

PRODUCTIVITY REPORT **2025**



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PRODUCTIVITY REPORT 2025

32nd EDITION

Advancing Structural Change For Sustainable Productivity Growth

The theme “Advancing Structural Change for Sustainable Productivity Growth” highlights the need for Malaysia to adopt transformative shifts across its economic and social frameworks.

Structural change is a deep-rooted alteration of the way businesses operate, sectors compete, and governments legislate. Malaysia can unlock new efficiencies, elevate resilience against external shocks, and move towards long-term productivity and prosperity by thoroughly reconfiguring its economic architecture.

Sustainable productivity growth cannot be built on conventional strategies alone; it relies on a proactive approach that rethinks organisational structures, policy frameworks, and strategic investments. This perspective emphasises continuous innovation and adaptability across the entire value chain.

Productivity drivers: talent, artificial intelligence (AI), the business environment, and research and development (R&D) play integral roles.

Talent initiatives demand reforms in education, training, and labour mobility to produce a workforce capable of meeting the complexities of tomorrow’s industries.

The strategic application of AI offers a powerful tool to modernise production processes and refine decision-making. These breakthroughs must be embedded within structured policies that support innovation and responsible governance.

Business environment reforms, including streamlined regulations and improved institutional frameworks, spur confidence among investors and local enterprises, reinforcing structural shifts.

Productivity-outcome-based R&D ensures that new knowledge, technologies, and methodologies take root in Malaysia, fuelling breakthroughs that sustain growth in the long run.

The 32nd Productivity Report elaborates on Malaysia’s journey towards structural transformation. It details how recalibrations in policy, institutional arrangements, and sectoral strategies accelerate productivity while promoting responsible and inclusive growth.

This year’s chapters cover Malaysia’s productivity trends and sectoral performance, culminating in analyses of the principal productivity drivers.



The theme “Advancing Structural Change for Sustainable Productivity Growth” highlights the need for Malaysia to adopt transformative shifts across its economic and social frameworks.

TABLE OF Contents

Executive Summary	6
Key Highlights	7
Chairman's Statement	8
Message from the Director General	9
Board of Directors	10
Management Team	11

4



12

CHAPTER ONE

Malaysia's Productivity: Between Recovery and Reinvention

34

CHAPTER TWO

Structural Realignment in Sectoral Productivity Landscape



54

CHAPTER THREE

A Model for Enhancing Talent and Workforce Productivity



70

CHAPTER FOUR

Regulatory Reform Shapes a Productive Business Ecosystem



86

CHAPTER FIVE

Artificial Intelligence (AI) for Productivity Acceleration



Executive Summary

The Productivity Report 2025 outlines a practical pathway to advance structural change for sustainable productivity growth by shifting Malaysia from an input-led expansion to a productivity-centred model, anchored in talent, artificial intelligence (AI), a pro-productivity business environment, and R&D.

Malaysia recorded a sharp improvement in the Institute for Management Development (IMD)'s World Competitiveness Ranking (WCR) in 2025, rising from 34th to 23rd. The country's performance was particularly notable in the following areas: Economic Performance, ranked 4th; Government Efficiency, 25th; and Business Efficiency, 32nd. Labour productivity per employee reached around RM99,000 in 2024, with a growth of 2.4 per cent, although it still fell short of the Twelfth Malaysia Plan (12MP) target of 3.7 per cent.

Recent growth decomposition shows a rising contribution from labour and a moderating share from productivity, while labour quality has been largely static. Manufacturing remains the anchor of productivity, while services and construction are catching up, and agriculture and mining continue to lag behind.

Capital formation has been substantial but continues to favour structures over digital assets and intellectual property, and the link between capital deepening and total factor productivity (TFP) has room for improvement. The structural reform agenda focuses on converting competitiveness gains into durable productivity outcomes.

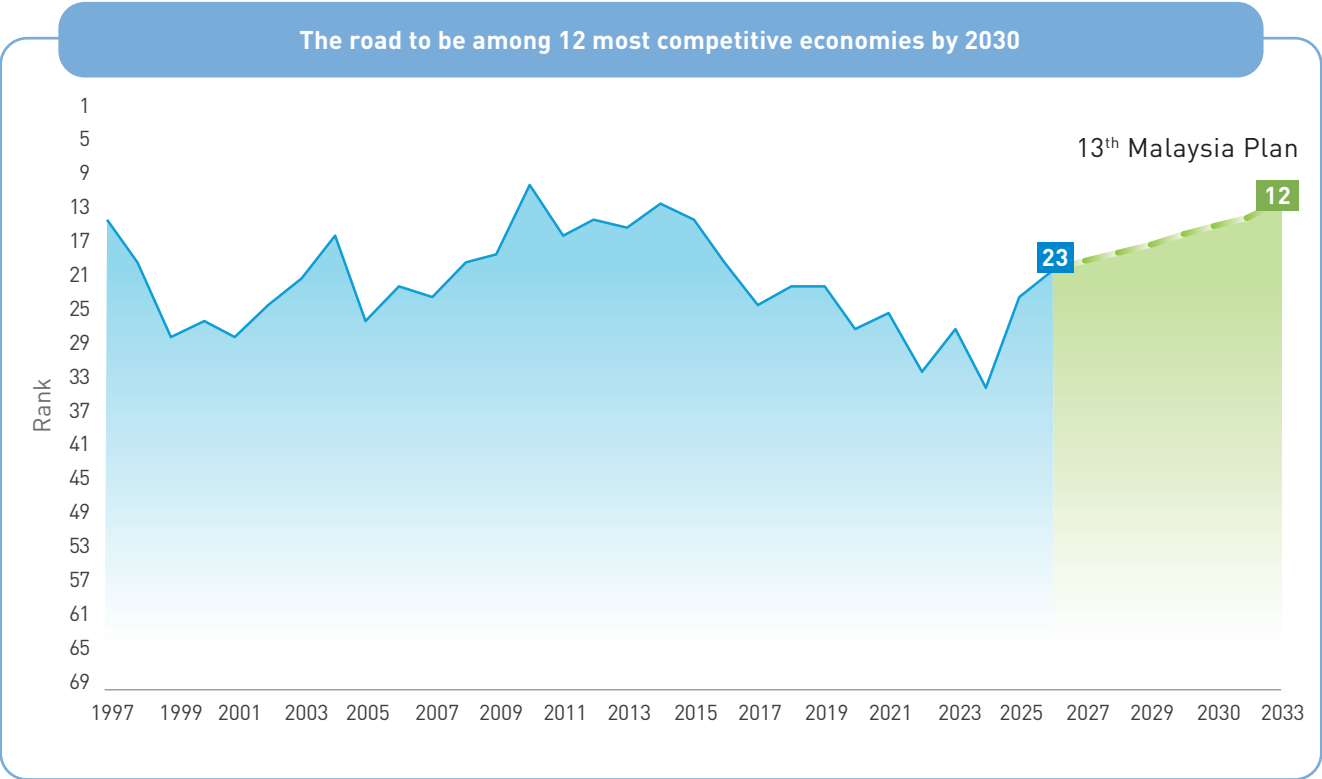
Talent policy calls for a competency-based, outcome-oriented Flexitivity Model that recognises non-formal learning, aligns training with measurable productivity, outcomes and supports the Progressive Wage Policy. The nationwide implementation of *Reformasi Kerenah Birokrasi* (RKB) initiative and the new ILTIZAM Act are expected to benefit businesses and the public by improving public service delivery efficiency.

AI is positioned as a capital deepening tool. However, its adoption is uneven. An AI Productivity Ecosystem, featuring a provider directory, industry roadmaps, readiness checks, proofs of concept and phased scaling, could be considered to boost AI adoption, prioritising agriculture, construction, manufacturing, healthcare, and logistics.

R&D funding accounts for around one per cent of GDP, with a lower business share, affecting the demand pull. An outcome-based shift that includes an R&D satellite account, a Productivity and Innovation Results Monitoring System (PIRMS), outcome-linked grants, and mission-oriented clusters is necessary to close gaps between universities and industry.

The Productivity Report 2025 outlines a practical pathway to advance structural change for sustainable productivity growth by shifting Malaysia from an input-led expansion to a productivity-centred model, anchored in talent, artificial intelligence (AI), a pro-productivity business environment, and R&D.

Key Highlights



Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD), Analysis by MPC

Chairman's Statement

"Our immediate task is to commit to strategic policy shifts that remove barriers and unlock untapped productivity potential."

