹⁷ MyCC's survey.

cloud storage, payments, messaging, and media. As these features become embedded into daily usage, users may form habitual patterns and reliance on platform-specific conveniences. Over time, this leads to a form of ecosystem stickiness, where the cumulative effort required to migrate such as reconfiguring settings, repurchasing apps, or facing cross-device incompatibility discourages switching to a different OS platform altogether.

While Android users may have greater flexibility in choosing between device brands (e.g., Samsung, Xiaomi, Oppo), they are still largely anchored to the Android OS due to integration with Google's core services and app suite. Switching to a different platform, such as iOS, introduces a range of user considerations such as potential data migration challenges and loss of access to previously purchased content, to incompatibility with existing accessories or third-party services. This ecosystem lock-in effect reinforces the market dominance of incumbent OS providers, making it increasingly difficult for alternative platforms to gain meaningful traction. As a result, barriers to entry for new mobile OS players continue to grow, not due to overt restrictions, but through the growth of network effect, due to the friction in switching, and the convenience of staying within a familiar, tightly integrated ecosystem.

5.1.8 Innovative trends

Three key innovative trends are observed in the mobile operating and payment system sub-sector:

5.1.8.1 Integration of Generative Artificial Intelligence (GenAI) in devices

GenAI represents a shift from traditional rule-based or predictive AI to models capable of contextual generation, personalisation, and real-time responsiveness. Unlike cloud-based AI solutions, the new technology involves embedding large language models (LLMs) and multimodal models directly on-device or through hybrid processing, enhancing privacy, speed, and user engagement. This shift aims to create smartphones to become more intelligent, context-aware assistants.

As part of ongoing development efforts, many device manufacturers have begun integrating GenAI into their products. Below are selected device manufacturers and their respective GenAI models:

Table 25: Selected device manufacturers and their AI models

Device Manufacturer	AI Model
Samsung	Galaxy AI ²⁹⁸
Google	Gemini AI ²⁹⁹
Apple	Apple Intelligence ³⁰⁰
Xiaomi	Xiaomi HyperAI ³⁰¹
Oppo	Oppo AI ³⁰²
Honor	Honor AI ³⁰³

²⁹⁸ Samsung (2025). Galaxy AI. <https://www.samsung.com/my/galaxy-ai/?srsltid=AfmBOooSrdp-yHwmJXfQPq7pFpBUMwQ1tTvkW1DOp7le7ChYmMTTah68>

²⁹⁹ Google (2025). Google Pixel with Gemini Live. https://store.google.com/intl/en_uk/ideas/gemini-ai-assistant/

³⁰⁰ Apple (2025). Apple Intelligence. <https://www.apple.com/my/apple-intelligence/>

³⁰¹ Xiaomi (2025). Xiaomi HyperAI. <https://www.mi.com/global/brand/ai/xiaomi-hyperai>

³⁰² Oppo (2025). Oppo AI. <https://www.oppo.com/my/discover/technology/oppo-ai/>

³⁰³ Honor (2025). HonorAI. https://www.honor.com/my/tech/honor-ai/?srsltid=AfmBOoozpgPfqJTmt-Z6YQ8Vg4wFeHD5ZY_IA9xWv8ucFQi5H78m-pGD

Device Manufacturer	AI Model
Vivo	Vivo AI ³⁰⁴

Source: Various device manufacturers' websites

According to the IDC, worldwide shipments of GenAI smartphones are reaching 234.2 million units and accounting for 19% of the overall smartphone market. This momentum is expected to continue, with GenAI smartphones anticipated to represent 70% of the global market by 2028³⁰⁵.

The GenAI technology is being operationalised in smartphones through a range of differentiated features, each aimed at enhancing productivity, creativity, and convenience:

- **Content creation and enhancement:** Devices like the Samsung Galaxy S24 and S25 integrate AI-powered photo editing tools that leverage GenAI to enable advanced content manipulation. Features such as object removal, background generation, and style enhancement are now available natively, eliminating the need for third-party apps³⁰⁶.
- **Natural language processing:** Integration of GenAI into devices such as Google's Pixel 8 Pro, powered by the Gemini Nano, is a key example. Features like on-device summarisation, smart-reply generation, and contextual message drafting have aimed to improved messaging and productivity applications³⁰⁷.

³⁰⁴ Shine (2023). Vivo launches industry's first "AI smartphone". <https://www.shine.cn/biz/tech/2311146381/>

³⁰⁵ IDC (2024). Worldwide Generative AI smartphone shipments forecast to reach 70% of the market by 2028 with more than 360% growth in 2024, according to IDC. <https://www.idc.com/getdoc.jsp?containerId=prUS52478124>

³⁰⁶ Samsung (2024). How to use Generative photo editing with Galaxy AI. <https://www.samsung.com/sg/support/mobile-devices/how-to-use-generative-photo-editing-on-the-galaxy-s24/>

³⁰⁷ Google (2023). Pixel 8 Pro – the first smartphone with AI built in – is now running Gemini Nano, plus more AI updates coming to the Pixel portfolio. <https://blog.google/intl/en-au/products/devices-services/pixel-8-pro-the-first-smartphone-with-ai-built-in-is-now-running-gemini-nano-plus-more-ai-updates-coming-to-the-pixel-portfolio/>

- **Real-time translation:** Samsung and Google, for example, offer devices with voice and text translation capabilities that allow users to communicate across languages.^{308,309}.
- **Voice assistant reinvention:** One of the recent developments being Apple's announcement of "Apple Intelligence", a cross-device GenAI system integrated across iPhone, iPad, and Mac. A key feature is the updated Siri, which can now access on-device data, such as emails, messages, calendar entries, files, and photos, to generate context-aware responses.

In Malaysia, the adoption of GenAI has been positive. According to Seek's 2024 report, 44% of Malaysians use GenAI on a monthly basis, surpassing the global average of 39% and aligning with the Southeast Asia (SEA) average³¹⁰. This growth is also reflected in increasing government regulation, as seen with the establishment of the National AI Office and the launch of the National Guidelines on AI Governance and Ethics in 2024³¹¹.

In view of this, Malaysians are likely to increasingly seek smartphones integrated with GenAI technology in the future, as they become more accustomed to its benefits and capabilities.

³⁰⁸ Samsung (2024). How to use Live translate for phone calls with Galaxy AI. https://www.samsung.com/latin_en/support/mobile-devices/how-to-use-live-translate-for-phone-calls-on-the-galaxy-s24/

³⁰⁹ Google (2025). Pixel live translate. https://store.google.com/intl/en_au/ideas/articles/pixel-live-translate/

³¹⁰ Malaysian Business (2024). New report: Malaysia's high adoption of generative AI indicates a future-ready local workforce, despite employee concerns about job security and reliability. <https://malaysian-business.com/index.php/wordpress/item/9972-new-report-malaysia-s-high-adoption-of-generative-ai-indicates-a-future-ready-local-workforce-despite-employee-concerns-about-job-security-and-reliability>

³¹¹ National AI Office (2024). About NAIIO. <https://ai.gov.my/about-naio>

5.1.8.2 Growth of adjacent products

Figure 64: iPhone and its adjacent products (from left to right: iPhone, iPad, AirPods, Apple Watch)



Source: Apple

Figure 65: Samsung Galaxy and its adjacent products (from left to right: Galaxy Smartphone, Galaxy Tab, Galaxy Buds, Galaxy Watch)



Source: Samsung

Manufacturers are increasingly positioning their ecosystems as holistic platforms, where smartphones serve as the central hub for a broader suite of connected devices and services. Products like the iPad, Apple Watch, Samsung Galaxy Tab, Pixel Watch, and wireless earbuds such as AirPods and Galaxy Buds have seen consistent upgrades, supported by improvements in hardware, form factor, and software capabilities tailored to specific use cases such as productivity, fitness, communication, and entertainment.

In parallel, smart home devices, including smart speakers (e.g., Apple HomePod, Google Nest Audio), displays (e.g., Nest Hub), thermostats, security cameras, and lighting systems, have become more deeply integrated into mobile operating systems. These devices often rely on the smartphone as a control hub and are optimised for their respective ecosystems, increasing user convenience but also reinforcing platform dependence.

Alongside the growth of these products is a push by platform providers toward cross-device ecosystem integration. Apple's Handoff, Universal Clipboard, and AirDrop, and Google's Nearby Share and Multi-Device Hub are designed to enable continuous and synchronised experiences across devices. These features allow users to start tasks on one device and continue on another, transfer files instantly, or share access to apps and content in real time.

5.1.8.3 Adoption of native digital wallet

In recent years, digital wallets embedded directly into mobile operating systems such as Apple Wallet, Google Wallet, and Samsung Wallet have emerged as one of the drivers in the mobile technology ecosystem. These integrated wallets differ from third-party payment apps in that they are natively developed, pre-installed, and embedded within the device's software stack and hardware layer, offering seamless interaction and security. Native wallets are designed to support not only retail transactions but also integrate with various digital credentials and access solutions:

- **Digital identity storage:** In partnership with the State of Maryland, Apple Wallet allows users to store their driver's license or state ID in digital form. This can be used at Transportation Security Administration (TSA) checkpoints³¹², positioning smartphones as legally recognised forms of identification.
- **Public transit and access cards:** Both Apple Wallet and Google Wallet support transit card integrations in cities like New York, Tokyo, and London. Features like Express Transit allow users to board without unlocking their phones³¹³. This reduces physical card dependency and increases reliance on the device as a multi-service access point.

³¹² Apple (2025). Apple Watch user guide. <https://support.apple.com/en-my/guide/watch/apd4ce005ed6/watchos>

³¹³ Apple (2025). Use Express Mode with travel cards, passes and keys in Apple Wallet. <https://support.apple.com/en-sg/105123>

- **Travel and events:** Users can store and use boarding passes³¹⁴, hotel keys³¹⁵ (e.g., Hyatt³¹⁶, Marriott), and event tickets (e.g., concerts, sports) directly within their wallets. This improves user convenience and minimises app fragmentation.
- **Vehicle Access:** Google Wallet and Apple Wallet support digital car keys³¹⁷ (e.g., Bayerische Motoren Werke – BMW, MINI, Volvo, etc.) that allow users to unlock and start their vehicles using NFC or Bluetooth connectivity.

At present, adoption of native digital wallets remains in the early stages in Malaysia, with third-party digital wallets such as Touch ‘n Go eWallet, GrabPay, Boost and ShopeePay being preferred. Despite this, Malaysia shows a strong potential for adopting native digital wallets, as evidenced by its global leadership in mobile wallet usage, with 63% of Malaysians using them for transactions³¹⁸.

5.1.8.4 Implications on competition

The growing trends of integrating generative AI into devices, expanding adjacent product lines, and adopting native digital wallets contribute to deeper consumer lock-in across devices, operating systems, and payment ecosystems.

In its 2025 update, Apple reported record iPhone upgrades during the last quarter of 2024, with the strongest performance in markets where Apple Intelligence had launched. The integration of this GenAI system was also

³¹⁴ Apple (2025). Add, use and share boarding passes, tickets and other passes in Apple Wallet. <https://support.apple.com/en-my/111112>

³¹⁵ Apple (2025). Add a hotel room key to Apple Wallet on your iPhone. <https://support.apple.com/en-jo/118273>

³¹⁶ TechCrunch (2021). Apple launches support for hotel keys in Apple Wallet, initially with Hyatt Worldwide. <https://techcrunch.com/2021/12/08/apple-launches-support-for-hotel-keys-in-apple-wallet-initially-with-hyatt-worldwide/>

³¹⁷ 9to5Mac (2025). Here are all the cars that support Apple Wallet’s car keys. <https://9to5mac.com/2025/03/18/apple-wallet-car-key-supported-cars>

³¹⁸ Sinar Daily (2024). Malaysians lead the world in mobile wallet usage – Survey. <https://www.sindaily.my/article/218429/focus/national/malaysians-lead-the-world-in-mobile-wallet-usage---survey>

cited as a key driver for iPhone 16 purchases³¹⁹, indicating that advanced, AI-powered features, when tied directly to hardware and OS, can incentivise device upgrades and increase consumer reliance on a single ecosystem.

Separately, personalised services powered by GenAI, such as AI-powered photo editing, smart reply messaging, and voice assistant enhancements, are becoming increasingly embedded within many devices' respective OS. While these features offer a seamless and tailored user experience, they also reinforce ecosystem dependency. As many of these capabilities are platform-specific and not transferable, switching between ecosystems (e.g., from iOS to Android or vice versa) becomes more difficult.

The growth of adjacent products, such as smartwatches, tablets, earbuds, and smart home devices, further reinforces this trend. As consumers adopt more devices within the same ecosystem, the overall experience becomes more interconnected, therefore raising switching costs and strengthening platform loyalty. Similarly, native digital wallets introduce another layer of friction. Moving to a different platform requires re-linking cards, re-verifying identities, and re-downloading passes, often secured through biometric authentication and cloud-based systems.