Datuk Kamaruzzaman Johari
Chairman, Malaysia Productivity Corporation (MPC)



8

Our focus is on sustainable productivity growth.

Malaysia's productivity per employee rose from around RM89,000 in 2020 to approximately RM99,000 in 2024. Although 2020 was difficult, we saw a rebound in 2021 and 2022. By 2024, productivity growth stabilised at 2.4%, reflecting the resilience of our economy and the efficacy of policy measures undertaken thus far.

Enduring prosperity demands more than momentary gains. To remain competitive and inclusive, Malaysia must pursue structural reforms that push our productivity agenda forward with clarity and ambition.

Productivity is a driver of living standards, business expansion, and social well-being. Countries that excel in productivity invest heavily in talent development, harness technology, such as AI effectively, nurture a supportive business environment, and champion vigorous R&D efforts.

When these elements align, they unleash innovation, foster high-value job creation, and boost our collective capacity to survive volatile global markets.

Our immediate task is to commit to strategic policy shifts that remove barriers and unlock productivity potential. We must rally all key stakeholders to collaborate for wide-ranging, high-impact outcomes. MPC will continue to facilitate these efforts by offering data-driven insights, spearheading capacity-building programmes, and ensuring that bold ideas translate into tangible improvements across diverse sectors.

The Productivity Report 2025 sets out how we can stay ahead of emerging challenges. By emphasising an integrated approach, encompassing progressive labour policies, streamlined regulations, targeted AI-driven solutions, and increased R&D initiatives, we can ensure Malaysia seizes high-value, knowledge-intensive roles that fuel sustainable growth.

I trust that the insights from the report will spark renewed determination in all of us to elevate Malaysia's productivity to new heights.

Message from the Director General

“In 13MP, productivity and competitiveness are among the key priorities for increasing Malaysia’s economy, leading to sustainable growth. This requires structural reform, one that goes beyond short-term growth.”

Datuk Zahid Ismail
Director General, Malaysia Productivity Corporation (MPC)



Malaysia’s leap in the Institute for Management Development (IMD)’s World Competitiveness Ranking (WCR) from 34th to 23rd position in 2025 reflects the success of our collective reform efforts. It strengthens the nation’s resolve to become one of the world’s top 12 most competitive economies by 2030, as targeted in the Thirteenth Malaysia Plan (13MP).

In 13MP, productivity and competitiveness are among the key priorities for increasing Malaysia’s economy, which in turn leads to sustainable growth. The country’s productivity and economic stability depend on structural reform, one that goes beyond short-term growth. We must pivot to high-value, knowledge-intensive sectors that prioritise research, innovation, and the skill development of our workforce.

Central to this reform are the core productivity drivers of skilled talent, digitalisation and AI, a conducive business environment, and strong R&D. Aligning public policies with the evolving needs of the current and future economic landscape maximises these drivers for sustainable productivity growth.

Productivity is not an end in itself but a foundation for higher living standards, quality employment, and inclusive growth. MPC will continue to strengthen collaboration across government ministries, industry players, and civil society to achieve these goals.

The future requires us to align structural reforms, talent development, and technology adoption with the aspirations of the people.

The Productivity Report 2025 provides insights into our current position and outlines a path for the future. I invite all stakeholders to actively engage with the insights, recommendations, and data presented in this report. Let us remain committed to fostering a resilient and innovative economic environment.

Board of Directors

Datuk Kamaruzzaman bin Johari

Chairman,
Malaysia Productivity Corporation (MPC)

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Deputy Secretary General (Industry)
Ministry of Investment, Trade and Industry (MITI)

Datuk Zahid bin Ismail

Director General
Malaysia Productivity Corporation (MPC)

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Deputy Secretary General (Policy)
Ministry of Agriculture and Food Security

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Director General of Higher Education
Ministry of Higher Education

Datuk Dr. Suhana binti Md. Saleh

Director of Macroeconomics Division
Ministry of Economy

Datuk Noraini binti Soltan

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Senari Synergy Group of Companies

YM Dato' Syed Haizam Hishamuddin Putra Jamalullail

Managing Partner
The Hive Southeast Asia

Hasliana binti Kamarudin

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Modern Management & Technology

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Deputy Director General

People Productivity

Mohd Yazid bin Abdul Majid

Director

Modern Management & Technology

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Director

National Competitiveness

Directors

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Mohamad Muzaffar bin Abdul Hamid

Zaffrulla bin Hussein

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Mohammed Alamin bin Rehan

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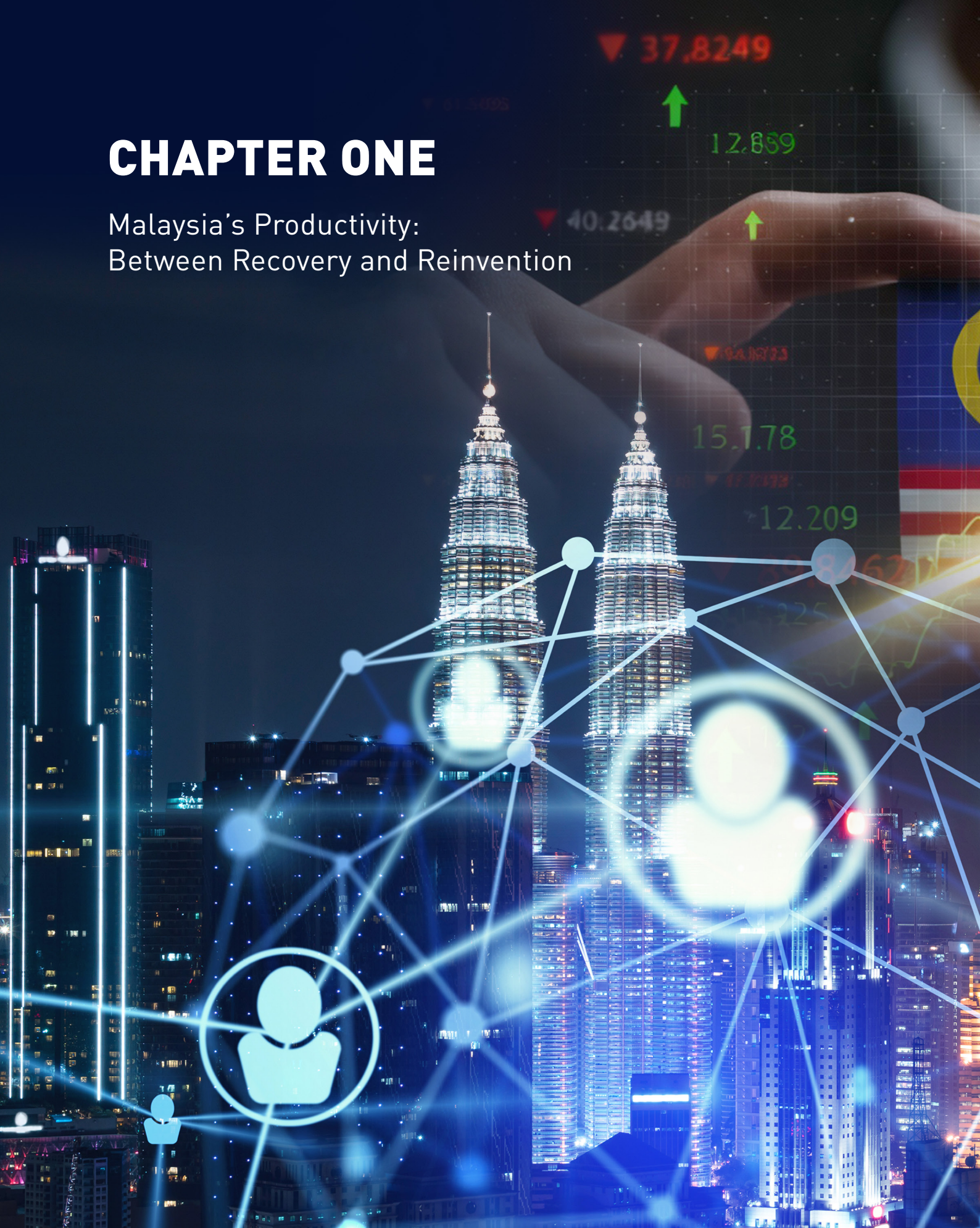
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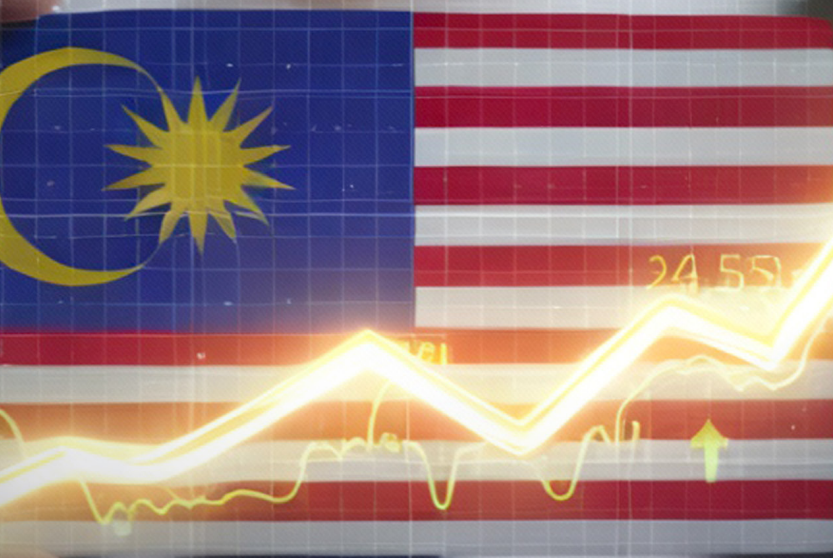
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CHAPTER ONE

Malaysia's Productivity:
Between Recovery and Reinvention





▼ 78.583

35.2358

▼ 34.8904

▼ 57.754

15.6525

14.11

24.55

▼ 25.1245

94,361

25.6162

46.8452

14.89

Malaysia's Productivity: Between Recovery and Reinvention

Malaysia's economic growth is entering a critical phase where productivity must take centre stage. Labour expansion and traditional capital investment drove recent rebounds, but labour quality and efficiency gains remain limited. Capital accumulation has been substantial, but digital and intangible investments are still secondary.

Malaysia must shift from input-led strategies towards productivity-driven transformation to sustain growth and improve resilience. This requires prioritising smart capital, upskilling the workforce, improving the effectiveness of education and innovation policies, and strengthening the business environment and regulatory frameworks.

These foundations are essential to position Malaysia for high-value, inclusive, and sustainable long-term growth. They strengthen Malaysia's competitiveness as a nation of choice for trade, investment, and industrial development.

Malaysia must shift from input-led strategies towards productivity-driven transformation to sustain growth and improve resilience, strengthening the country's competitiveness as a nation of choice for trade, investment, and industrial development.

Competitiveness-led Productivity

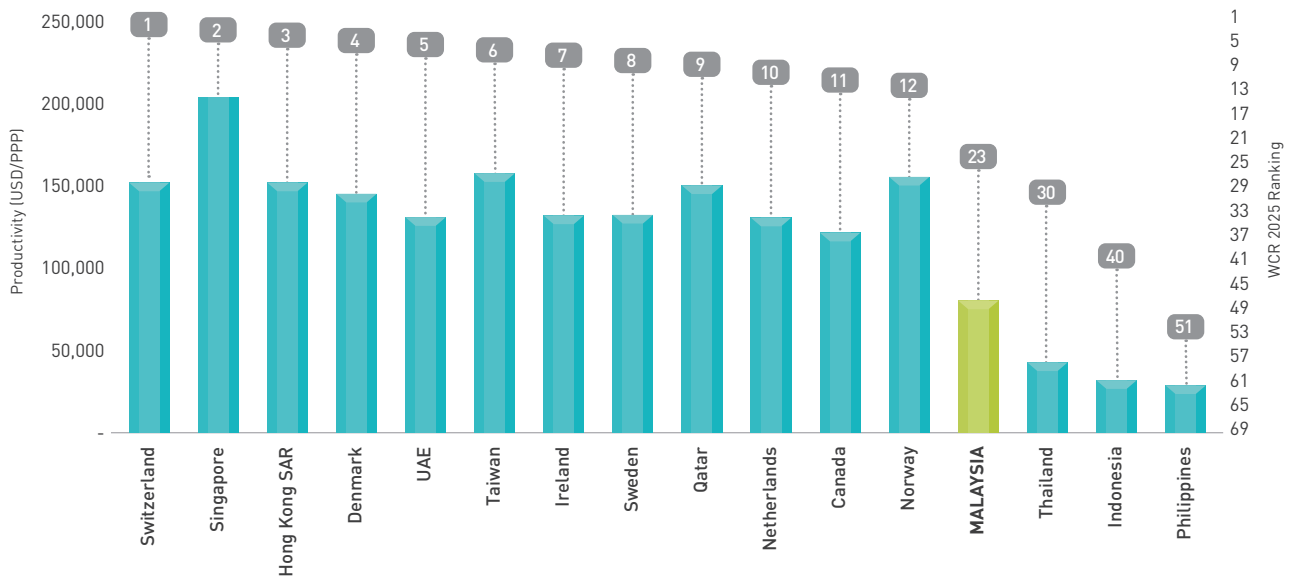
14

Productivity and competitiveness are deeply intertwined: a nation's global standing can spur higher productivity levels, reinforcing that nation's competitiveness. This dynamic process is mutually reinforcing; each factor perpetually drives the other, forming a feedback loop that drives growth.

Figure 1 : Productivity-Competitiveness Feedback Loop Drives Economic Growth



Figure 2 : World Competitiveness Ranking (WCR) 2025 and Productivity Performance, Selected Countries



Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD); The Conference Board (TCB)

Competitiveness reflects an economy's capacity to deploy resources and capabilities efficiently, innovate rapidly, and maintain an advantageous position in the global marketplace. It captures how an economy stands globally and serves as a catalyst that encourages productivity gains, lowers costs, and fuels innovation. As competitiveness wanes, productivity growth can stall, leading to higher production costs and reduced attractiveness for trade and investment.

Highly competitive economies, such as Switzerland, Singapore, and Hong Kong SAR, recorded strong productivity performance. Malaysia's productivity must reach beyond USD 100,000 per person employed to be among the top 12 performers.

Competitiveness and productivity operate in a mutually reinforcing cycle that fosters sustainable growth. As an economy intensifies its efforts to gain a competitive edge, it triggers continuous technological advancements, enhanced workforce capabilities, and refined operational processes, each contributing to higher productivity.

Positioning competitiveness for growth requires improvements in areas that have a direct bearing on productivity: talent, technology, and business environment.

Positioning competitiveness for growth requires improvements in areas that have a direct bearing on productivity: talent, technology, and business environment.

Malaysia's Competitiveness

The World Competitiveness Ranking (WCR) by the Institute for Management Development (IMD) comprehensively appraises an economy's dynamism through four equally weighted factors: Economic Performance, Government Efficiency, Business Efficiency, and Infrastructure. Within these four factors lie five sub-factors each, collectively comprising 262 indicators.

Policymakers and stakeholders can leverage these indicators as a baseline to strategise data-driven structural reforms that affect Malaysia's global standing.

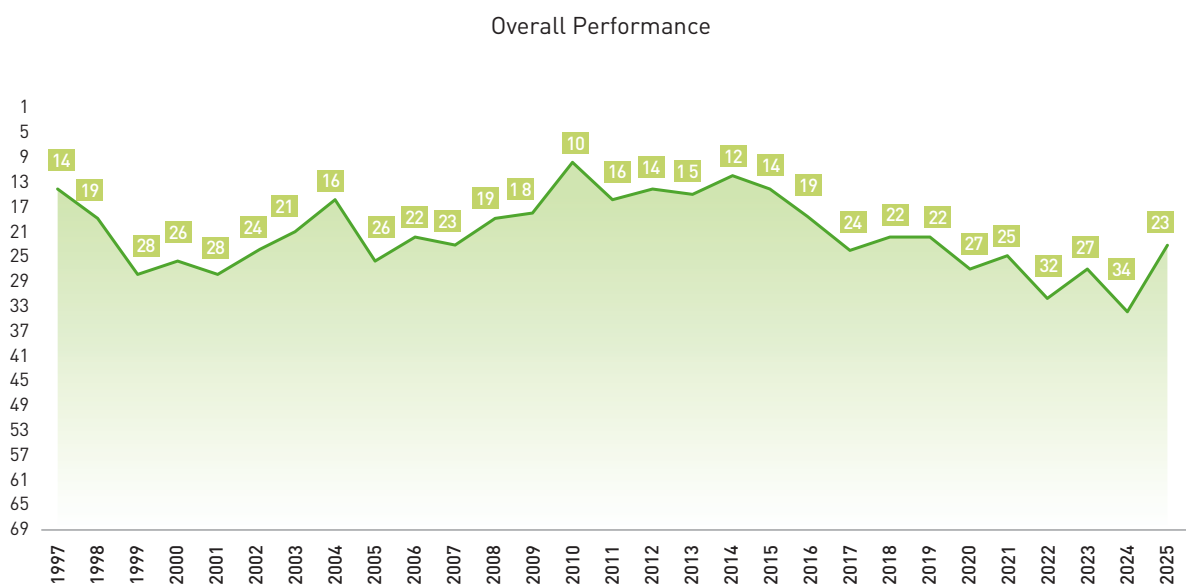
Policymakers and stakeholders can leverage 262 WCR indicators as a baseline to strategise data-driven structural reforms that affect Malaysia's global standing.