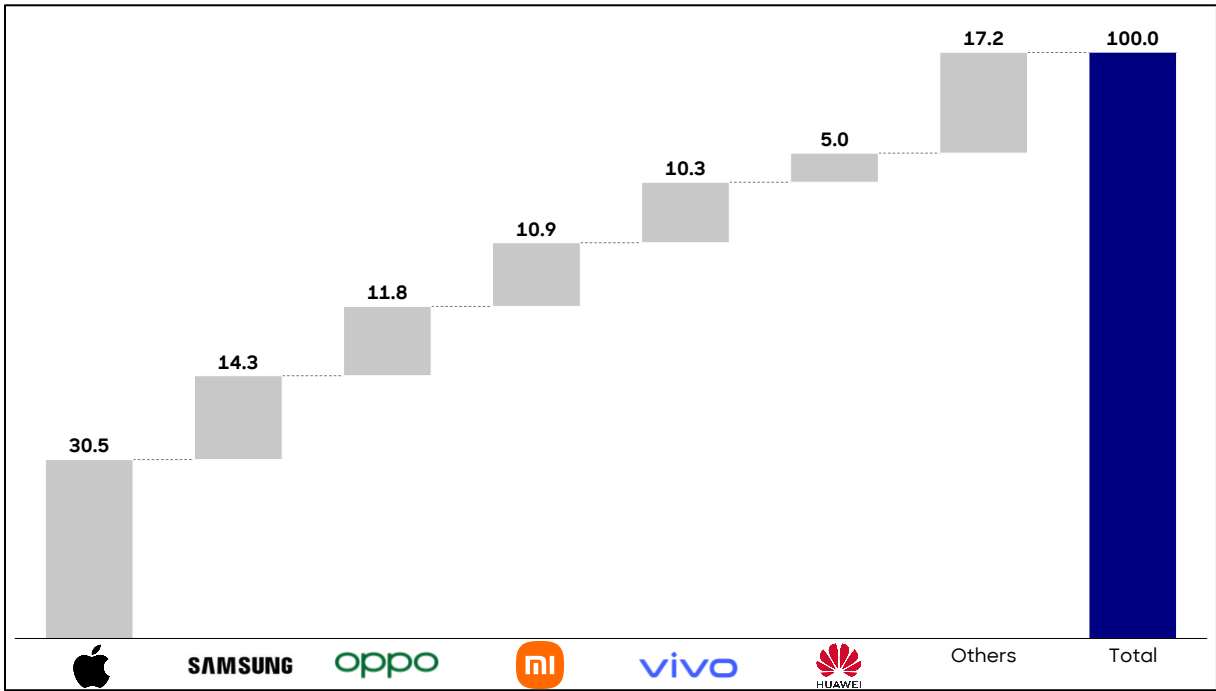
³¹⁹ CNBC (2025). Apple shares rise 3% as boost in services revenue overshadows iPhone miss. <https://www.cnbc.com/2025/01/30/apple-aapl-q1-earnings-2025.html>

5.1.9 Key players

5.1.9.1 Key players along the supply chain

(a) Key device manufacturers

Figure 66: Mobile device market share in Malaysia, December 2024, [%]



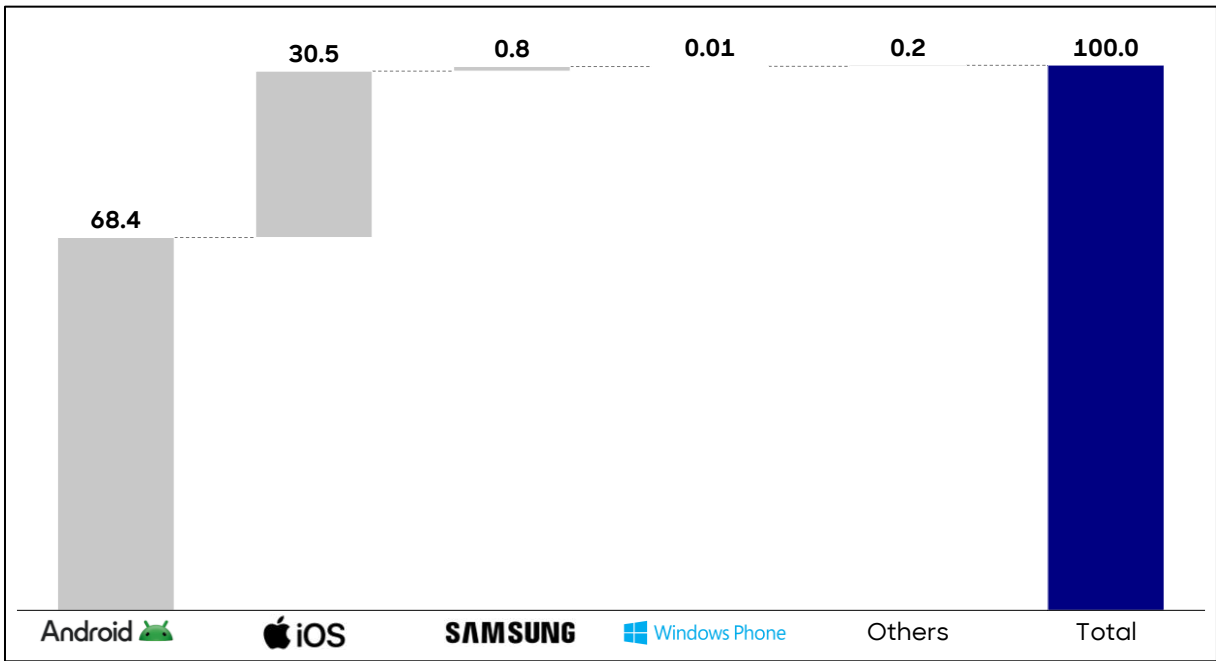
Source: StatCounter

As of December 2024, Apple leads the smartphone market in Malaysia, holding a dominant share of 30.5%. Its focus on premium features, such as advanced camera technology, security through Face ID, etc., is particularly appealing among tech-savvy and higher-income consumers. The next four major contenders, Samsung, Oppo, Xiaomi, and Vivo, each maintain a market share of over 10%³²⁰, shaping a highly competitive mobile device landscape in the country. All four brands operate on the Android OS. Samsung holds a strong presence, particularly in the premium segment with its Galaxy S and Note series, while Oppo, Vivo and Xiaomi cater to both the mid-range and budget markets with their diverse product portfolios.

³²⁰ StatCounter (2024). Mobile vendor market share Malaysia. <https://gs.statcounter.com/vendor-market-share/mobile/malaysia/>

(b) Key mobile OS players

Figure 67: Mobile OS market share in Malaysia, December 2024, [%]



Source: StatCounter

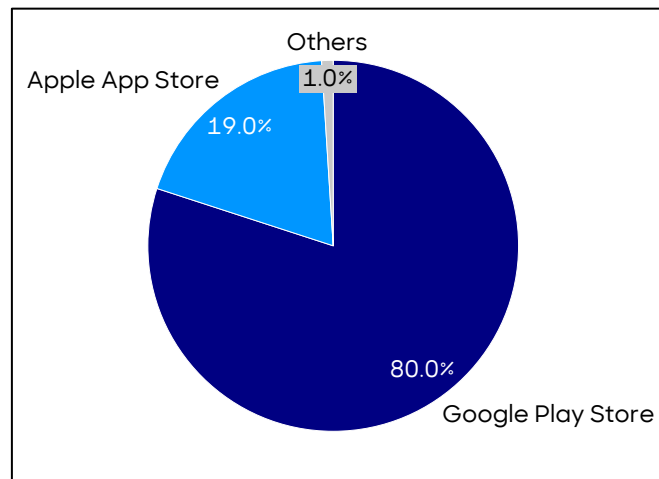
Separately, mobile OS in Malaysia shows considerable dominance by Android, which, as of December 2024, commands a market share of 68.4%. This significant growth can be attributed to its open-source system, allowing device manufacturers to customise and enhance the platform, resulting in a wider range of devices and applications that cater to diverse consumer needs. iOS follows with a substantial share of 30.5%, while Samsung's OS holds a mere 0.8% and other systems represent just 0.2%³²¹.

Users who value more technical customisation often prefer Android devices. Android offers greater flexibility, even allowing users to remove the graphical user interface (GUI) and revert to command line mode, providing more control for those with technical expertise. However, for Apple, customer preference toward is largely driven by its streamlined features, which make its devices easier to use, particularly for those seeking a simple and cohesive experience.

³²¹ StatCounter (2024). Mobile operating system market share Malaysia. <https://gs.statcounter.com/os-market-share/mobile/malaysia>

(c) Key app stores

Figure 68: Mobile app downloads by store in Malaysia, 2021 [%]



Source: Rakuten Insight (via Statista)

Android's business model, where the Google Play Store is set as the default app store on its partner devices, has contributed to its dominance in the app store market. As of 2021, the Google Play Store accounts for approximately 80% of all mobile app downloads in Malaysia, followed by Apple's App Store at 19%, with other app stores making up the remaining 1%³²².

³²² Rakuten Insight (via Statista) (2021). Leading app store to download mobile phone apps in Malaysia as of September 2021. <https://www.statista.com/statistics/1278753/malaysia-leading-app-store-for-app-downloads/>

(d) Key app developers

Figure 69: App ranking by downloads in Malaysia, 2024 [ranking]

Rank	App	Developer
1	 TikTok	ByteDance
2	 CapCut	ByteDance
3	 Shopee	SEA
4	 MAE	Maybank
5	 MYJPJ	Jabatan Pengangkutan Jalan
6	 Whatsapp	Meta
7	 Touch n' Go	TNG Digital
8	 Telegram	Telegram
9	 Facebook	Meta
10	 Instagram	Meta

Source: DataReportal

On apps, as of the end of 2023, the top apps downloaded in Malaysia are predominantly developed by international companies, with seven out of the top 10 being foreign apps. ByteDance leads the segment with its popular apps TikTok and CapCut. Following closely are Shopee, developed by SEA Group, MAE by Maybank, and MyJPJ by *Jabatan Pengangkutan Jalan* (JPJ)³²³.

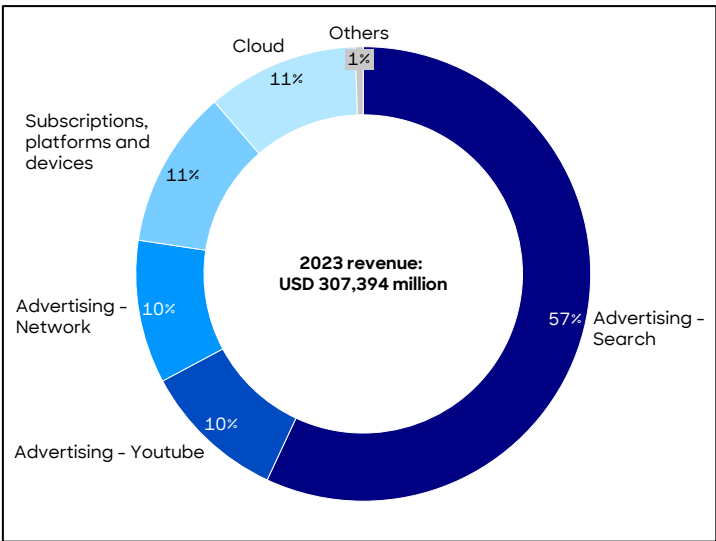
³²³ DataReportal (2024). Digital 2024: Malaysia. <https://datareportal.com/reports/digital-2024-malaysia?rq=digital%20malaysia>

5.1.9.2 Key mobile operating and payment system players

(a) Google

Founded in 1998 as a search engine and has since evolved into a multifaceted technology company. It is known for products like Android, Google Chrome and services such as Google Maps and YouTube.

Figure 70 : Google’s global revenue breakdown, 2023 [%]

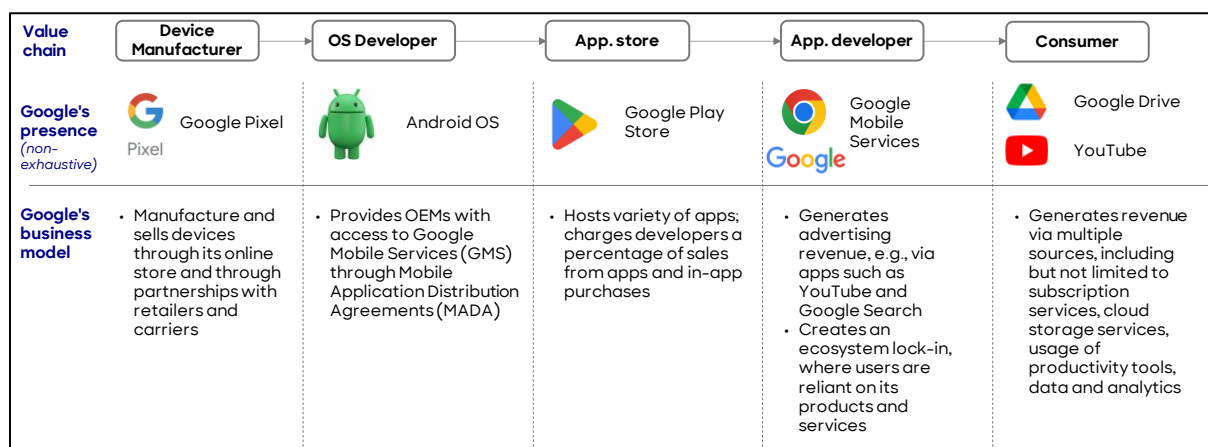


Source: Alphabet Inc

Google’s revenue model is heavily reliant on digital advertising, with 79.4% of its earnings stemming from this segment. Its browser app plays a critical role in driving traffic and engagement within its ecosystem. Other sources of revenue include subscriptions and platforms (10.3%), cloud services (9.3%) and miscellaneous income (1.1%)³²⁴.

³²⁴ Google (2024). Annual report pursuant to Section 13 or 15 (d). <https://abc.xyz/investor/sec-filings/annual-filings/2024/>

Figure 71 : Google’s involvement and business model along the mobile operating and payment system supply chain



Source: Google

In the mobile operating and payment system sub-sector, Google plays a significant role throughout the entire supply chain. It operates as a device manufacturer with its Google Pixel smartphones, an OS developer with Android OS, an app store provider through the Google Play Store and an app developer with GMS³²⁵.

The Android OS was initially developed in response to issues such as OS fragmentation and high barriers for app developers, with the goal of balancing the interests of OEMs, Mobile Network Operators (MNOs), app developers, and users to foster innovation, reduce costs, and enable broad app distribution and adoption³²⁶. As an OS player, Android’s free, open-source and customisable nature allows OEMs to access GMS apps, such as Google Play, Chrome (Google’s default browser) and YouTube, at no cost through its MADA. Selected apps serve important functions within the Android ecosystem, with a key example being Chrome, which acts as the default web browser for Android devices. It plays a critical role in gathering user data, which supports Google's advertising business by helping deliver more targeted ads.

³²⁵ Google (2025). Google Mobile Services. <https://www.android.com/gms/>

³²⁶ Written response from industry players.

For the installed GMS apps, although they cannot be removed, users can disable them if desired.

On the payment system, Google Play's integrated billing system supports over 200 payment methods³²⁷ and provides security features such as fraud detection and user controls. It also implements various initiatives to continuously improve its security system. For example, Google Play Protect leverages AI to detect and mitigate security threats in real-time.