Malaysia's overall performance in WCR shows a significant rebound in 2025, climbing 11 positions to 23rd place from a record-low rank of 34th in 2024. The improvement represents the sharpest annual increase since the country's best historical rank at 10th place in 2010, indicating substantial recovery following several years of declining competitiveness ranking.

Malaysia's overall performance in WCR 2025 at 23rd place, climbing 11 positions from a record-low rank of 34th in 2024, indicates successful policy interventions and economic reforms.

After fluctuating between the 20th and 30th ranks over the past decade, Malaysia's advancement in 2025 highlights successful policy interventions and economic reforms. This resurgence places Malaysia closer to its historical average and suggests renewed confidence in governance efficiency, economic performance, business productivity, and infrastructure development.

Figure 3 : Malaysia's Overall Performance in the World Competitiveness Ranking (WCR), 1997 - 2025



Source : World Competitiveness Yearbook (WCY), Institute for Management Development (IMD)

Figure 4 : Malaysia's Ranking in WCR Economic Performance Factor, 1997 - 2025

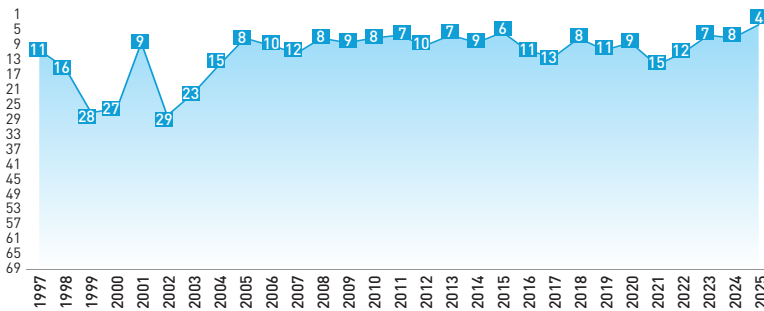


Figure 5 : Malaysia's Ranking in WCR Government Efficiency Factor, 1997 - 2025

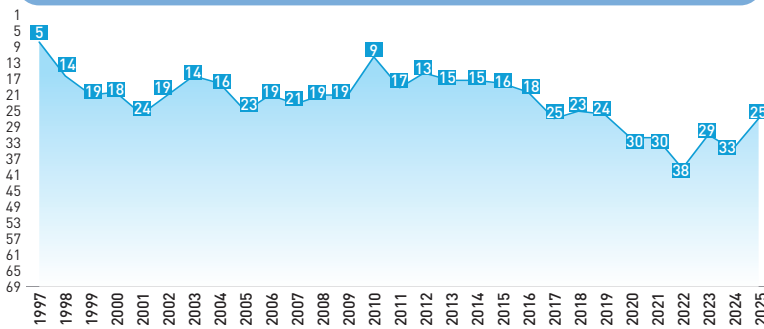


Figure 6 : Malaysia's Ranking in WCR Business Efficiency Factor, 1997 - 2025

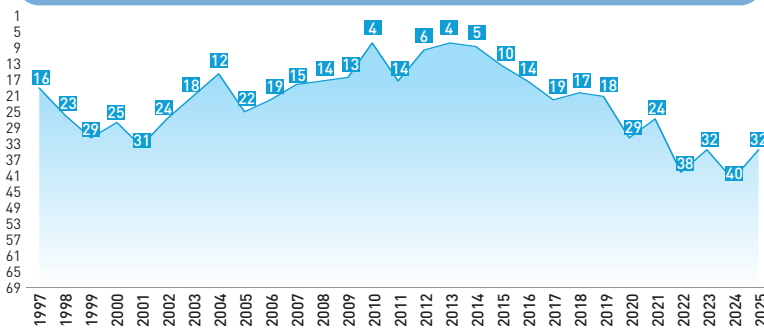
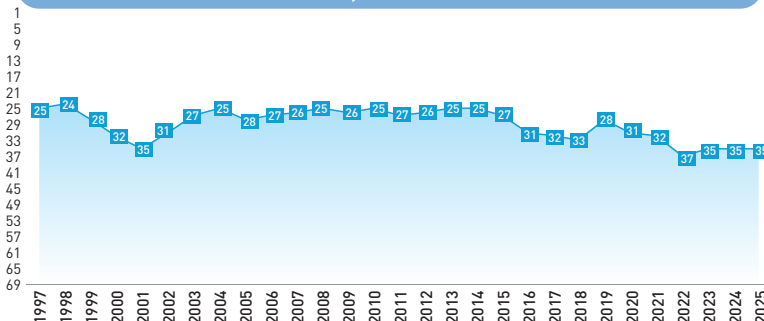


Figure 7 : Malaysia's Ranking in WCR Infrastructure Factor, 1997 - 2025



The latest rise underscores a critical turning point, potentially setting the stage for continued upward momentum, provided that Malaysia sustains its current reform trajectory and strengthens structural competitiveness factors to achieve long-term economic resilience and global competitiveness.

Malaysia's ranking in the WCR Economic Performance factor for 2025 demonstrates positive momentum, improving four position to 4th place from 8th in 2024. The advancement places the nation firmly within the top five globally, reflecting sustained economic resilience. The recent uptick continues Malaysia's stable trajectory over the past several years, marking its third consecutive year within the single-digit ranking, indicative of robust economic fundamentals and strategic policy implementation. The latest improvement signals stronger economic indicators under the domestic economy, international trade and investment, employment, and prices.

Malaysia must address structural vulnerabilities and pursue proactive economic diversification to ensure continued ascendancy and sustainable competitiveness, particularly amid intensifying global competition and evolving economic landscapes.

The country ranks
4th globally in
WCR Economic
Performance factor.

Government Efficiency's ranking improved in 2025, climbing eight positions to 25th from 33rd place in 2024. The rebound marks a critical recovery from the previous sharp deterioration seen in 2022 ranking, when it dropped to 38th, the lowest in its history. The improvement signifies effective governance reforms, streamlined bureaucratic procedures, and successful digitalisation initiatives that have enhanced administrative responsiveness and regulatory efficiency. However, Malaysia remains substantially below its peak ranking at 9th place in 2010, implying the necessity of sustained institutional reforms, improved public service delivery, and strengthened policy frameworks moving forward.

Improvement in the Government Efficiency factor signifies effective governance reform, streamlined bureaucratic procedures, and successful digitalisation initiatives.

Business Efficiency factor ranks 32nd in WCR 2025, a jump of eight spots compared to 2024. It is a vital turnaround after the country recorded its lowest-ever ranking the previous year. The Productivity & Efficiency subfactor recorded remarkable progress, ascending sharply from 53rd position in 2024 to 34th in 2025, implying substantial enhancements in organisational efficiency, process optimisation, and productivity-driven initiatives across businesses.

Productivity & Efficiency subfactor under the Business Efficiency factor increases by 19 spots in WCR 2025, implying substantial improvement in business productivity.

However, the rank remains considerably below its peak years between 2009 and 2013, highlighting the imperative for continued policy reinforcement, technological integration, and innovation-driven strategies to sustain long-term business competitiveness.