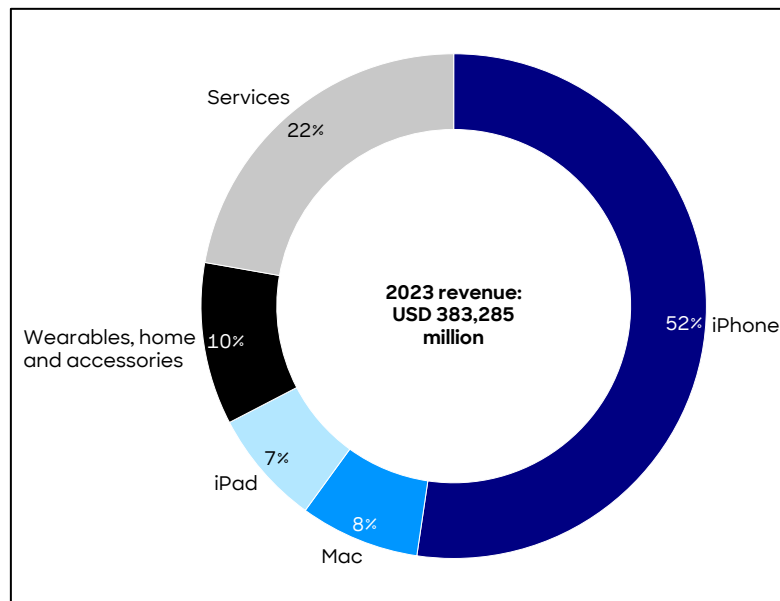
Overall, Google's strategy encourages widespread use of Google's services, which helps to increase its advertising revenue and enhancing its market share. Each layer of the ecosystem operates as a multi-sided market, involving various players. These services are often for free to attract users into the ecosystem, creating a seamless user experience that strengthens reliance on its ecosystem.

(b) Apple

Established in 1976, Apple is known for its hardware, including the iPhone, iPad and Mac computers, alongside its OS like iOS and macOS. The company focused on a closed, tightly integrated ecosystem that offers a seamless user experience across its devices, fostering strong brand loyalty and a distinct identity in the technology market.

³²⁷ Written response from industry players.

Figure 72: Apple's global revenue breakdown, 2023 [%]



Source: Apple

Apple's revenue model is fundamentally built around device sales, with the iPhone contributing 52.3% to its total revenue of USD 383.3 billion in 2023. Other non-mobile devices, such as Macs and iPads, represent 25.4%, while services account for 22.3%³²⁸.

The company creates its own operating system, iOS and MacOS, which is specifically tailored to optimise performance on its devices (e.g., iPhone, iPad, Mac, etc.). This integration allows for features that enhance user interaction, such as continuity across devices and advanced security measures. Apple also controls the app distribution process through its App Store, which is pre-installed as the only official platform for iOS applications. By restricting access to other app stores, Apple ensures a high level of quality and security for its apps. In addition to its hardware and software, Apple is also a major app developer specifically tailored to optimise performance on its devices. It offers popular applications such as Apple Music, Apple TV, iCloud, and Safari (which is the default web browser on all Apple devices).

³²⁸ Apple (2024). Investor updates. <https://investor.apple.com/investor-relations/default.aspx>

As the default browser, Safari partners with Google to make Google its default search engine. According to documents released in the U.S. DOJ's ongoing antitrust lawsuit against Google in 2024, it was noted that Google paid Apple USD 20 billion in 2022, which allegedly represents 36% of the revenue Google generates from search ads³²⁹. This arrangement allows both Apple and Google to have significant influence over the browsing habits of users, encouraging the use of their services while maintaining control over their online experiences.

On the payment system, Apple offers a more secure environment due to its consistent device-level security measures. It implements extensive layers of fraud prevention, including tokenisation, secure storage, authentication methods, monitoring, and fraud detection, all of which are integrated into its closed ecosystem. This ensures a highly controlled environment, enhancing overall security for users.

(c) Other players

Aside from Google and Apple, two other smaller players (in mobile operating and payment system) also have end-to-end integration throughout the entire supply chain:

Samsung: Founded in 1969 and known for its wide range of consumer electronics, including smartphones, tablets, TVs and home appliances. In this sub-sector, Samsung is involved throughout the entire supply chain. It has an extensive production line of smartphone devices that cater to different market segments.

While it does not produce its own OS, Samsung adds customisation and features on Android OS through its own UI system - One UI. This interface enhances the user experience on Samsung devices and offers unique features such as Samsung Pay, Bixby and Knox, tailored to their hardware.

³²⁹ The Business Times (2024). Google's payments to Apple reached US\$20 billion in 2022, antitrust court documents show. <https://www.businesstimes.com.sg/companies-markets/telcos-media-tech/googles-payments-apple-reached-us-20-billion-2022-antitrust-court-documents-show>

Samsung also operates the Galaxy Store, an app store designed specifically for its devices, which provides users access to applications optimised for Samsung's ecosystem. Although Samsung primarily relies on third-party developers for app creation, it also invests in developing its own apps and services, such as Samsung Health and Samsung Kids, Samsung Internet.

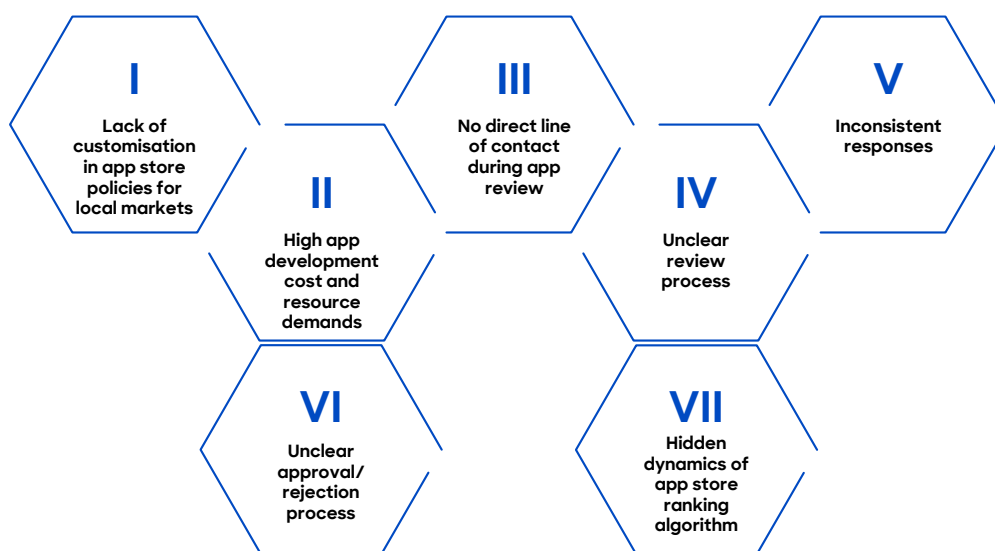
Huawei: Established in 1987 as a telecommunications equipment and consumer electronics company. Its device manufacturing focuses on a range of smartphones, from budget models to premium devices under its Pura and Mate series.

On the OS side, Huawei developed its own system, HarmonyOS, in response to restrictions imposed by the U.S. government on its access to Android. It also operates the Huawei AppGallery, its proprietary app store. In addition to supporting third-party developers, Huawei develops its own applications, such as Huawei Health, Huawei Browser and Huawei Books.

5.1.10 Key market-related issues

- (a) **Operational challenges in app development and management:** App developers face multiple operational challenges in app development and management that arise from app store policies, technical requirements, and platform processes. These include:

Figure 73: Overview of operational challenges faced by app developers



Source: MyCC analysis

- I. **Lack of customisation in app store policies for local markets:** App store policies are often broad and do not specifically consider local market regulations, creating challenges for app developers when conflicts arise with Malaysian laws. For example, under Apple's new deletion requirement implemented in 2022, all apps that allow user account creation must also offer an option to delete the account³³⁰. This policy is likely done to align with GDPR's Article 17, which grants users the right to request the deletion of personal data under certain circumstances³³¹. However, this creates confusion for financial services apps in Malaysia, as its domestic Anti-Money Laundering,

³³⁰ Apple (2022). Offering account deletion in your app. <https://developer.apple.com/support/offering-account-deletion-in-your-app/>

³³¹ GDPR (2024). Art. 17 GDPR: Right to erasure ('right to be forgotten'). <https://gdpr-info.eu/art-17-gdpr/>

Anti-Terrorism Financing and Proceeds of Unlawful Activities Act 2001 (AMLA) requires financial institutions to keep records for at least six years following the completion of a transaction or termination of a business relationship³³². It is therefore not always feasible or appropriate to allow users to delete accounts tied to such financial transactions.

- II. **High app development cost and resource demands:** Different OS require distinct frameworks for app development, with Android primarily using Java or Kotlin and iOS using Swift or Objective-C. This creates challenges for developers in building apps that are compatible with both platforms, resulting in higher costs, longer development times, and complexities in maintaining and updating multiple codebases. While cross-platform frameworks like React Native, Flutter, and Xamarin aim to alleviate these challenges, issues such as performance concerns, User Interface/User Experience (UI/UX) consistency, and integration with native features can still emerge.
- III. **No direct line of contact during app review:** Developers often face challenges due to the lack of direct communication with the person reviewing their app. When issues arise, they must rely on generic support channels or automated systems, which can sometimes be inefficient and time-consuming depending on the current volume of queries and complexity of the issue.
- IV. **Unclear review process:** According to selected app developers, the app review process can be unclear, as the guidelines are sometimes open to varying interpretations. While developers typically seek clarification through the app store's support system, the feedback they receive can sometimes be vague. For instance, if an app (or app update) submission is rejected from Google Play, developers will typically only receive an explanation and details to appeal in the form of an email. As a result, developers often need to follow up with the app store to ensure their issues are resolved effectively.

³³² BNM (2025). Anti-money laundering/countering financing of terrorism. <https://amlcft.bnm.gov.my/>

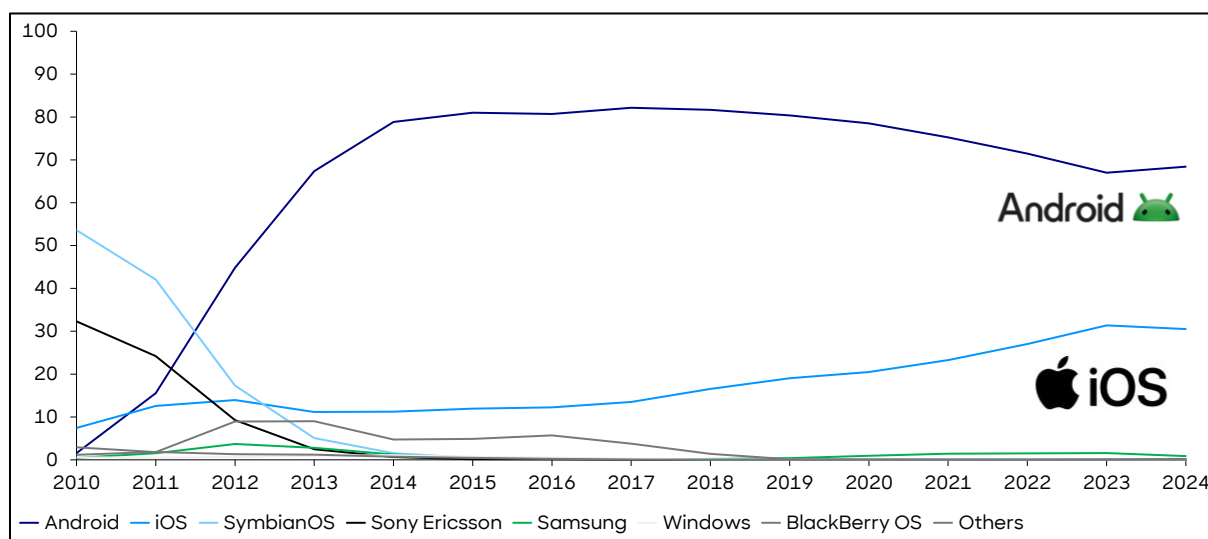
- V. **Inconsistent responses:** While submitting a ticket may lead to support from an actual support personnel, developers reported that communication with app stores can vary each time they reach out, resulting in inconsistent and often unclear guidance. This may lead to discrepancies, where similar apps are treated differently, or policies are enforced inconsistently.
- VI. **Unclear approval/rejection process:** Developers often encounter delays or confusion due to an inconsistent approval/rejection process and lack of specific feedback on rejections. In some cases, they are directed to app stores' community forums for clarification or issue resolution. For example, in 2022, a Malaysian eWallet was unavailable for download on the Apple App Store for several days³³³. It was later restored, but no official reasons were provided for its delisting.
- VII. **Hidden dynamics of app store ranking algorithm:** The app stores' recommendation and ranking algorithms play a significant role in determining which apps gain visibility. Although platforms like Apple App Store and Google Play publishes a list of factors when organising apps for display (i.e. User relevance, ads, quality of app experience, etc), these algorithms are not publicly disclosed in full detail due to proprietary reasons. This situation makes it difficult for developers, especially small ones, to ensure their apps are discovered by users. The app stores may also push developers toward paid advertising for visibility, potentially benefiting developers with larger marketing budget.

³³³ Input from IDI.

5.1.11 Competition assessment

5.1.11.1 Market concentration³³⁴

Figure 74: OS players' market share in Malaysia, 2010-2024 [%]



Source: Statcounter, 2024

Based on data from Statcounter³³⁵, strong dominance by selected players is evident in the mobile operating and payment system sub-sector. As of the end of 2024, Apple and Google collectively control 98.9% of the OS market. Google's Android leads with a 68.4% share, while Apple's iOS follows with 30.5%. Specifically for Android, this is mostly attributed to its open-source platform that enables broad manufacturer participation and OS customisation.

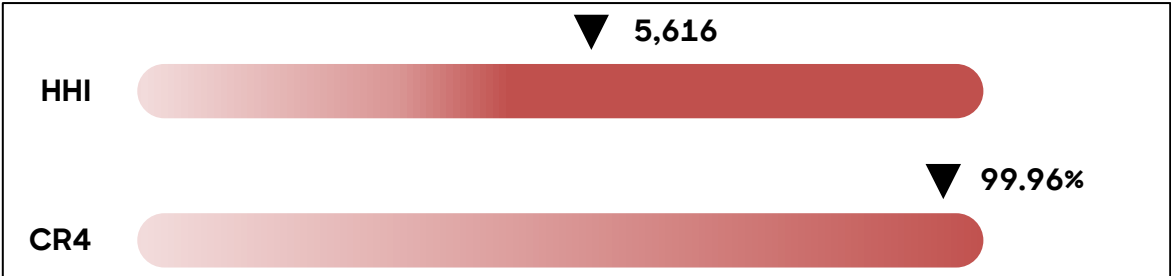
Both players have dominated the market since 2012, with a combined share of 58.8%. From 2014 onwards, their market share has consistently exceeded 90%, indicating the relative stability of their duopoly in the sub-sector.