Malaysia's Infrastructure ranking remains constant at 35th position in 2025, unchanged from 2023. The stability, while demonstrating resilience, indicates persistent structural limitations and a relative stagnation compared to global peers. The rank is below the country's better historical performances, which saw consistent positions within the 20s throughout the early 2000s up to the mid-2010s. Malaysia's current ranking underscores the need for intensified outcome-driven investment in technological and scientific infrastructure, education, healthcare, and environmental conservation. A robust R&D ecosystem is essential to boost innovation.

Malaysia's Infrastructure ranking remains constant at 35th position in 2025, demonstrating resilience, but also indicating persistent limitations and a relative stagnation compared to global peers.

Moving Forward in Competitiveness

Malaysia remains well-positioned to harness new growth opportunities. Enhancing Malaysia's competitiveness depends on a holistic approach that synthesises policy and economic reforms, infrastructure upgrades, and socially inclusive policies.

Effective investment in talent and workforce, digitalisation, and R&D, especially in high-value industries, can spur productivity and strengthen resilience. Efforts to streamline business regulations will be equally pivotal, ensuring enterprises operate within a transparent, predictable environment that attracts sustained foreign and domestic investments.

Enhancing Malaysia's competitiveness to drive productivity depends on a holistic approach that synthesises policy and economic reforms, infrastructure upgrades, and socially inclusive policies.

The government's ambition to break into the ranks of the top 12 most competitive economies by 2030 requires a recalibration of priority, one that is based on productivity-driven growth.

In collaboration with relevant ministries and government agencies, MPC spearheads the strategic actions to drive Malaysia's competitiveness agenda.

The plan comprises initiatives that streamline business regulations, strengthen the labour market, enhance research and development capacities, and modernise digital and physical infrastructure.

Oversight rests with the national level competitiveness committee, Jawatankuasa Daya Saing Negara (JKDSN), co-chaired by the Minister of Investment, Trade and Industry and the Second Finance Minister.

JKDSN's whole-of-government approach seeks to solidify Malaysia's global standing and align with the MADANI Economy framework by uniting government agencies, the private sector, and society.

The goal is to create an environment that nurtures an upward spiral of productivity and competitiveness, ensuring that the country can endure global economic headwinds while continuously seeking opportunities for advancement.

The government's ambition to break into the ranks of the top 12 most competitive economies by 2030 requires a recalibration of priority, one that is based on productivity-driven growth.

Productivity-Driven Growth

Productivity, which measures how effectively inputs like labour and capital are converted into output, is the foundation of sustainable economic growth. Economies can expand in the short term by increasing the labour force or raising investment levels, but these strategies have natural limits and eventually yield diminishing returns.

Productivity-driven growth enhances output quality and quantity without proportionately increasing inputs. Increased productivity raises living standards, supports wage growth, and improves competitiveness. It enables economies to generate more value from existing resources. This is vital for countries with ageing populations, tight labour markets, or fiscal constraints.

Growth driven by productivity improvements forms a stronger foundation for long-term, inclusive prosperity. In contrast, when growth relies primarily on short-term boosts to Gross Domestic Product (GDP), it may not yield broad societal benefits.

Such growth conceals structural inefficiencies, including reliance on low-skilled labour, commodity exports, or outdated business regulations. These inefficiencies become more apparent during economic shocks or downturns.

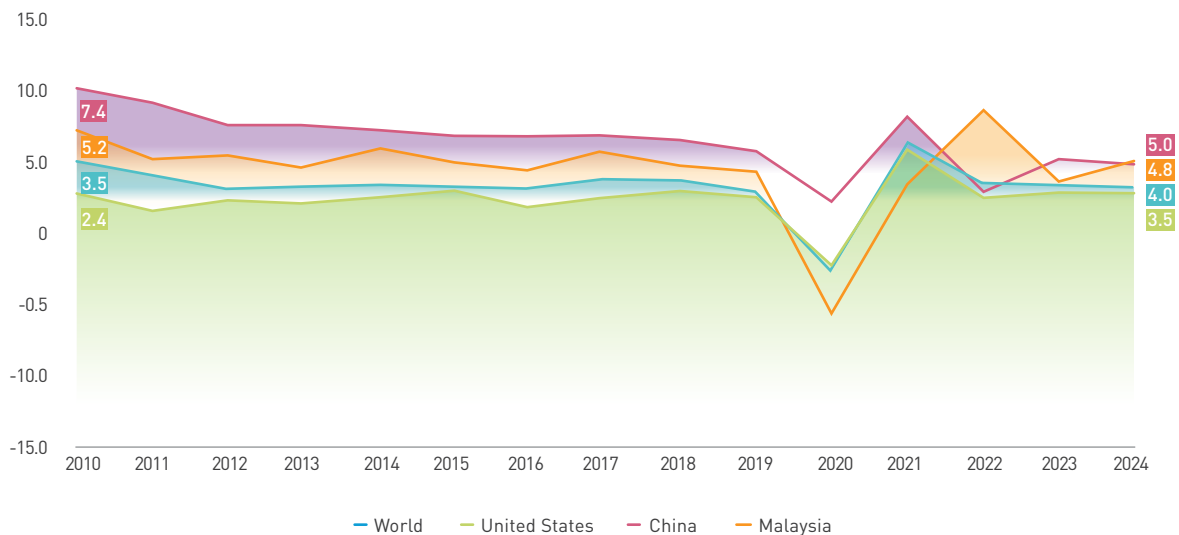
Addressing these challenges build lasting resilience and adaptability. Countries can create high quality jobs, enhance social mobility, and transition to higher-value economic activities by prioritising productivity improvements, reducing inequality, informality, and economic vulnerability.

As economies continue to manage the aftershocks of past crises while tackling new disruptions, the focus shifts from short-term rebounds to long-term structural resilience. Productivity resilience is a critical pillar of national economic strength against the rising global economic uncertainties, driven by geoeconomic fragmentation, disrupted supply chains, and shifting geopolitical dynamics.

Over the past four years, from 2021 to 2024, global GDP growth averaged 4.0 per cent, an increase from the prior decade's trend of 3.5 per cent, but largely cyclical. Emerging economies, particularly China, consistently recorded higher growth rates than advanced economies, propelled by rapid industrialisation and demographic expansion.

Productivity resilience is a critical pillar of national economic strength against the rising global economic uncertainties, driven by geoeconomic fragmentation, disrupted supply chains, and shifting geopolitical dynamics.

Figure 8 : Trends in GDP Growth (%) – World and Selected Economies, 2010 – 2024



Source : World Development Indicator (WDI) & International Monetary Fund (IMF) data; MPC analysis

China dominated the long-term growth landscape, averaging over 7% GDP growth from 2010 to 2019. Its pace moderated in the latest year (2021-2024).

Countries like Japan, Germany, and France recorded more subdued growth, reflecting maturing economies and demographic headwinds.

In Southeast Asia, countries such as Malaysia, Thailand, and Indonesia tracked moderately high growth between 2021 and 2024, but less consistently than in the earlier period of 2010-2019.

Post-pandemic rebounds were visible in most countries, although not all could sustain the momentum due to inflation, interest rate shocks, and trade volatility.

Table 1 : Trends in GDP Growth (%)

Country	Average 2010-2019	Average 2021-2024	2024
 World	3.5	4.0	3.2
 United States	2.4	3.5	2.8
 United Kingdom	1.9	3.5	0.9
 France	1.4	2.8	1.1
 Germany	1.9	1.1	-0.2
 South Korea	3.3	2.6	2.2
 China	7.4	5.2	4.8
 Indonesia	5.3	4.7	5.0
 MALAYSIA	5.2	5.1	5.0
 Singapore	6.2	6.0	5.8
 Thailand	4.8	4.2	2.6
 Philippines	3.5	2.1	2.7

Source : World Development Indicator (WDI) & International Monetary Fund (IMF) data; MPC analysis

When assessing the sources of economic growth, it is essential to determine whether output expansion mainly stems from increases in employment or improvements in efficiency. Recent evidence, particularly from 2021 to 2023, suggests that productivity enhancements have played a growing role in driving GDP growth across numerous economies.

The UK recorded 4.4 per cent GDP growth in this period, of which 3.8 per cent came from labour productivity, suggesting strong efficiency gains. In contrast, countries like the Philippines and the USA recorded a much larger share of growth coming from labour inputs.

These differences reflect each country's stage of development, structural transformation, and exposure to innovation or technological capital.

Recent evidence, particularly from 2021 to 2023, suggests that productivity enhancements have played a growing role in driving GDP growth across numerous economies.

Understanding how economic growth and productivity evolve, and how global developments influence domestic outcomes, is crucial for Malaysia to secure a strong position in the international landscape.

The growth pattern is evolving for Malaysia. Between 1991 and 2000, growth was relatively balanced between labour (3.1%) and productivity (3.5%). In the most recent period (2021–2023), labour input remained a key driver (2.2%), but productivity made a stronger contribution at 2.8 per cent.

This positions Malaysia above the world average in both dimensions, indicating a positive shift towards more efficient, productivity-led growth. Malaysia appears to be moving in the right direction, transitioning from input-driven expansion to a more resilient and sustainable productivity foundation.

Malaysia is moving in the right direction, transitioning from input-driven expansion to a more resilient and sustainable productivity foundation.

Table 2 : GDP Growth Decomposition, 1991 - 2023

COUNTRY	1991–2000			2001–2010			2011–2020			2021–2023		
	GDP (%)	Labour (%)	Labour Productivity (%)	GDP (%)	Labour (%)	Labour Productivity (%)	GDP (%)	Labour (%)	Labour Productivity (%)	GDP (%)	Labour (%)	Labour Productivity (%)
 World	2.7	1.6	1.3	3.5	1.4	2.2	2.7	0.9	1.9	4.3	2.3	2.0
 U.S.	3.4	1.8	2.0	1.7	0.1	1.6	1.9	0.7	1.2	3.7	2.5	1.2
 U.K.	2.6	0.6	2.4	1.5	0.6	0.9	0.6	1.1	-0.5	4.4	0.6	3.8
 France	2.2	0.5	1.8	1.3	1.0	0.4	0.4	0.3	0.1	3.4	1.7	1.7
 Germany	2.0	-0.2	1.9	0.9	0.5	0.4	1.1	0.7	0.4	1.6	0.6	0.9
 Japan	1.3	0.1	0.9	0.6	-0.3	0.9	0.4	0.6	-0.3	1.7	0.3	1.4
 South Korea	6.9	1.5	5.1	4.6	1.1	3.5	2.5	1.2	1.3	2.7	1.8	0.9
 China	9.9	0.9	9.1	10.0	0.8	9.3	6.6	-0.2	6.8	5.4	0.6	4.8
 MALAYSIA	6.9	3.1	3.5	4.5	2.9	1.6	3.9	2.7	1.3	5.1	2.2	2.8
 Singapore	6.8	3.5	3.3	5.7	3.1	2.5	3.1	1.6	1.5	4.7	2.0	2.7
 Indonesia	3.8	2.3	1.2	5.1	1.6	3.5	4.5	1.6	2.8	4.6	1.3	3.3
 Philippine	2.9	2.8	0.4	4.7	2.5	2.2	4.5	1.2	3.3	6.1	5.7	0.4
 Thailand	4.3	1.9	2.0	4.5	1.3	3.2	2.2	0.2	2.0	2.0	0.5	1.4

Source : Data compiled from World Development Indicator (WDI). All variables in constant 2021 PPP \$

Efficiency Gap

Malaysia's labour productivity trend from 2015 to 2024 comprises three key phases: pre-pandemic expansion, the sharp pandemic contraction, and the recovery in the post-pandemic period. The compound annual growth rate (CAGR) of labour productivity stood at 2.9 per cent during the pre-pandemic (2015–2019) and post-pandemic (2021–2024) periods, indicating that Malaysia has regained its earlier pace of productivity growth following the COVID-19 shock. This reflects resilience in the economy's structural base and policy response.

Despite regaining momentum, the current productivity growth rate still falls short of the national target of 3.7 per cent per annum set under the Twelfth Malaysia Plan (12MP). 2025's projection indicates that labour productivity will grow between 2.5 and 2.6 per cent, depending on the real GDP growth of 4.5 per cent (cautious) to 5.5 per cent (optimistic).

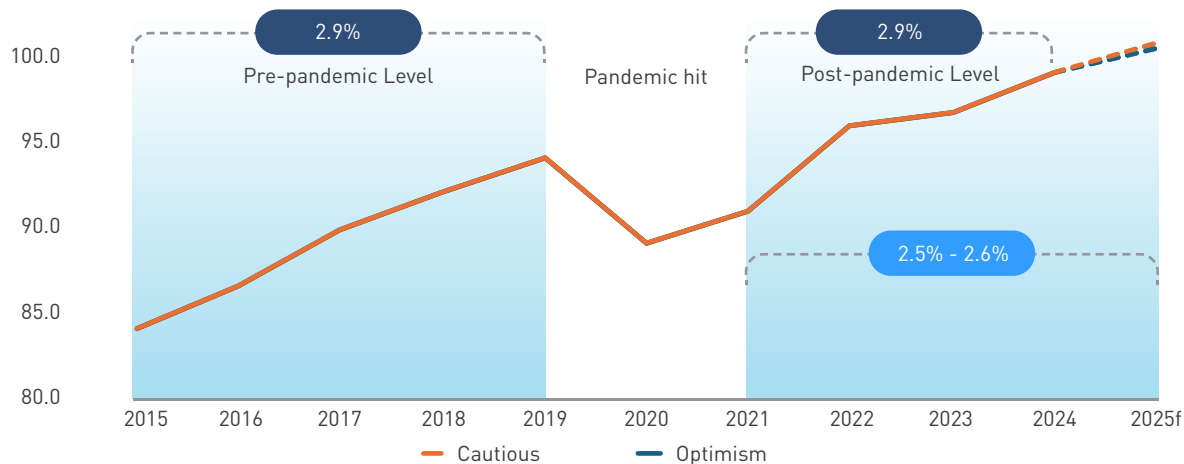
Even in the optimistic case, this level remains below the target. With one year remaining in the current planning period, this gap highlights the urgency of enhancing

productivity growth across all sectors to meet headline targets and support sustainable, innovation-led growth. A decomposition of GDP growth into labour input and productivity contributions offers a clearer understanding of the structural dynamics of economic performance.

Productivity-driven growth reflects efficiency improvements, enabled by innovation, technology adoption, skills development, and capital deepening. In contrast, labour-driven growth typically signals expansion through increased input rather than enhanced output per input. A balance between these drivers ensures long-term economic resilience and competitiveness.

Productivity-driven growth reflects efficiency improvement, and labour-driven growth signals expansion through increased input. A balance between these drivers ensures long-term economic resilience and competitiveness.

Figure 9 : Malaysia's Productivity Level, 2015-2025



Source : Calculation based on Department of Statistics Malaysia (2025) data.
 Notes : Labour productivity is measured using GDP at constant 2015 prices, with growth presented as compound annual growth rate (CAGR). The 2025 figure is a forecast based on two scenarios: real GDP growth of 4.5% (cautious) and 5.5% (optimistic), as projected by the Ministry of Finance (MOF) in the Economic Outlook 2025.

Malaysia's growth trajectory gradually decreased over the past three decades, followed by a post-pandemic rebound. GDP growth declined from an average of 6.8 per cent in the 1990s to 3.9 per cent between 2011 and 2020, before recovering to 4.9 per cent in 2021–2024. The recovery is encouraging and signals a return to positive growth, but it prompts a deeper examination of the underlying drivers shaping this trend.

Labour input fueled the recent rebound, with labour contributing 40.8 per cent to GDP growth in the current

period, a significant jump from 10.3 per cent in the preceding decade. Productivity's contribution declined from 89.7 per cent to 59.2 per cent, reflecting a growing reliance on input-based rather than efficiency-led growth.

The employment growth reflects labour market recovery, but an overdependence on labour expansion at the expense of productivity gains may constrain wage growth, reduce competitiveness, and weaken the economy's resilience.

Figure 10 : Productivity and Labour Contribution to Growth Malaysia, 1991-2024

Economic, labour and productivity growth,
average annual growth (%).

■ Labour growth ■ Productivity growth



Contribution of labour and productivity to economic growth, percentage share (%).

Economic growth

Labour share (%)

Productivity share (%)

6.8

17.6

82.4

4.5

22.2

77.8

3.9

10.3

89.7

4.9

40.8

59.2

Source : The Conference Board (TCB)
 Notes : Labour growth is growth in labour quantity. Productivity growth is the difference between economic growth and labour growth. Labour share is computed as the ratio of labour growth to economic growth. Productivity share is calculated as the ratio of productivity growth to economic growth.

Quantity to Quality

The growth accounting framework provides a structured approach to dissect GDP growth into its core components: capital input, labour input, and TFP.