³³⁴ Based on the study's scope only. Findings does not reflect MyCC's final view on the sub-sector's market concentration.

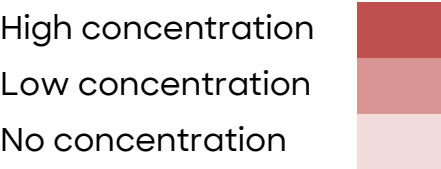
³³⁵ StatCounter (2024). Mobile operating system market share Malaysia. <https://gs.statcounter.com/os-market-share/mobile/malaysia/#yearly-2009-2024>

Market concentration was further analysed using the HHI³³⁶ and CR4³³⁷:

Table 26: Market concentration level in the mobile operating and payment system sub-sector, June 2025



Legend³³⁸



Source: MyCC analysis

5.1.11.2 Market dynamics

The mobile operating and payment systems sub-sector was relatively dynamic prior to 2012 but has experienced low market activity and limited competitive shifts since then.

In the early days of smartphones in the 2000s, Symbian was the dominant mobile OS, powering a wide range of devices, particularly those from Nokia and Sony Ericsson. In 2010, Symbian held a significant share of the global

³³⁶ Commonly used measure of market concentration and competition among companies in a sector. It assesses how much market share is controlled by the key companies. It can be calculated by adding the squares of the market share percentages of all the companies in the market.

³³⁷ Another common measure of market concentration that focuses on the largest companies in a sector. It shows how much of the market is controlled by the top four companies. It can be calculated by adding the market share percentages of the four largest companies in the market.

³³⁸ HHI legend: < 100 = no concentration, 100-1,500 = low concentration, 1,500-2,500 = medium concentration and > 2,500 = high concentration; CR4 legend: 0% = no concentration, 1-49% = low concentration, 50% = oligopoly, 51-99% = high concentration, 100% = monopoly

(32.3%) and Malaysian (53.6%) smartphone market, with Nokia leading the way. Sony Ericsson, which used a variant of Symbian, also enjoyed strong market presence in Malaysia (32.3% in 2010)³³⁹. However, as consumer preferences shifted towards more user-friendly and feature-rich platforms, Symbian's limitations in terms of UI and app ecosystem led to its decline.

By 2012, Apple's iOS and Google's Android emerged as leaders in Malaysia (with a combined market share of 58.8%). iOS gained prominence due to its intuitive touchscreen interface. On the other hand, Android gained prominence due to its open-source nature, offering a core system that manufacturers could customise. This flexibility led to a wide range of device makers adopting Android. As of 2024, Android has partnered with 135 device brands³⁴⁰.

Both iOS and Android are pioneers in the mobile app distribution system, with both introducing the concept of "app store" in 2008³⁴¹, where users could easily download and update apps. Before the app stores, apps were typically distributed through various methods such as software packages from manufacturers or third-party websites. Users also had to manually download and install apps, which was more complicated and less secure than the streamlined experience offered by app stores today.

Due to their large user bases, the Apple App Store and Google Play Store are preferred platforms for app developers. This is particularly true in regions with strict security and regulatory standards, as both platforms adhere to relevant rules and regulations. These stores ensure compliance with local and international requirements, providing developers with a level of assurance that their apps will meet legal and security standards in various markets.

³³⁹ StatCounter (2024). Mobile operating system market share worldwide. <https://gs.statcounter.com/os-market-share/mobile/>

³⁴⁰ Android (2025). Partners. <https://www.android.com/certified/partners/>

³⁴¹ Apple (2018). The App Store turns 10. <https://www.apple.com/sg/newsroom/2018/07/app-store-turns-10/>; App Radar (2024). App store history: The evolution of the app marketplace from 2008 to 2004. <https://appradar.com/blog/app-stores-history>

5.1.11.3 Degree of horizontal and vertical integration

Both Apple and Google are highly vertically integrated in their operations, controlling key aspects such as hardware, operating systems, app distribution platforms, and app development. Apple, in particular, exemplifies this integration with its closed ecosystem of iPhones, iOS, the App Store, and proprietary apps. Google, while relying on third-party hardware manufacturers for Android devices, maintains strong control over the Android OS, Google Play Store, and its suite of apps.

In terms of horizontal integration, there are limited examples - a notable case is Google's acquisition of Android Inc. in 2005 for USD 50 million³⁴², which enabled Google to develop and expand the Android OS. Today, Android and iOS dominate the global market, accounting for the majority of mobile operating and payment usage. This dominant market position has created challenges for other OS players. Several platforms are seen to have exited the market, including but not limited to:

- **Windows Mobile OS:** In late 2019, Microsoft officially ended support for the OS³⁴³.
- **BlackBerry OS:** Lost relevance as touchscreen smartphones from Apple and Android gained popularity, leading to its decline and exit in 2022³⁴⁴.

³⁴² Medium (2022). Nearly 17 years ago, Google secured its most significant acquisition: Have you any idea what it was? https://medium.com/@Blank_Misfit/nearly-17-years-ago-google-secured-its-most-significant-acquisition-have-you-any-idea-what-it-3e3d9bf1d87d

³⁴³ Microsoft (2022). Support ending for Windows 10 mobile in 2019. <https://learn.microsoft.com/en-us/lifecycle/announcements/windows-10-mobile-end-of-support>

³⁴⁴ The Economic Times (2022). End of an era! BlackBerry OS smartphones will stop working from January 4. <https://economictimes.indiatimes.com/magazines/panache/end-of-an-era-blackberry-os-smartphones-will-stop-working-from-january-4/articleshow/88658655.cms?from=mdr>

- **Firefox OS:** Failed to attract developers and users and was discontinued in 2016³⁴⁵.

5.1.11.4 Level of entry barriers

The sub-sector is characterised by high entry barriers, making it challenging for new players to compete. Indirect network effects may create a self-reinforcing cycle where established platforms like iOS and Android can attract more users and developers, increasing the platform's value and entrenching their dominance. Newcomers may struggle to build a robust app ecosystem, which is critical for attracting users.

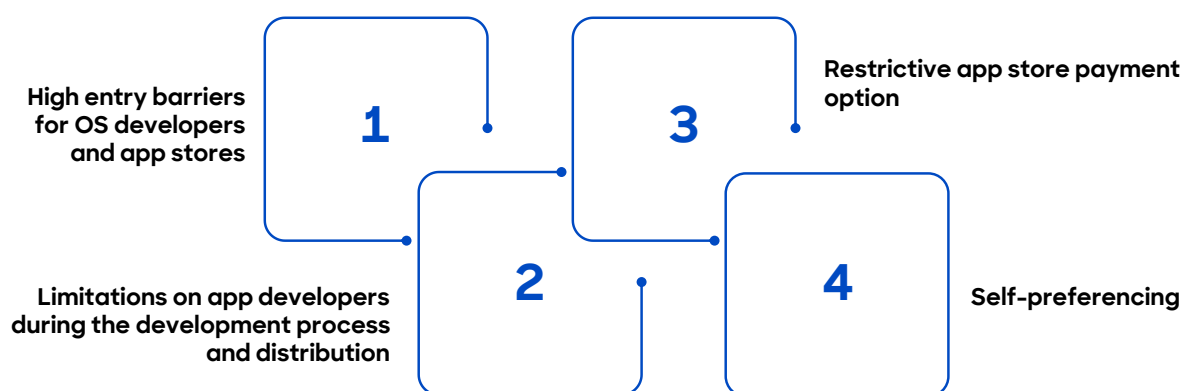
Additionally, high development costs for creating and maintaining a mobile OS, including expenses for software, hardware, and security systems, pose significant financial challenges for smaller entrants. Established players may also benefit from economies of scale, spreading development and marketing costs over a large user base, which allows them to offer competitive pricing and quality. Furthermore, customer lock-in effects make it difficult for users to switch platforms due to non-transferable app purchases, media subscriptions, and platform-specific services.

Further details of the entry barriers are detailed in the key anti-competitive issues.

³⁴⁵The Verge (2016). Mozilla outlines the end of Firefox OS on phones and looks to IoT future. <https://www.theverge.com/2016/2/4/10915930/mozilla-firefox-os-internet-of-things>

5.1.12 Key anti-competitive issues

Figure 75: Summary of key anti-competitive issues



Source: MyCC analysis

5.1.12.1 High entry barriers for OS developers and app stores

Description: In Malaysia, as well as globally, the OS market is primarily a duopoly. In the early days of smartphones, platforms like Symbian OS (used by brands such as Motorola and Nokia) and Sony Ericsson's OS were dominant. However, these OS eventually lost ground due to their primary hardware manufacturers, Motorola, Nokia, and Sony Ericsson, not being able to adapt quickly enough to the competition posed by Apple and Samsung. Additionally, the pace at which these companies developed a comprehensive mobile ecosystem lagged behind that of their rivals. Today, Android (with 68% market share in Malaysia) and iOS (at 31%) dominate the OS market³⁴⁶.

This trend is also evident in the app store landscape, where dominance is similarly concentrated. As of 2021, the Apple App Store accounted for 80% of mobile app downloads in Malaysia, while the Google Play Store made up

³⁴⁶ StatCounter (2024). Mobile operating system market share Malaysia. <https://gs.statcounter.com/os-market-share/mobile/malaysia/#yearly-2009-2024>

19%³⁴⁷. This is largely due to both Apple³⁴⁸ and Google being pioneers in app development and distribution, benefiting from a first-mover advantage. Although other app stores exist, their visibility and market share in Malaysia remain minimal.

For new players looking to enter the market (OS and app store), several barriers to entry exist:

- **Indirect network effects:** OS and app stores play a central role in building ecosystems that tightly connect consumers, app developers, and device manufacturers. By working closely with manufacturers, OS platforms ensure seamless hardware-software integration, which enhances the user experience and encourages manufacturers to stay within established ecosystems. This thus makes it harder for new platforms to gain device partnerships.

On the app developer side, platforms with large user bases are able to position itself more attractively, as they are able to offer greater reach and monetisation potential. Unless there is a specific need that only smaller platform and new entrants are able to offer, app developers are thus incentivised to build for these platforms, continuously enriching the app landscape. Furthermore, developers must decide whether to build for Android, iOS, or both (a practice known as “multi-homing”). Although multi-homing helps reduce reliance on a single platform by allowing broader user reach, the cost and effort involved often result in developers favouring one platform, which can still strengthen network effects for the dominant players.

From the consumer perspective, users gravitate toward platforms that offer a wide selection of apps, reliable devices, and integrated services. As more users join a platform, its value increases, attracting even more developers and further improving the user experience up

³⁴⁷ Rakuten Insight (via Statista) (2021). Leading app store to download mobile phone apps in Malaysia as of September 2021. <https://www.statista.com/statistics/1278753/malaysia-leading-app-store-for-app-downloads/>

³⁴⁸ Apple was the first to provide a controlled ecosystem for app developers and consumers, introducing the concept of "apps" as a major revenue stream. The app store was launched in October 2008.

to a certain point, although the ability of developers and users to multi-home (i.e., participate in multiple ecosystems simultaneously) can soften these lock-in effects.

- **High development costs:** Developing a mobile OS requires significant investment in both software and hardware infrastructure, while ongoing costs associated with maintaining and updating the platform only add to the financial burden. For instance, OS developers must manage systems like Multi-Factor Authentication (MFA), which, while essential for security, adds complexity and expense. According to the JFTC³⁴⁹, majority of the cost associated with providing mobile OS and app store services is fixed, such as development costs. Such costs place new and smaller players at a disadvantage, limiting their ability to scale effectively.
- **Economies of scale by established players:** Key players can spread their development and marketing costs over a broader user base (i.e. lower cost per user and higher quality products). However, this makes it difficult for smaller entrants to compete on price or quality. While inter-platform competition among key players fosters innovation and creates more efficient app distribution channels, this dynamic reinforces their market dominance, creating an environment where the cost of entry is prohibitively high for many aspiring OS developers.

Additionally, these companies may have the advantage of cross-subsidising services, using profits from one area to support growth or experimentation in others. This allows them to take risks and innovate in new areas, further consolidating their market position.

- **Customer lock-in effects:** Occur when users find it difficult to switch to alternative products or services due to factors like switching costs and network effects. For instance, media purchases and subscriptions bought through app stores are often tied to their respective platforms. This includes items like music purchased on iTunes, subscriptions via Google Play Music, or storage on iCloud. As

³⁴⁹ JFTC (2023). Market study report on mobile OS and mobile app distribution, page 39. https://www.jftc.go.jp/file/230209EN_hontai2.pdf

a result, both the content and subscriptions are closely linked to the OS, a user who has invested significantly in one ecosystem must effectively repurchase apps and some services if they decide to switch to a competing OS. Additionally, app purchases are typically non-transferable between different platforms, meaning that once a user commits to one ecosystem, they are effectively locked in and must repurchase apps or services if they decide to switch to another OS.

However, to mitigate this friction, tools and APIs have been developed by both platform owners and third parties to facilitate the transfer of other personal data, such as contacts, photos, and messaging histories, between ecosystems. This reduces some of the barriers to switching.

While switching between the two dominant platforms occurs, from a regulatory perspective, the market power of Android and iOS (which collectively hold 99% of OS market share in Malaysia as of September 2024³⁵⁰) could potentially raise concerns about market dynamics. The dominance of these platforms may make it more challenging for new entrants to gain traction, reinforcing their position and potentially reducing competitive pressure. This could have implications for innovation and consumer choice, as the market may become more focused on existing ecosystems.

Implication on competition:

- **Dominant players with entrenched market positions** lead to reduced competition and discourage potential entrants into the sub-sector.
- **Increasing business costs and declining commercial viability** make it harder for new players to compete in the sub-sector.
- **Market influence exerted by dominant players**, particularly in the regulatory space, can further shape the competitive landscape.

³⁵⁰ StatCounter (2024). Mobile operating system market share Malaysia. <https://gs.statcounter.com/os-market-share/mobile/malaysia/#yearly-2009-2024>

- **Reduced consumer experience and choice** as the sub-sector is primarily controlled by the products and services of two dominant players.
- **Stifled innovation and diversity**, as dominant market players may have less incentive to develop new products or services due to their established market share.

Relevant case(s): In November 2024, the U.S. Department of Justice has proposed that Alphabet's Google (GOOGL.O) be required to sell off its Chrome internet browser³⁵¹. Google's integration of its Chrome browser with its search engine and advertising business illustrates how vertical integration may reinforce market dominance. Google's control over how people access the internet and view advertisements is heavily linked to its Chrome browser, which typically defaults to Google Search and collects data critical to Google's advertising business. With an estimated two-thirds share of the global browser market, Chrome is a significant revenue driver for Google.

Additionally, when users sign into Chrome with their Google account, the company is able to deliver more targeted search advertisements, which further solidifies its market position. By controlling how users access the internet and view advertisements, Google not only strengthens its position in the digital advertising market but also has the potential to limit opportunities for competitors, creating barriers to entry in both the browser and advertising markets.

Observations in Malaysia: Similar to global issues in Malaysia reflect broader global trends.

On the regulatory front, certain complexities may emerge due to the strategic investments from key investors in the country. In May 2024, Google announced a commitment of MYR 9.4 billion to establish its first data centre and Google Cloud region in Malaysia. According to MITI, this investment is projected to generate approximately 26,500 employment

³⁵¹ Reuters (2024). DOJ to ask judge to fore Google to sell off Chrome, Bloomberg News reports. <https://www.reuters.com/technology/doj-ask-judge-force-google-sell-off-chrome-bloomberg-reports-2024-11-18/>

opportunities and contribute an estimated economic value of MYR 15.4 billion. Additionally, Malaysia stands to benefit from advancing its digital goals as outlined in the MDEB and the New Industrial Master Plan 2030³⁵².

5.1.12.2 Limitations on app developers during the development process and distribution

App developers operate within the technical and policy frameworks set by mobile operating system providers, which can shape how apps are developed and distributed. While these frameworks are often designed to ensure consistency, security, or performance, they may also present certain limitations for developers. The following highlights key areas where developers may face constraints:

(a) Limited access to device functionalities

Description: Third-party app developers face restrictions in accessing certain device functionalities that are reserved for the OS provider's own applications. This issue is particularly prominent on iOS due to Apple's vertical integration approach, which tightly controls access to key hardware features. One of the most notable restrictions is NFC, a short-range wireless technology that allows devices to exchange data when brought close together. NFC is commonly used in applications like contactless payments, access control, and data sharing.

While NFC is not proprietary³⁵³, Apple limits direct access to the NFC controller, reserving full functionality for its own Wallet and Apple Pay services. For banks and financial institutions, NFC payments must be routed through Apple Pay rather than through independently developed apps³⁵⁴. Apple noted that this restriction on the grounds of security and user experience, noting that Apple Wallet provides a unified interface

³⁵² Malay Mail (2024). Google to invest RM9.4b in Malaysia to set up data centre and cloud region. <https://www.malaymail.com/news/malaysia/2024/05/30/google-to-invest-rm94b-in-malaysia-to-set-up-data-centre-and-cloud-region/137176>

³⁵³ Secure Technology Alliance (2025). NFC frequently asked questions. <https://www.securetechalliance.org/publications-nfc-frequently-asked-questions/>

³⁵⁴ Apple (2025). Apple Pay security and privacy overview. <https://support.apple.com/en-sg/101554>.

where users can store and switch between multiple payment cards, loyalty passes, and keys without needing to navigate separate apps³⁵⁵.

From a security perspective, direct access to NFC or the Secure Element could potentially increase the iOS attack surface, which might expose devices to risks from compromised apps or infrastructure. As a security measure, Apple implements a one-to-one pairing between the NFC controller and Wallet, which helps simplify settings and minimise token duplication across third-party services.

The limitations on NFC access are also tied to platform restrictions on iOS and could allow Apple to maintain control over the payment ecosystem, ensuring security, privacy, and compliance with financial regulations. This may be viewed as a competitive advantage for Apple, particularly in the context of growing contactless payment adoption. For instance, in Malaysia, Visa Consumer Payment Attitudes Study reveals that over 90% of consumers use card payments, with 20% of total transactions being contactless³⁵⁶.

Implication on competition:

- **Limiting third-party apps** from leveraging NFC for payment purposes, further limiting their capability to operate.
- **Reduced market competitiveness** as Apple's control over NFC for payment systems may create an uneven playing field, where third-party app developers cannot innovate or offer alternative payment solutions.
- **Potential impact on payment method diversity** to end users of iPhones (less consumer choice).

Relevant case(s): In May 2022, the EC preliminarily concluded that Apple had abused its dominant position by restricting access to its NFC

³⁵⁵ Written input from industry players; CMA (2022). Mobile ecosystems: Market study final report, page 187. <https://www.gov.uk/cma-cases/mobile-ecosystems-market-study>

³⁵⁶ New Straits Times (2024). Visa study says more than two-thirds of Malaysian consumers have tried to go cashless. <https://www.nst.com.my/business/corporate/2024/06/1065634/visa-study-says-more-two-thirds-malaysian-consumers-have-tried-go>

functionality exclusively for Apple Pay, thereby hindering competition among mobile wallet providers. This restriction prevented other providers from developing competing solutions, reinforcing Apple's control over the mobile payments market.

Following discussions with the EC, Apple committed in July 2024 a ten-year agreement that allows other mobile wallet providers to access the NFC function free of charge, without requiring integration with Apple Pay or Apple Wallet. This commitment is significant as it removes a key barrier to entry for third-party providers and levels the playing field. It also applies to iPhone users across the European Economic Area (EEA), which encompasses the EU, Iceland, Liechtenstein, and Norway. By opening up NFC capabilities, this move is expected to boost competition in the mobile payments market, encouraging innovation and providing consumers with greater choices³⁵⁷.

Specifically in Norway, in December 2024, Vipps became the first third-party mobile payment app globally to offer NFC-based tap-to-pay functionality on iOS devices³⁵⁸.

Furthermore, in August 2024, Apple announced that starting with its iOS version 18.1, app developers in Australia, Brazil, Canada, Japan, New Zealand, the UK and the US will be able to offer NFC contactless transactions using the Secure Element from within their own apps on iPhone, separate from Apple Pay and Apple Wallet.

Observations in Malaysia: According to feedback from one of the study's participants, an e-wallet player, they have a desire to implement the NFC feature within the e-wallet app to provide greater convenience for users,

³⁵⁷ European Commission (2024). Antitrust: Commission seeks feedback on commitments offered by Apple over practices related to Apple Pay. https://ec.europa.eu/commission/presscorner/detail/fi/ip_24_282; European Commission (2024). Commission accepts commitments by Apple opening access to 'tap and go' technology on iPhones. https://ec.europa.eu/commission/presscorner/api/files/document/print/fin/ip_24_3706/IP_24_3706_EN.pdf

³⁵⁸ Vipps (2024). Vipps MobilePay launches the world's first alternative to Apple Pay on iPhone. <https://vippsmobilepay.com/en/news/2024/12/09/vippsmobilepay-launches-the-worlds-first-alternative-to-apple-pay-on-iphone>

enabling payments for various purchases and transportation (existing NFC technology only used in its cards for balance top-up). However, this is challenging due to the limited access granted by device manufacturers and OS developers.

(b) Restrictions/challenges in browser app development

Description: On iOS, Apple mandates that all browsers must use its proprietary WebKit engine, including browsers like Chrome, Firefox, and Edge, which must run on WebKit rather than their own engines (e.g., Blink for Chrome, Gecko for Firefox). This may limit the features and performance enhancements these browsers can offer compared to their versions on other platforms.

In contrast, Android offers flexibility by allowing browsers to use different engines, such as Blink (used by Chrome and others) or Gecko (used by Firefox), giving developers more freedom to innovate and customise their browsers.

Recently, in the EU and due to the DMA, Apple has allowed third-party developers to use their own engines on iOS, subject to authorisation from Apple, based on specific privacy and security criteria³⁵⁹.

Implication on competition:

- **Limited innovation on iOS**, where the WebKit restriction reduces the ability of browsers to differentiate, and thus limiting innovation.
- **Unfair competition on browser apps on iOS**, as Apple's Safari is pre-installed, which may result in it having a more prominent presence, while third-party browsers must be downloaded. Additionally, the requirement for third-party browsers to use the same WebKit engine may limit their ability to differentiate in terms of performance or features.

³⁵⁹ Apple (2024). Apple announces changes to iOS, Safari, and the app store in the European Union. <https://www.apple.com/sg/newsroom/2024/01/apple-announces-changes-to-ios-safari-and-the-app-store-in-the-european-union/>

- **Impact web app quality**, as developers must adjust compatibility and features to align with the limitations of the WebKit engine, potentially reducing performance and functionality.

Relevant case(s): In 2024, the CMA conducted an investigation on the Mobile Browsers and Cloud Gaming space³⁶⁰. It found that Apple's rules restrict other competitors from being able to deliver new, innovative features that could benefit consumers. According to input from other browser providers, the WebKit restriction on iOS results in several impacts:

- **Browser improvements & innovation:** Third-party browser developers cannot implement unique features or optimisations due to the reliance on WebKit.
- **Security:** Only Apple can implement security fixes for browsers on iOS, delaying important updates for other browser vendors.
- **Privacy:** Browser developers are unable to implement privacy features or improvements effectively, as they are restricted by WebKit.
- **Performance:** Lack of access to necessary APIs within WebKit limits performance improvements for third-party browsers.
- **Web app compatibility:** WebKit's limited feature support hampers the ability of third-party browsers to provide full support for web app features.
- **Maintenance costs:** Browser vendors face additional costs to maintain separate versions of their browsers for WebKit and other engines on different platforms.

³⁶⁰ CMA (2024). Mobile browsers and cloud gaming market investigation. https://assets.publishing.service.gov.uk/media/667d2f0caec8650b100900c0/WP2_-_The_requirement_for_browsers_operating_on_iOS_devices_to_use_Apple_s_WebKit_browser_engine_1.pdf

Separately, Apple highlighted that the WebKit restriction is necessary “for reasons of security, privacy and performance”³⁶¹.

Observations in Malaysia: Issues in Malaysia are similar to global ones – they reflect broader international trends.

(c)Control over app distribution

Description: In Malaysia, the dominance of Google Play Store and Apple App Store in app distribution is pronounced. According to MyCC’s survey, 97% of respondents reported that they typically download apps through native app stores, such as Google Play and Apple App Store, while only 2% used third-party app stores. This strong preference is driven by factors such as ease of use (83%), enhanced security (80%), faster updates (77%), and default availability on devices (64%)³⁶².

Moreover, there are various restrictions on the availability of alternative app stores within both iOS and Android OS. For Apple, the company maintains strict control over its App Store, limiting third-party app distribution and enforcing a closed ecosystem. In contrast, while Android is generally more open, the availability of alternative app stores is largely restricted to Google Play and app stores managed by device manufacturers, such as Samsung’s Galaxy Store³⁶³, Oppo’s App Market³⁶⁴ and Vivo’s V-Appstore³⁶⁵. Beyond this, alternative app stores face additional challenges, such as limitations imposed by Google’s security protocols (e.g., Google Play Protect), which restrict the installation of apps from unknown sources, and device manufacturers’ own compatibility and update requirements.

³⁶¹ CMA (2024). Mobile browsers and cloud gaming market investigation, page 33. https://assets.publishing.service.gov.uk/media/667d2f0caec8650b100900c0/WP2_-_The_requirement_for_browsers_operating_on_iOS_devices_to_use_Apple_s_WebKit_browser_engine_1.pdf

³⁶² MyCC’s survey.

³⁶³ Samsung (2025). Galaxy store. <https://galaxystore.samsung.com/>

³⁶⁴ Oppo (2025). App Market. https://developers.oppomobile.com/newservice/capability?pagename=app_store

³⁶⁵ Vivo (2025). V-Appstore. <https://www.vivo.com/en/support/questionList?categoryId=55879>

Due to this, Apple's App Store and Google's Play Store may hold considerable influence over app developers, shaping a competitive environment where developers depend on these platforms to reach customers effectively. As a result, many app developers may feel compelled to establish a presence on both app stores to maximise visibility and remain competitive, which in turn reinforces the prominence of these platforms and presents challenges for alternative app stores in gaining traction.

Implication on competition:

1. **Market dominance of key players**, where they control the primary distribution channels for apps, limiting competition and making it difficult for alternative app stores to thrive; additionally, dominance may inhibit innovation in app distribution methods.
2. **Increased dependency/reduced market power by app developers**, as they heavily rely on limited platforms for customer access.
3. **Reduced app store platform diversity** which also impacts end-users and app developers' availability of choice.

Relevant case(s): In response to the key app store constraints, some app developers have sought alternative distribution methods, such as downloading from other app stores or sideloading applications within the Android ecosystem. However, as of September 2024, the latest Android 15 OS (Vanilla Ice Cream) includes a "Google Play Integrity" API that allows app developers to check whether a user has sideloaded apps³⁶⁶.

Additionally, Samsung, as Android's leading OEM, has taken measures by shipping devices with maximum restrictions, disabling sideloading by default³⁶⁷. These measures, while addressing security concerns, further

³⁶⁶ Forbes (2024). Google to block some sideloading and push Android users to Play Store. <https://www.forbes.com/sites/zakdoffman/2024/09/13/google-issues-new-app-install-warning-for-pixel-9-pro-samsung-galaxy-s24-android-users/>

³⁶⁷ Samsung (2024). Protect your Galaxy device with the Auto Blocker feature. https://www.samsung.com/latin_en/support/mobile-devices/protect-your-galaxy-device-with-the-new-auto-blocker-feature/

limit developers' options and underscore the competitive challenges posed by the existing app distribution landscape.

Observations in Malaysia: Based on interactions with local app developers, in addition to relying on Google Play Store and Apple App Store, some developers also list their apps on Huawei AppGallery. This provides an additional option to ensure their apps are available and accessible to specific markets.

5.1.12.3 Restrictive app store payment option

Description: Both Apple's App Store and Google Play Store have stringent guidelines that control how developers can process payments within their apps. Specifically, these guidelines require that IAPs for digital content, including games, subscriptions, and other digital goods, be processed through Apple's IAP system or Google Play's billing system. These systems are mandatory for developers who want to offer digital goods or services within their apps.