Capital input encompasses investments in physical assets such as machinery, equipment, and infrastructure. Labour input reflects both the quantity of labour employed and the quality of that labour, including factors such as education, skills, and experience. TFP measures the efficiency with which capital and labour are combined, and is closely linked to innovation, technology adoption, and institutional effectiveness.

Labour quality has remained stagnant, contributing a steady 0.4 per cent to GDP growth from 1991 through 2020, before dropping to just 0.1 per cent in the most recent period.

This decline indicates a slow pace of upskilling and limited progress in enhancing the workforce's capabilities. It suggests that while more people enter employment, their skills may not keep pace with economic demands, particularly in high-value sectors such as digital technology, advanced manufacturing, and the green economy.

To address these structural gaps, Malaysia's education and training systems must be reoriented to deliver more productive and outcome-driven results. This requires a fundamental shift from input-based spending to effectiveness-based evaluation, ensuring that every ringgit invested in education, reskilling, and upskilling translates into measurable improvements in workforce capabilities and productivity.

Educational expenditure, including technical and vocational programmes, digital skills training, and lifelong learning initiatives, must be systematically assessed for relevance, impact, and alignment with labour market demands.

Table 3 : 5 Sources of GDP Growth 1991-2024

PERIOD	Real GDP Growth	Capital Services	ICT Capital	Non-ICT Capital	Labour Quantity	Labour Quality	TFP
A. CONTRIBUTION TO GROWTH (%)							
1991-2000	6.8	6.5	1.5	4.9	1.2	0.4	-1.3
2001-2010	4.5	3.4	1.5	1.9	1.0	0.4	-0.3
2011-2020	3.9	3.3	0.6	2.7	0.4	0.4	-0.2
2021-2024	4.9	1.8	0.4	1.4	2.0	0.1	1.0
B. PERCENTAGE SHARE TO GROWTH (%)							
1991-2000	100	94.1	23.4	76.6	17.6	5.9	-17.6
2001-2010	100	75.6	44.1	55.9	22.2	8.9	-6.7
2011-2020	100	84.6	18.2	81.8	10.3	10.3	-5.1
2021-2024	100	36.7	22.2	77.8	40.8	2.0	20.4

Source : The Conference Board. ICT and TFP denote Information and Communication Technology and Total Factor Productivity, respectively

Modernising Capital

Over the past three decades, Malaysia's economic growth has been predominantly driven by capital input, contributing between 3.3 and 6.5 per cent to GDP growth across different periods (Table 4).

Even in the most recent period between 2021 and 2024, capital services remained a key contributor at 1.8 per cent, though its relative share has declined. Crucially, non-ICT capital continues to dominate, contributing 1.4 per cent, while ICT capital accounted for just 0.4 per cent.

The reliance on traditional forms of capital indicates that Malaysia's digital capital base remains underdeveloped, potentially limiting opportunities for innovation-driven productivity and long-term transformation.

While capital deepening has historically supported Malaysia's growth, particularly during the post-Asian financial crisis recovery and the 2000s, recent patterns suggest a need to pivot from quantity to quality, especially in terms of technology-intensive investments.

Traditional capital formation, such as buildings and infrastructure, shows diminishing returns, while TFP remains modest despite capital accumulation. To unlock stronger productivity gains, Malaysia must prioritise digital, knowledge-based capital embedded with technological advancement rather than continuing to expand legacy assets.

Capital deepening and TFP are distinct yet intertwined. More capital per worker increases output, but only capital that enhances process innovation, automation, and digital capability can raise productivity sustainably. When capital investments incorporate advanced technologies, such as smart manufacturing, digital infrastructure, or software, it strengthens the capital base and TFP.

More capital per worker increases output, but only capital that enhances process innovation, automation, and digital capability can raise productivity sustainably.



Continued investment in underutilised or outdated physical capital risks impeding overall efficiency and failing to prepare the economy for future demands.

A sectoral breakdown of Gross Fixed Capital Formation (GFCF) from 2006 to 2023 reveals the underlying imbalance. While structures still represent the largest share of GFCF, peaking above RM180 billion in 2016–2020, growth has slowed significantly to just 0.1 per cent in 2021–2023. This signals maturity in traditional infrastructure and a limited path forward for productivity gains.

ICT and other machinery investment surged to RM83 billion during the same period, registering a strong growth of 11.4 per cent, reflecting a shift towards automation and digital transformation. Despite this, ICT's share of total GFCF (27.9%) still trails structural investment, highlighting the need for a more deliberate

realignment of national investment priorities towards digital assets.

Encouragingly, intellectual property products (IPP), including software, R&D, and design, have shown consistent, long-term growth, with their share rising to 13.2 per cent of GFCF. This reflects a growing awareness of the value of intangible capital in building future competitiveness.

Other asset categories, such as transport equipment and biological assets, have stagnated or declined, reinforcing the urgency to scale up high-impact, innovation-oriented investments.

Malaysia's capital strategy must shift from volume-based infrastructure spending to digital capital formation and intangible asset development to enhance productivity, drive innovation, and stay globally competitive.

Table 4 : Types of Gross Fixed Capital Formation, 2006-2023

Types of capital/ Period	Structure	Transport equipment	ICT equipment and other machinery & equipment	Biological assets	Intellectual property products	Other assets	Total
A. RM MILLION							
2006-2010	84,242	22,979	53,921	3,270	16,843	4,133	18,5387
2011-2015	141,085	27,949	63,570	4,644	29,367	4,552	271,166
2016-2020	182,985	20,811	69,512	4,693	35,837	3,879	317,717
2021-2023	149,246	18,475	83,074	4,242	39,360	2,921	297,318
B. GROWTH (%)							
2005-2010	7.6	11.5	-0.3	10.4	9.1	-11.4	5.3
2011-2015	11.4	-2.9	3.8	3.3	11.0	6.4	7.9
2016-2020	-2.1	-7.3	-0.2	-1.6	1.7	-8.3	-1.6
2021-2023	0.1	7.0	11.4	-2.7	2.7	6.2	3.7
C. PERCENTAGE SHARE (%)							
2005-2010	45.4	12.4	29.1	1.8	9.1	2.2	100.0
2011-2015	52.0	10.3	23.4	1.7	10.8	1.7	100.0
2016-2020	57.6	6.6	21.9	1.5	11.3	1.2	100.0
2021-2023	50.2	6.2	27.9	1.4	13.2	1.0	100.0

Source : Department of Statistics Malaysia (DOSM), various years

CONNECTING CAPITAL ACCUMULATION AND PRODUCTIVITY

While capital deepening has historically contributed to Malaysia's labour productivity growth, its impact on TFP, the efficiency of combining labour and capital, has been more ambiguous.

Empirical analysis confirms a concerning pattern: capital accumulation in Malaysia, both ICT and non-ICT, has not been associated with higher TFP growth.

In the baseline model, aggregate capital input shows a negative and statistically significant relationship with TFP growth. This implies that increases in capital stock may not have been used efficiently, likely due to misallocation, overinvestment in low-productivity sectors, or underutilisation of assets.

Further analysis that separates ICT and non-ICT capital shows a similar trend. While ICT capital is often associated with technological upgrading, its coefficient is statistically insignificant in isolation and negative when combined with non-ICT capital in the full model.

This points to an underperformance in the return on digital investment, possibly due to fragmented adoption, limited absorptive capacity, or lack of complementary skills and organisational readiness.

These findings underscore a potential structural improvement: Accumulating capital should be effectively translated into productivity gains. Stronger innovation linkages, R&D activities, or public-private coordination may strengthen the investment ecosystem.

As Malaysia moves towards more knowledge-based and high-value activities, capital policy must evolve, from expanding the capital base to ensuring capital is well-deployed, strategically targeted, and embedded within supportive ecosystems that drive technological diffusion and workforce transformation.

Table 5 : Impact of Capital Deepening on TFP

Dependent: Independent variables	Model 1, TFP Growth	Model 2, TFP Growth	Model 3, TFP Growth	Model 4, TFP Growth
Constant	0.2946 [0.5754]	-0.3957 [-0.9807]	-0.1317 [-0.3051]	0.2905 [0.5633]
Capital input	-0.2674 [-2.2083]			
IT Capital		0.0049 [0.1151]		-0.2543** [-2.1156]
Non-IT Capital			-0.1212 [-1.7576]	-0.2680** [-2.1678]
R-square	0.0646	0.000	0.0300	0.0648

Note : Regressions were computed using OLS with robust standard error due to Newey-West (1987). Figures in round brackets (...) are t-statistics.