In addition to mandating the use of their own payment systems, both Apple and Google impose a 15% to 30% commission fee on most transactions processed through their platforms (see market practices for more information). This means that for every purchase made within an app, the app developer must pay a fee to the app store.

There are, however, exceptions and potential instances of preferential treatment in the app store policies. In 2021, as part of the Epic Games lawsuit against Google, it was revealed that Google allegedly offered Netflix, a video streaming company, a significantly reduced commission rate of 10% if it agreed to use Google's payment system exclusively. This offer was made in response to Netflix's request for an alternative payment system. However, Netflix ultimately rejected the deal due to profitability concerns³⁶⁸.

³⁶⁸ The Verge (2023). Google offered Netflix a sweetheart deal to pay just 10 percent on Google Play. <https://www.theverge.com/23954852/google-netflix-app-store-deal-play-10-percent-revshare>

Additionally, companies like Spotify, which offer digital goods (subscriptions to streaming services), are not required to use the Google Play billing or Apple Pay systems. In particular, Spotify reportedly has a special arrangement with Google that allows it to pay zero commission when users subscribe through its own payment channels. If users subscribe via Google Pay, Spotify is only charged a 4% commission. These favorable terms stem from Spotify's market influence and Google's recognition of music as a core function of smartphones. Google has stated that such exceptions are necessary, as users might be less inclined to buy Android devices if apps like Spotify do not function seamlessly³⁶⁹.

Aside from the commission fee, both Apple and Google impose limitations on how developers can promote or link to external payment options. According to Apple's Developer Program License, it specifies that a licensed application can read or play digital content purchased outside the app (such as on a developer's website) but cannot link to or market these external purchases within the app³⁷⁰. Similarly, Google's Developer Policy prohibits apps from directing users to any payment method other than Google Play's billing system³⁷¹ within the app.

From Apple's standpoint, such policies are implemented in order to support the ecosystem and serve to maintain business model sustainability, ensuring platform security, and minimising fraud. The company also highlighted that developers retain multiple off-platform communication channels, including websites, social media, email, and marketing campaigns, through which they may inform users about alternative purchasing methods³⁷². For Google, it states that its billing system is distinct from a payment processor, providing various user with protections such as fraud detection, purchase management, and refund processing.

³⁶⁹ The Verge (2023). A secret Google deal let Spotify completely bypass Android's app store fees. <https://www.theverge.com/2023/11/20/23969690/google-spotify-android-billing-commission-secret-deal>

³⁷⁰ Apple (2025). Apple developer program license agreement. <https://developer.apple.com/support/terms/apple-developer-program-license-agreement/>

³⁷¹ Google (2025). Payments. <https://support.google.com/googleplay/android-developer/answer/9858738>

³⁷² Input from industry players.

Implication on competition:

- **Reduced flexibility for developers** as they are required to use Apple's and Google's payment systems, limiting their ability to choose alternative solutions.
- **High commission fees** (up to 30%) on IAPs reduces developers' profits, disadvantaging competitiveness, especially among smaller players.
- **Curtailment of innovation** due to high commission fees charged by app stores, which limit the resources developers can allocate to new projects.
- **Limited consumer choice** where end-users are restricted to using the app store's payment system, preventing access to potentially better payment options.
- **Barriers to entry for new competitors**, as the mandatory commission and payment restrictions discourage new developers from entering the market.

Relevant case(s): A notable example of competitive constraints in the app market is Epic Games' legal challenge against Apple's App Store policies in 2021. The case centred on Apple's requirement for developers to use its in-app payment system, which includes a 30% commission fee³⁷³. Epic Games criticised this policy, arguing that it limits developers' flexibility, increases costs, and restricts their ability to offer alternative payment methods or set competitive prices.

In response, Apple removed Fortnite from the App Store but later made adjustments to its policies by providing a "StoreKit External Purchase Link Entitlement"³⁷⁴. This entitlement allows developers to include links directing users to external payment sites, represent a limited concession to developer concerns by providing a limited way to bypass Apple's in-app

³⁷³ US Courts (2021). Epic Games, Inc. v. Apple Inc. <https://cand.uscourts.gov/cases-e-filing/cases-of-interest/epic-games-inc-v-apple-inc/>

³⁷⁴ Apple (2025). Distributing apps in the U.S. that provide an external purchase link. <https://developer.apple.com/support/storekit-external-entitlement-us/>

payment system. (Apple now takes a commission of up to 12-27%^{375, 376} on proceeds from sales made through links to external payment systems).

On May 2025, a U.S. federal judge ruled that Apple had “wilfully” violated the previous ruling by continuing to impose restrictions and commissions on external IAPs. As a result, the court ordered Apple to cease charging any fees on purchases made outside its App Store and to remove limitations on how developers direct users to external payment options. Apple stated that it will comply but plans to appeal³⁷⁷. Following the ruling, Fortnite returned to the U.S. Apple App Store in the same month³⁷⁸.

The lawsuit also contributed to heightened legislative scrutiny, helping to build momentum for the Open App Markets Act which was introduced in 2022. The bill aims to increase competition and consumer choice in digital marketplaces. It seeks to ensure the right to sideload apps, prohibit app store operators from self-preferencing their own services (including payment systems), and prevent retaliation against developers who offer alternatives³⁷⁹. As of April 2025, the bill remains under review in Congress and has not yet been enacted into law³⁸⁰. Separately, in Indonesia, the Indonesia Competition Commission (ICC) imposed a fine of USD 12.4 million on Google for abusing its dominant position by mandating that app developers exclusively use Google Play Billing for IAPs in January 2025. The commission also ordered Google to cease this mandatory requirement and to allow app developers to participate in the "User Choice Billing" programme. The programme is intended to offer an incentive by reducing

³⁷⁵ CNBC (2025). Apple says Epic Games contempt ruling could cost ‘substantial sums’. <https://www.cnbc.com/2025/05/07/apple-says-epic-games-contempt-ruling-could-cost-substantial-sums-.html>

³⁷⁶ 12% for participants in the company’ Small Business Program.

³⁷⁷ US Courts (2025). Epic Games Inc. v. Apple Inc. https://storage.courtlistener.com/recap/gov.uscourts.cand.364265/gov.uscourts.cand.364265.1508.0_2.pdf

³⁷⁸ BBC (2025). Fortnite back on US Apple app store after ban lifted. <https://www.bbc.com/news/articles/c0711mrl470o>

³⁷⁹ U.S. Senator Richard Blumenthal (2021). Open app markets act. <https://www.blumenthal.senate.gov/imo/media/doc/8.11.21%20-%20Open%20App%20Markets%20Act%20-%20Bill%20Text.pdf>

³⁸⁰ U.S. congress (2022). S.2710 - Open app markets act. <https://www.congress.gov/bill/117th-congress/senate-bill/2710/all-actions>

service fees by at least five percent for one year, starting from the date the ICC's decision becomes final/legally binding³⁸¹.

Observations in Malaysia: A Malaysian digital e-book retailer faced challenges due to the 30% commission fees imposed by Google Play Store. This high commission rate impacted the company's profitability and market operations.

In an attempt to circumvent the steep app store commission, the app provided an alternative payment option within its app. However, this move led to the app being removed from the app store, as it violated the platforms' policies requiring all transactions to go through their designated payment systems.

In the e-book industry, the standard revenue share model typically allocates 70% to publishers and 30% to the platform. However, with the app store taking a 30% commission on e-book sales, the retailer thus makes little to no financial gain, as the app store fees effectively absorbed the publisher's share, leaving no margin.

In order to be relisted on the app stores, the retailer had to fully comply with the app store policies, removing its alternative payment option from its app entirely³⁸².

Separately, in the over-the-top (OTT) streaming industry, various global players operating in Malaysia have demonstrated the ability to negotiate more favourable terms. Some OTT apps, depending on the size of their user base and market leverage, have successfully reduced their commission rates to as low as 15%. In certain cases, these apps are even able to offer third-party payment gateways for IAPs, a privilege typically unavailable to smaller or less influential developers³⁸³.

³⁸¹ KPPU (2025). Google found in violation, KPPU imposes fine of IDR 202.5 billion. <https://eng.kppu.go.id/google-found-in-violation-kppu-imposes-fine-of-idr-202-5-billion/>

³⁸² Input from IDI.

³⁸³ Input from IDI.

5.1.12.4 Self-preferencing

Description: Potential self-preferencing by mobile OS providers occurs at various levels within their ecosystems, influencing the availability, visibility, and performance of apps. At the first level – **app availability**, both Apple and Google offer apps that compete with third-party alternatives. For example:

Table 27: Selected OS apps that compete with 3rd party alternatives

App type	OS apps	Relevant third-party apps (not exhaustive)
Browser	iOS: Safari Android: Google Chrome	• Firefox • Opera
Email	iOS: Mail Android: Gmail	• Microsoft Outlook • Spark
Maps/navigation	iOS: Apple Maps Android: Google Maps	• Waze
Messaging	iOS: iMessage Android: Google Messages	• Telegram • Facebook
Music	iOS: Apple Music Maps Android: Google Play Music	• Spotify • Tidal

Source: MyCC analysis

These companies may also have an advantage when updating their apps, as they have access to platform updates and can adjust their own apps in response to changes ahead of time. This allows them to release updates or features sooner than third-party developers, who must wait for public releases.

Additionally, concerns have been raised regarding potential self-preferencing in the implementation of Apple's ATT policy. Apple's advertising platform uses first-party data and does not require the ATT prompt since it does not involve third-party tracking, according to the company. Apple's Personalised Ads feature collects data from user interactions within Apple services like the App Store, Apple News, and Stocks. The collected information includes device type, search queries,

download history, app interactions, and demographic information linked to the Apple ID³⁸⁴.

While Apple allows users to disable Personalised Ads through device settings, the process involves more steps compared to disabling ATT prompts for third-party apps. To disable, iPhone users must navigate to "Settings," then "Privacy," and "Apple Advertising" to disable "Personalised Ads"³⁸⁵. Before opting out, users are also shown information explaining how Apple uses targeting data for personalised ads and the consequences of disabling it. This dual system might confuse users and raise concerns about Apple's self-preferencing practices, which disadvantage competitors while protecting its own ecosystem.

The second level of self-preferencing relates to **app visibility**, where Apple and Google pre-install a range of their own apps on devices. For example, Apple pre-installs apps such as Safari, Mail, and Calendar on iPhones, while Google grants OEM licensees the right to pre-install GMS apps such as Google Search, Chrome, and YouTube on Android devices.

Specifically, under Google's MADA, OEMs wishing to pre-install one Google app must pre-install all GMS apps³⁸⁶. This bundling practice may contribute to reinforcing Google's market position by potentially limiting OEMs' ability to choose competing apps or services. OEMs are faced with the choice to either accept Google's requirements or give up the Android app ecosystem and essential apps like YouTube (unless the user chooses to manually install them), a situation that may be further complicated by revenue-sharing agreements³⁸⁷. While many third-party developers have thrived on Android, in terms of downloads without pre-installation,

³⁸⁴ Written input from industry players.

³⁸⁵ CMA (2021). Appendix J: Apple's and Google's privacy changes. https://assets.publishing.service.gov.uk/media/62a229c2d3bf7f036750b0d7/Appendix_J_-_Apple_s_and_Google_s_privacy_changes_eg_ATT__ITP_etc_-_FINAL_.pdf

³⁸⁶ CMA (2021). Appendix E: Google's agreements with device manufacturers and app developers. https://assets.publishing.service.gov.uk/media/62a0d5cbe90e07039ba54eee/Appendix_E_-_Google_agreements_with_device_manufacturers_and_app_developers.pdf

³⁸⁷ Sharing of a portion of net advertising revenue from specific search access points on manufacturers' devices.

according to similarweb³⁸⁸, as of January 2025, three of the top 10 most used apps on Android include three pre-installed apps - Google Search, Google Chrome and YouTube.

For Android OS devices, manufacturers also accept deals from third-party app developers to pre-install their apps. This may create an imbalance, as financially strong app developers may gain an unfair advantage.

Separately, selected pre-installed apps are often set as the default for their respective functions, such as Safari for browsing and Mail for email on iOS, and Google Chrome for browsing and Google Search for web searching on Android. This arrangement may give OS-owned apps prominent visibility and a competitive advantage for their apps.

Apple has stated that its approach to pre-installing apps is rooted in delivering a seamless and functional out-of-the-box experience for users. The company maintains that core apps such as Phone, Mail, Notes, and Messages are necessary to ensure that basic device functions, such as calling, texting, and browsing. Apple further noted that apps like FaceTime, Music, or TV help differentiate iPhone in a competitive smartphone market³⁸⁹.

The third level of self-preferencing concerns **app performance**. Mobile OS operators may collect user data through their platforms, which can be used to improve their apps. This includes information such as location data, usage patterns, and payment details. Such data allows these companies to refine app performance and user experience. However, the use of this data also raises privacy concerns, particularly regarding how information is shared with third-party advertisers. Both companies leverage the data collected to target users with personalised ads, which can influence the performance and appeal of their own apps relative to third-party options.

³⁸⁸ Similarweb (2025). Top apps ranking. <https://www.similarweb.com/top-apps/google/malaysia/>

³⁸⁹ Input from industry players.

Implication on competition:

- **Uneven playing field in the app market**, where OS platforms' apps may compete with third-party apps; these platforms also may have the potential to prioritise their own apps over others, gaining an advantage in terms of visibility and user accessibility; additionally, financially stronger third-party app developers may gain an unfair advantage through agreements with device manufacturers to pre-install apps, therefore reducing opportunities for smaller players to compete effectively.
- **Influence on consumer behaviour**, as studies show users often stick with default apps even when alternatives are available³⁹⁰.
- **Unfair operating conditions**, with selected OS platforms placing a compliance burden on third party developers (e.g., ATT), while its own apps are not subject to the same requirement.

Relevant case(s): In 2022, Germany's competition authority, Bundeskartellamt, initiated an investigation into Apple's ATT framework due to concerns about potential anti-competitive effects. The investigation focuses on whether the ATT framework provides an advantage to Apple's own services by limiting third-party apps' access to user data for targeted advertising while allowing Apple to continue collecting such data, potentially hindering competition³⁹¹. This raises concerns that Apple's services, such as Apple Search Ads, may gain a competitive advantage by benefiting from data exclusivity, while third-party advertisers face reduced effectiveness and increased costs. If proven, such practices could entrench Apple's dominance in the digital advertising market by limiting third-party developers' ability to compete on equal footing, thereby curbing innovation and reducing consumer choice.

³⁹⁰ The University of Tennessee (2015). When competition fails to optimize quality: A look at search engines. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2598128

³⁹¹ Bundeskartellamt (2022). Bundeskartellamt reviews Apple's tracking rules for third-party apps. https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2022/14_06_2022_Apple.html

In the preliminary findings, Bundeskartellamt has implied that Apple's ATT framework makes it "far more difficult" for rival app publishers to access advertising-relevant user data. The authority concluded that the policy may amount to unlawful self-preferencing and unequal treatment on Apple's iOS operating system. According to the Bundeskartellamt's President Andreas Mundt, the agency will soon require Apple to propose a remedy to address these concerns, while stopping short of imposing a fine. The Bundeskartellamt's position is that ensuring equal treatment of third-party services is essential, and that meaningful behavioural change is more impactful than financial penalties³⁹².

This concern was further highlighted by enforcement action in France. In June 2025, the Autorité de la concurrence (France's national competition regulator) fined Apple EUR 150 million for abuse of dominance in relation to its ATT framework. The French authority concluded that between April 2021 and July 2023, Apple implemented ATT in a way that disproportionately penalised third-party app developers. Specifically, Apple was found to have created an "artificially complex" consent mechanism for third-party apps requiring users to confirm tracking permissions twice while simultaneously applying a simpler, single-step process for its own data collection practices. This asymmetry was deemed to undermine the neutrality of the ATT framework and constitute an exploitative use of Apple's gatekeeper position on iOS.

The French authority further noted that Apple's implementation caused tangible economic harm, particularly to smaller app publishers and advertising service providers that depend on third-party data to monetise through targeted advertising. The enforcement body, however, stopped short of imposing structural remedies, instead leaving Apple to determine how to bring its conduct into compliance. This has prompted criticism from digital rights groups such as European Digital Rights (EDRI), who argue that the absence of clear remedial obligations risks enabling minimal adjustments that preserve Apple's market advantage while formally meeting legal thresholds³⁹³.

³⁹² TechCrunch (2025). Apple's app tracking privacy framework could fall foul of German antitrust rules.

³⁹³ Autorité de la concurrence (2025). Targeted advertising: the Autorité de la concurrence imposes a fine of €150,000,000 on Apple for the implementation of the App Tracking

Separately, in January 2025, device manufacturers Oppo and Realme issued a formal apology to users in Thailand for preinstalling the loan-related apps Happiness Loan and Fineasy. This raised concerns about potential access to users' personal information, such as contacts. In response to the backlash, the manufacturers began rolling out over-the-air updates³⁹⁴ that allow users to delete preinstalled apps from their devices³⁹⁵.

In a separate case related to "app performance," a report citing internal documents and sources revealed that Google used Android Lockbox data (a pre-installed system used by Google that collects and stores anonymised data on how users interact with apps and services on Android devices) as part of its planned rollout of YouTube Shorts in competing with TikTok in India. Data was used to understand how users were engaging with TikTok and its competitors. Additionally, it highlighted that Lockbox data was used to track and compare how Google's apps perform against rival products worldwide³⁹⁶. The anonymised performance related data is accessible to all developers, not only to Google-owned services.

Responding to the report, Google acknowledged that it has access to usage data from competing apps but clarified that the program is open to the public, allowing other developers to access similar data as well³⁹⁷. Google also states that no exclusive data advantages are provided to its own apps³⁹⁸.

Observations in Malaysia: On app availability, a digital e-book retailing app in Malaysia faced a competitive disadvantage compared to apps

Transparency ("ATT") framework. <https://www.autoritedelaconurrence.fr/en/press-release/targeted-advertising-autorite-de-la-concurrence-imposes-fine-eu150000000-apple>

³⁹⁴ Method of delivering software updates wirelessly to a device.

³⁹⁵ Bangkok Post (2025). Complaints as big phone brands pre-install loan apps. <https://www.bangkokpost.com/thailand/general/2938130/complaints-as-big-phone-brands-pre-install-loan-apps>

³⁹⁶ The Information (2020). Internal Google program taps data on rival Android apps. <https://www.theinformation.com/articles/internal-google-program-taps-data-on-rival-android-apps>

³⁹⁷ The Verge (2020). Google reportedly keeps tabs on usage of rival Android apps to develop competitors. <https://www.theverge.com/2020/7/24/21336946/google-android-lockbox-data-rival-apps-antitrust-scrutiny>

³⁹⁸ Input from industry players.

developed by Apple or Google, such as Google Play Books. As e-books are considered digital goods, every sale made within the app is thus subject to a mandatory commission fee from the app store. Additionally, e-books provided by foreign-registered digital services are subject to an 8% SST under the regulations of the RMCD. This tax is applied on top of the commission fee, increasing its total costs. As a result, the combined impact of the commission fee and the 8% SST significantly erodes the company's profit margins, making it challenging to maintain profitability while offering competitive prices.

In contrast, there are concerns that Google Play Books may not be subject to the standard 30% commission fee from the Google Play Store and may also have a clear competitive advantage over the company and other similar players (in terms of visibility). In response, Google noted that all apps are subject to the same billing policies, discovery and ranking criteria, and that third-party data is not shared with its own app teams³⁹⁹.

³⁹⁹ Input from industry players.

5.1.13 Recommendations

This section is divided into two sections:

- **Targeted recommendations** that are specific to individual sub-sectors
- **General recommendations** that apply across all sub-sectors to address broader systemic issues

It is important to emphasise that these recommendations are presented solely for consideration during the market review stage. Prior to any implementation, a comprehensive assessment should be undertaken, grounded in relevant theories of harm, and with careful evaluation of potential impacts on innovation, competition, and investment.

This approach will help ensure that any policy responses are evidence-based, effectively address the concerns identified, and preserve the flexibility and dynamism essential to Malaysia's digital economy and its long-term competitiveness.

On implementation, due to the complex and multifaceted nature of the digital economy, a flexible and adaptive approach is essential. This means taking into account the cross-cutting characteristics of the digital sub-sectors involved, as well as the existing mandates of various ministries and government agencies.

To support smooth and coordinated execution, the proposed central digital economy body (see general recommendation 1) should take the lead. The central body will also play a key role in ensuring alignment across stakeholders without imposing additional governance burdens to various ministries and government agencies.

5.1.13.1 Targeted recommendations

Three targeted recommendations are proposed to address the competition, regulatory and market issues identified specifically within the mobile operating and payment systems sub-sector.

1. Develop mobile operating and payment system sub-sector guideline

Linkage to issue	• High entry barriers for OS developer and app stores • Limitations on app developers during the development process and distribution • Restrictive app store payment option • Self-preferencing • Imbalance regulatory framework
Description	• Establish a clear and specific set of guidelines for key digital platforms operating in the mobile operating and payment system space in Malaysia. • Guideline to serve as a foundation to the unified digital economy legislation, with key areas being: ○ Platform definition: Specific to mobile operating systems, app stores and IAP systems that are integrated into app stores ○ Fair business conduct rules: Fair access to key functionalities, encourage responsible use of app developer data, allow flexible commercial terms in terms of optionality in payment system ○ User rights: Provide users with freedom to choose to uninstall pre-installed apps, change default apps, support user data portability ○ Access & transparency requirements: Maintain fair and open processes for app review, listing and ranking, provide clear guides on access to hardware functionalities, facilitate interoperability and data portability

Government stakeholders to be involved	• Ministry of Digital • KPDN • MyCC
Time horizon	• Short-term (1 year)
Expected outcomes	• Provides regulatory clarity for key digital platforms in the sub-sector. • Promotes fair platform practices and strengthens user rights. • Lays the foundation for future unified digital economy legislation.
Case study	Japan⁴⁰⁰ : In December 2018, the Japan Fair Trade Commission (JFTC) published the “Fundamental Principles for the Improvement of Rules Corresponding to the Rise of Digital Platform Businesses.” The document was intended as Japan’s first comprehensive policy framework to address competition and consumer protection concerns arising from the increasing dominance of digital platforms. The principles outlined: • The need to enhance transparency, fairness, and effective competition in digital platform operations. • Promotion of fair business conduct, including disclosure of contract terms and prevention of exploitative practices. • Ensuring transparency in algorithms, ranking systems, and data usage. • Encouraging the responsible use of consumer data to avoid abuse of market power. The 2018 framework served as a foundational guideline, shaping Japan’s subsequent regulatory interventions,

⁴⁰⁰ Japan Fair Trade Commission (2018). Fundamental principles for improvement of rules corresponding to the rise of digital platform businesses. https://www.jftc.go.jp/en/policy_enforcement/survey/index_files/190220.1.pdf



including the Act on Promotion of Competition for Specified Smartphone Software (2024)⁴⁰¹.

⁴⁰¹ Japan Fair Trade Commission (2024). Outline of the Act on promotion of competition for specified smartphone software. <https://www.jftc.go.jp/file/240612EN3.pdf>

2. Expand the regulatory scope of payment systems

Linkage to issue	• Restrictive app store payment option
Description	• Potential expansion of the definition of electronic money issuer in Malaysia to include tokenisation platforms⁴⁰² or mobile wallets offering payment facilitation. Players such as Apple Pay and Google Pay⁴⁰³ currently operate in Malaysia without direct regulation by BNM concerning their commission fees to app developers or restrictions imposed on developers' use of alternative payment services. • Conduct a market impact study for the study on tokenisation platforms' expected growth, adoption and impact. Study to also evaluate implications for local app developers, consumers, and the broader digital economy. • Potential amendment of the Financial Services Act to cover "digital platforms with integrated payment functionalities".
Government stakeholders to be involved	• BNM • MOF • MDEC • JPDP
Time horizon	• Medium-term (2-3 years)
Expected outcomes	• Increased comprehensiveness of the regulatory framework to incorporate tokenisation platforms, ensuring consistent consumer protection and effective market oversight.

⁴⁰² Systems that convert sensitive data (e.g., credit card numbers, personal IDs) into unique, non-sensitive tokens. After the token is used (e.g., during a transaction), it becomes invalid or expires and cannot be reused for another transaction.

⁴⁰³ Google Payment (Google Play Gift Card) is currently registered with BNM as a e-money issuer

	Enhanced trust and confidence among consumers and local developers in the digital payment's ecosystem.
Case study	Australia ⁴⁰⁴: In October 2023, the Australian Treasury released an exposure draft to amend the Payment Systems (Regulation) Act 1998 (PSRA) to cover new payment providers, including those facilitating transactions in non-monetary digital assets and closed-loop systems. The proposed amendments aim to capture innovative payment models that previously fell outside the traditional definition of a “payment system,” ensuring that emerging players are subject to regulatory oversight. The reforms specifically expand the designation powers under the PSRA, allowing the Minister to designate entities that operate payment systems using digital currencies or proprietary tokens, even if those tokens do not constitute legal tender. This reflects a recognition that the economic and systemic significance of these platforms grows as network participation increases, particularly in cases where closed-loop arrangements or digital assets are widely used for transactions. By regulating these new forms of payment, the Australian government aims to mitigate potential risks to market integrity, consumer protection, and competition. Entities that integrate digital asset payments into broader ecosystems such as marketplaces, remittance services, or loyalty platforms could otherwise leverage their network effects to entrench market positions and create barriers to entry for smaller or emerging competitors. The legislation therefore seeks to balance innovation with oversight, ensuring that digital payment markets remain

⁴⁰⁴ Reserve Bank of Australia (2024). Reforms to the Payment Systems (Regulation) Act 1998. <https://www.rba.gov.au/publications/submissions/payments-system/reforms-to-the-psra/index.html>



competitive while protecting consumers and the stability of the payment system.

3. Establish a local app developer consultative body

Linkage to issue	Operational challenges in app development and management
Description	- A consultative body with oversight from relevant ministries or agencies that represents local app developers by: - Serving as an alternative point of contact between developers and global app platforms (Apple, Google, Huawei, etc.). - Collating recurring issues and escalate them as a unified voice to relevant platforms - Raising/tabling key issues to relevant ministry on a regular basis for updates, support and next steps - Providing localised guidance on platform policies and appeals
Government stakeholders to be involved	- Ministry of Digital - MCMC - MDEC - MyCC
Time horizon	Short-term (1 year)
Expected outcomes	- Provides a unified channel for local developers to raise and escalate issues with global app platforms. - Enhances communication between developers and government through regular policy dialogue and updates.
Case study	U.S.⁴⁰⁵: The App Association is a trade group representing small and medium-sized technology companies involved in the app ecosystem, including independent developers and entrepreneurs. It engages with policymakers in the

⁴⁰⁵ The App Association (2025). Policy. <https://actonline.org/eu/policy/>; The App Association (2025). About. <https://actonline.org/about/>

U.S. and the European Union on issues such as platform governance, competition, privacy, intellectual property, and emerging technologies like artificial intelligence.

Its activities include policy analysis, legislative submissions, and participation in public consultations, with a focus on how digital regulation may impact SMEs. The Association also provides resources and guidance to help members navigate compliance requirements and market access, particularly in relation to mobile and cloud-based services.

5.1.13.2 General recommendations

General recommendations are proposed to complement the targeted recommendations and ensure a more coherent regulatory approach. Specifically, they are aimed at:

- **Addressing common structural issues across the sub-sectors:** Key competition concerns like opaque platform operations, data access asymmetries and market concentration are found across all four sub-sectors. As such, cross-cutting recommendations are needed to tackle these underlying challenges in a consistent and coordinated manner.
- **Preventing policy fragmentation:** While tailored, sector-specific recommendations are important for addressing unique or targeted challenges, they must be supported by an overarching regulatory framework to ensure coherence. General recommendations can serve as a unifying foundation, helping to align regulatory approaches across sub-sectors and ensuring that actions in one area reinforce, rather than contradict those in another.
- **Building internal capacity:** Effective regulation of the digital economy requires strong regulatory capacity, both in terms of technical expertise and coordination. Many of the issues raised demand collaboration across ministries, agencies, and even regional counterparts. General recommendations in this area focus on supporting capacity building, facilitating inter-agency coordination, and promoting knowledge sharing to strengthen oversight and regulatory responsiveness across the entire digital ecosystem.

Six general recommendations are proposed:

1. Appoint a central digital economy taskforce

Description	• Creation of permanent portfolio within an existing government agency or establish a specialised taskforce. • Taskforce to be made up of different Ministries and agencies, including: ◦ MyCC: Enforcement of competition law in digital markets, including extraterritorial conduct. ◦ JPDP: Oversight of personal data processing and cross-border data flows. ◦ MCMC: Regulation of digital platforms, content governance, and network services. ◦ MOTAC: Oversight of digital intermediaries in tourism, licensing of tourism operators. ◦ BNM: Regulation of digital payments, e-wallets, and financial technology. ◦ MOF: Fiscal policy, digital taxation, and cross-border digital trade. ◦ KPDN: E-commerce, consumer protections, digital marketplace conduct. ◦ Others: MITI, SME Corp, MDEC, LHDN. • Key responsibilities include: ◦ Oversee legislative coherence, and managing inter-agency regulatory alignment. ◦ Regularly assess regulatory gaps across areas such as competition, data protection, platform governance in the context of digital economy. ◦ Coordinate overlapping jurisdictions between agencies (e.g., MyCC, MCMC) ◦ Conduct periodic legal reviews (e.g., every 3 to 5 years), enabling timely updates to legislation and policies in response to evolving technologies and market dynamics.
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- Establish a digital platform ombudsman to support users and businesses by providing an independent point of contact (see below for more details)
- Develop a central digital economy information hub (see below for more details)
- Develop comprehensive guideline on the do's and don'ts for digital platform based on various benchmark countries; violation of guideline, especially on competition-related matters, can lead to potential investigation from MyCC (see below for more details)
- Develop and implement a regional-level digital economy legislative framework (see below for recommended framework).

Establish a digital platform ombudsman

- Established a neutral and accessible party, acting as an intermediary between consumers, businesses, and digital platform operators.
- Ombudsman may be created as a standalone institution, or hosted within existing agencies such as the MyCC or the Ministry of Digital.
- Serves as an alternative channel for redress, allowing businesses and consumers to seek assistance after all internal (within platforms) or ministry-level complaint mechanisms have been exhausted.
- Receives and addresses complaints related to digital platform practices, especially in areas involving unfair treatment, lack of transparency, or platform conduct.
- Provides dispute resolution services with methods such as mediation and conciliation, promoting faster outcomes.
- May be empowered to conduct market studies and issue observations on emerging trends, behaviours, or systemic issues in the digital market.

Central digital economy information hub

- Develop a one-stop central platform that consolidates key digital economy sub-sectors information, including but not limited to:
 - **Regulatory:** Up-to-date guidelines, licensing requirements, policy frameworks, and compliance obligations from relevant regulators
 - **Market:** Key statistics
 - **Consumer protection resources:** Explanations of consumer rights, platform obligations, dispute resolution procedures, and educational materials
 - **Access to official complaint channels:** Direct links and submission portals for lodging complaints to the relevant authorities, with guidance on which agency to approach based on the nature of the issue (e.g., content complaints to MCMC, anti-competitive behavior to MyCC, consumer disputes to KPND)
- Platform to serve as an information hub for businesses, consumers, and other relevant stakeholders

Develop comprehensive digital economy guideline:

- Establish a clear and sector-specific set of guidelines for key digital platforms operating
- Guidelines to provide clarity and predictability to digital platform operators, as well as encourage self-regulation
- Guidelines can serve as a precursor to a unified digital economy legislation, with key areas being:
 - **Platform definition**
 - **Fair business conduct rules:** Fair access, support equal treatment, encourage responsible use of data, allow flexible commercial terms
 - **User rights:** Provide users with freedom to choose and personalise, offer clear, user-friendly

policies, enable informed consent and control over personal data, ensure transparent pricing

- **Access and transparency requirements:** Transparency in pricing, fees and commissions, maintain fair and open processes
- Non-compliance with the guidelines may lead to regulatory review/action by the MyCC

Regional digital economy legislative framework:

- Establish a comprehensive and integrated regional (ASEAN)-level legal framework to govern the digital economy.
- Framework to apply to all digital economy players operating in ASEAN, regardless of physical presence, to ensure consistent and fair regulation.
- Framework to cover the key areas of:
 - **Platform definition:** Criteria that determine whether a digital platform falls within the scope of the regulatory framework.
 - **Fair business conduct rules:** Defined obligations and prohibited practices for regulated platforms, including self-preferencing, data access restrictions, user lock-in, limited user choice, lack of interoperability with third-party services,, restrictions on third-party competition and other anti-competitive behaviours.
 - **User rights:** Consumers' freedom of choice and information, including access to platform advertising processes, data portability, and the freedom to uninstall apps or change default settings.
 - **Access and transparency requirements:** Mandate that platforms provide clear and accessible information and hardware, such as ranking systems, fees, recommendation algorithms, infrastructure and data usage practices.
 - **Compliance and enforcement mechanisms:** Define the regulator's responsibilities, including

	powers to conduct audits, monitor potential violations, and enforce compliance through appropriate legal measures. • Framework to be anchored/aligned with existing legislations (e.g., Competition Act, PDPA, CMA, Companies Act). • Leverage MCMC's current licensing framework for social media and internet messaging services, the forthcoming amendments to the Electronic Commerce Act 2006, and the PDPA's Automated Decision Making and Profiling Guidelines as foundational elements for the proposed legislative framework.
Government stakeholders to be involved	• Ministry of Digital • MyCC • JPDP • MCMC • MOTAC • BNM • MOF • KPDN • MyDIGITAL • MITI • SME Corp • MDEC • LHDN
Time horizon	• Medium to long-term (2-5 years)
Expected outcomes	• Reduced regulatory fragmentation and jurisdictional confusion • Better alignment between digital economy strategy and regulation

Case study

U.K.⁴⁰⁶: The Digital Regulation Cooperation Forum (DRCF) was established in 2020 as a collaborative body bringing together the Information Commissioner's Office (ICO), the Competition and Markets Authority (CMA), Ofcom, and the Financial Conduct Authority (FCA). The DRCF was created to address the increasingly complex and cross-cutting nature of digital platform regulation, where issues of competition, data protection, online safety, and financial services oversight often intersect.

The forum's mandate includes aligning regulatory approaches, reducing duplication, and ensuring consistent oversight of digital platforms and services. It also leads joint projects and initiatives on emerging issues such as algorithmic auditing, online safety, and AI governance, while conducting horizon scanning to anticipate risks from new technologies.

By fostering regulatory coherence, the DRCF aims to prevent regulatory gaps or overlaps that could undermine enforcement or create uncertainty for market participants.

Japan⁴⁰⁷: In 2020, Japan enacted the Act on Improving Transparency and Fairness of Specified Digital Platforms (TFDPA), establishing a co-regulatory framework for large online platform operators such as app stores and e-commerce marketplaces. The Act requires designated providers to disclose their terms and conditions, develop procedures and systems to ensure fairness (including complaint and dispute handling), and submit annual reports on their business operations and self-evaluation to the Ministry of Economy, Trade and Industry (METI).

⁴⁰⁶ DRCF (2025). About the DRCF. <https://www.drcf.org.uk/about-us>

⁴⁰⁷ Ministry of Justice Japan (2020). Act on Improving Transparency and Fairness of Digital Platforms (Act No. 38 of 2020). <https://www.japaneselawtranslation.go.jp/ja/laws/view/4532/en>

Under this model, METI reviews and publishes evaluations of the annual reports, combining platform self-assessment with government oversight. By mandating disclosure and fair procedures, the Act seeks to reduce information asymmetry between dominant platforms and smaller businesses, while preventing unfair practices such as sudden changes to terms, opaque ranking mechanisms, or discriminatory treatment. The framework reflects Japan's approach of balancing innovation with accountability, ensuring that digital platform markets remain open, transparent, and competitive.

2. Consolidate competition oversight under a single authority

Description	• Clarify and delineate the regulatory boundaries between MyCC (competition regulation) and other sectoral regulators with competition mandates, in line with the anticipated consolidation of competition oversight under RMK-13 as outlined in Strategy A6.2: Strengthening the Competitive Ecosystem. • This includes coordination between MyCC, Malaysian Communications and Multimedia Commission (MCMC), Malaysian Aviation Commission (MAVCOM), and the Energy Commission (EC). The effort will require amendments to the Competition Act 2010 to incorporate existing competition-related provisions currently found in: ◦ the Communications and Multimedia Act 1998 and Postal Services Act 2012 (under MCMC), ◦ the Malaysian Aviation Commission Act 2015 (under MAVCOM), and ◦ the Energy Commission Act 2001 (under the EC). • These reforms will help eliminate jurisdictional overlaps and provide clearer regulatory authority, improving enforcement and addressing competition issues more effectively. • In the short-term, potential establishment of a structured coordination framework among relevant commissions (i.e., MyCC, MCMC, MAVCOM and EC) to facilitate information sharing and joint market intelligence.
Government stakeholders to be involved	• MyCC • MCMC • MAVCOM • EC
Time horizon	• Medium to long-term (2-5 years)

Expected outcomes	• Clarifies institutional roles and reduces regulatory overlaps in competition enforcement. • Enhances coordination and information-sharing among sectoral regulators.
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3. Strengthen government's revenue-generation mechanisms

Description	- Enhance existing RMCD efforts in requiring foreign digital service providers to report Malaysia-sourced revenue (under the Service Tax on Digital Services – SToDS regime), verified using geo-location tools such as IP addresses, billing information, and user registration data. - This can be complemented with the potential introduction of new legal/enforcement powers to block non-compliant digital platforms that fail to register or remit tax. - Strengthen Malaysia's participation in the OECD BEPS Pillar One regime by introducing a new nexus rule that allows for the taxation of foreign digital businesses that operate outside Malaysia but serve Malaysian customers. Rule could apply only to large firms, with the threshold to be benchmarked against (as a reference point) existing Application Service Provider (ASP) licensing criteria set by MCMC.
Government stakeholders to be involved	- MOF - RMCD - LHDN - MCMC - Ministry of Digital - BNM
Time horizon	Medium-term (2-3 years)
Expected outcomes	- Broader tax base capturing user-driven digital revenue - Reduced compliance burden on local businesses - Higher voluntary compliance by global digital players

4. Strengthen businesses and consumers' awareness on data privacy and protection

Description	- Enhance awareness and education to empower businesses and consumers in better protecting their personal data and making informed choices in the digital economy. - This can be done in collaboration with key players and civil societies to promote greater data protection practices and strengthen accountability among platforms. - Potential programmes include digital literacy campaigns, development of educational materials, interactive online modules.
Government stakeholders to be involved	- JPDP - MDEC - Ministry of Digital - KPDN
Time horizon	Short-term (1 year)
Expected outcomes	- Increased businesses and public awareness of personal data rights, leading to more informed digital behaviour. - Reduced risk of data misuse and abuse by digital platforms due to better consumer scrutiny.
Case study	Singapore ⁴⁰⁸ : In 2023, Singapore's Infocomm Media Development Authority (IMDA) partnered with Google to launch PET x Privacy, a joint initiative that integrates Google's Privacy Sandbox solutions into IMDA's Privacy-Enhancing Technologies (PET) Sandbox. The PET Sandbox provides a secure test environment for businesses to explore new technologies that enable

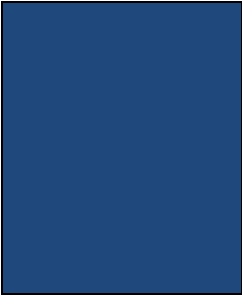
⁴⁰⁸ Google (2023). IMDA-Google: PET x Privacy Sandbox. https://services.google.com/fh/files/events/imda_google_pet_x_privacy_sandbox_2023.pdf

responsible data use and sharing while safeguarding consumer privacy.

Through this initiative, businesses in Singapore can trial privacy-preserving advertising and data solutions that aim to reduce reliance on third-party cookies, improve transparency, and strengthen user privacy. The collaboration reflects Singapore's co-regulatory approach of working with major technology players to balance innovation, privacy protection, and competition in the digital economy. By enabling early trials, IMDA helps firms adapt to global shifts in data governance and ensures that local businesses are not disadvantaged as dominant platforms roll out privacy-focused technologies that may reshape digital advertising markets.

5. Capacity building across entire public sector delivery

Description	• Entire public service to enhance in-house capabilities and understanding in AI, data science, analytics and algorithmic auditing • Assignment of specific sub-sector portfolio to relevant Ministries • Key ministries/agencies relevant to the four sub-sectors should also: ◦ Proactively track emerging trends, technological shifts, and issues affecting businesses and users, including market access barriers, algorithmic bias, and platform constraints ◦ Conduct frequent engagement with relevant key players to understand practices and build connections ◦ Platform regulation and policy enforcement ◦ Digital monitoring to detect changes in platform practices and identify potentially unfair or discriminatory behaviours ◦ Serve as a central liaison for coordinating with other ministries and agencies in addressing identified issues ◦ Act as mediator in fostering greater dialogue between businesses and key platforms ◦ Proactively publish public reports on the status, challenges, and developments within the sub-sectors
Government stakeholders to be involved	• Ministry of Digital • KPDN • MOTAC • MyCC
Time horizon	• Medium-term (2-3 years)
Expected outcomes	• Strengthens government capabilities in AI, data, and digital platform oversight.

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- Enhances proactive monitoring and policy responsiveness across key digital sub-sectors.
 - Improves coordination, transparency, and stakeholder engagement with platforms and businesses.

6. Enable the growth of local digital economy champions through a supportive ecosystem

Description	• Continuous development and promotion of more local digital economy champions (existing MDEC programmes, e.g., Malaysia Digital Acceleration Grant (MDAG), Digital Content Grant (DCG), 4IR Catalyst Grant – (4ICG)) • Support through provision of financial incentives such as grants, subsidies, or low-interest loans • Provide capacity-building programmes, technical assistance, and marketing support to enhance digital capabilities and market reach, alongside encouraging mergers, consolidations, or joint ventures among Malaysia-founded platforms to compete more effectively with large foreign digital players.
Government stakeholders to be involved	• Ministry of Digital • MDEC • MOTAC • MOF • BNM • MITI
Time horizon	• Medium-term (2-3 years)
Expected outcomes	• Increases the competitiveness and scalability of local digital platforms. • Encourages consolidation and collaboration to strengthen Malaysia's digital ecosystem.



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