Growth Forecast

After several years of volatility, the global economy is expected to stabilise over the near term. Global growth is forecasted to hold steady at 2.7 to 3.3 per cent in 2025 and 2026, a slight improvement from the post-pandemic dip but still below pre-COVID averages.

While this signals a return to baseline, it also reflects a world economy adjusting to tighter financial conditions, slower trade recovery, and geopolitical fragmentation.

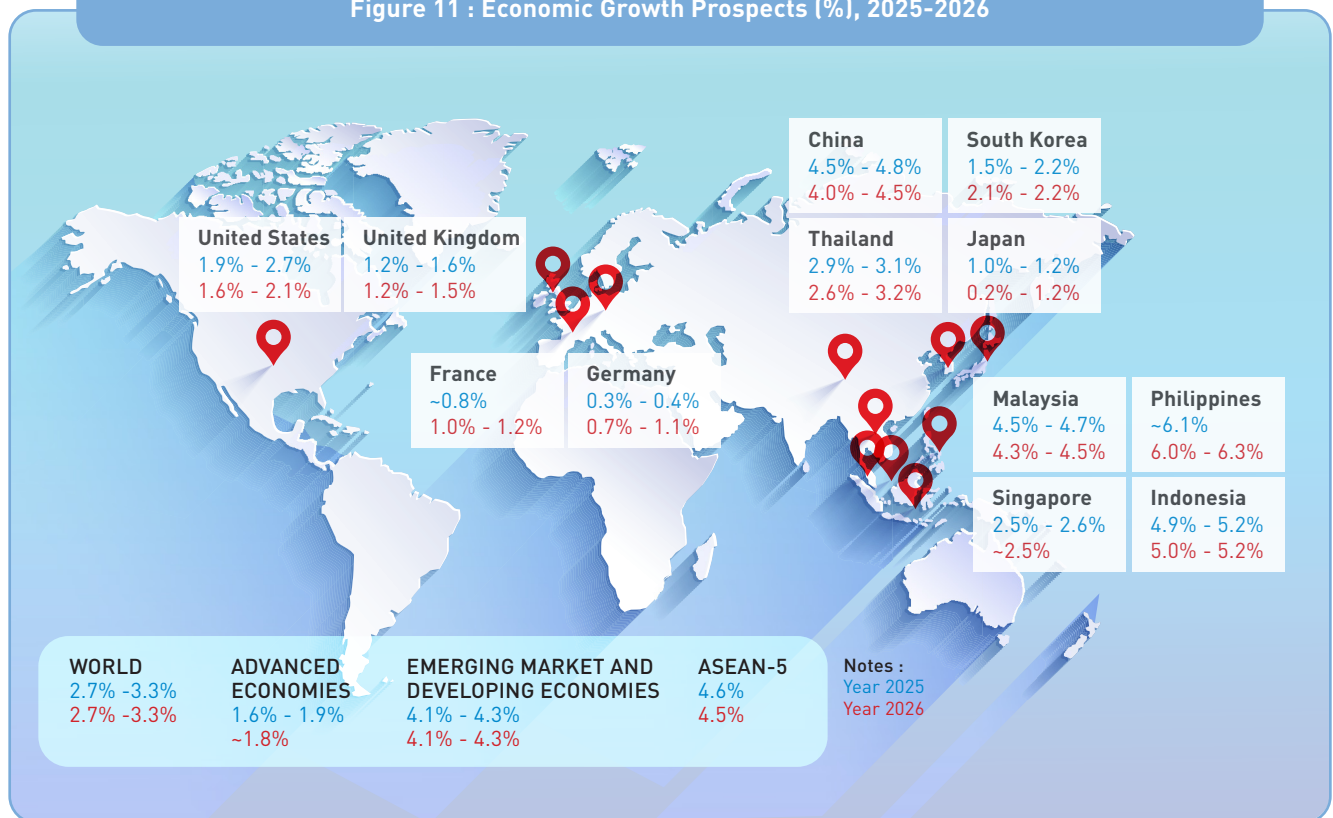
Advanced economies are projected to grow modestly, averaging around 1.6 to 1.9 per cent in 2025 and around 1.8 per cent in 2026. The United States remains relatively strong among its peers, supported by resilient domestic demand, while Europe and Japan face structural challenges and demographic drag.

South Korea's growth is expected to remain steady, with forecasts of 1.5 to 2.2 per cent in 2025 and 2.1 to 2.2 per cent in 2026, suggesting a stabilising trend rather than a strong recovery. This reflects external demand uncertainty and the maturing of its export-driven economy.

Emerging markets and developing economies continue to lead global growth. The ASEAN-5 economies are forecast to expand by 4.6 per cent in 2025 and 4.5 per cent in 2026, outperforming the global average.

Malaysia is projected to record one of the highest growth rates in the region, around 4.3 to 4.7 per cent, reflecting ongoing structural transition, domestic resilience, and recovery in strategic sectors. Similarly, the Philippines and Indonesia are expected to sustain momentum above 5 per cent, driven by domestic consumption and infrastructure spending.

Figure 11 : Economic Growth Prospects (%), 2025-2026



Source : Forecast figures are compiled from the International Monetary Fund (IMF), World Bank (WB), Organization for Economic Co-operation and Development (OECD) & United Nations (UN DESA), published between January to March 2025.

The downside risks to the global trade environment remain elevated, particularly due to the resurgence of protectionist measures. The recent escalation of reciprocal tariffs by the United States, notably on Chinese electric vehicles, semiconductors, and clean energy products, has reignited fears of a protracted trade conflict.

According to the World Bank in its January 2025 Global Economic Prospects, global trade growth is expected to grow by only 3.1 per cent in 2025 and 3.2 per cent in 2026, below the historical average of 4.5 per cent between 2010 and 2019. This sluggish trade outlook weighs on global GDP momentum, with the OECD cautioning that growth may further decelerate if fragmentation persists.

As an open and trade-dependent economy, Malaysia remains vulnerable to external shocks, especially those affecting global demand, supply chain integration, and investor confidence. The effects go beyond trade growth. Productivity may also be adversely affected, as manufacturers reliant on the USA's demand face underutilised production capacity and thinner margins.

This environment could delay capital investments, including automation, digital technology, and upskilling initiatives – core pillars of Malaysia's Industry 4.0 ambitions. Nonetheless, the disruption could motivate firms to pursue higher value-added production models and diversify their market exposure, especially if supported by the right policy instruments and investment facilitation.

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CHINA AND THE U.S. INFLUENCE ON MALAYSIA'S PRODUCTIVITY

Empirical analysis from 1991 to 2023 reveals that Malaysia's total factor productivity (TFP) growth is significantly influenced by economic cycles in the United States of America (USA), and that a one-percentage-point increase in the USA. GDP growth is linked to nearly a one-percentage-point rise in Malaysia's TFP, indicating strong productivity spillover effects. Statistically, China's GDP growth has little influence on Malaysia's TFP.

Table 6 : Impact of USA and China GDP Growth on TFP Malaysia

Dependent: Independent variables	Model 1, TFP Growth	Model 2, TFP Growth	Model 3, TFP Growth
Constant	-0.7907 (-1.0099)	0.9191 (0.3967)	-0.0688 (-0.0359)
GDP growth, USA	0.9535** (2.4155)		0.9862** (2.3274)
GDP growth, China		0.0726 (0.3211)	-0.0928 (-0.4586)
R-square	0.1990	0.0024	0.2027

► Note : Asterisk ** denotes statistically significant at the 5% level. TFP denotes Total Factor Productivity. Regressions were computed using OLS with robust standard error due to Newey-West (1987). Figures in round brackets [...] are t-statistics

Malaysia's TFP and China's GDP growth show a less significant and flatter positive relationship. The trendline is nearly horizontal, indicating a low correlation. Possible reasons include the nature of Malaysia's integration with China being more trade-oriented than technology- or productivity-enhancing. Sectoral mismatches or limited value-chain participation depth could also be a reason for its limited influence on Malaysia's productivity.

The relationship between Malaysia's TFP and the USA GDP growth exhibits a more apparent positive correlation. The upward-sloping trendline indicates that higher USA's economic growth aligns with higher TFP growth in Malaysia.

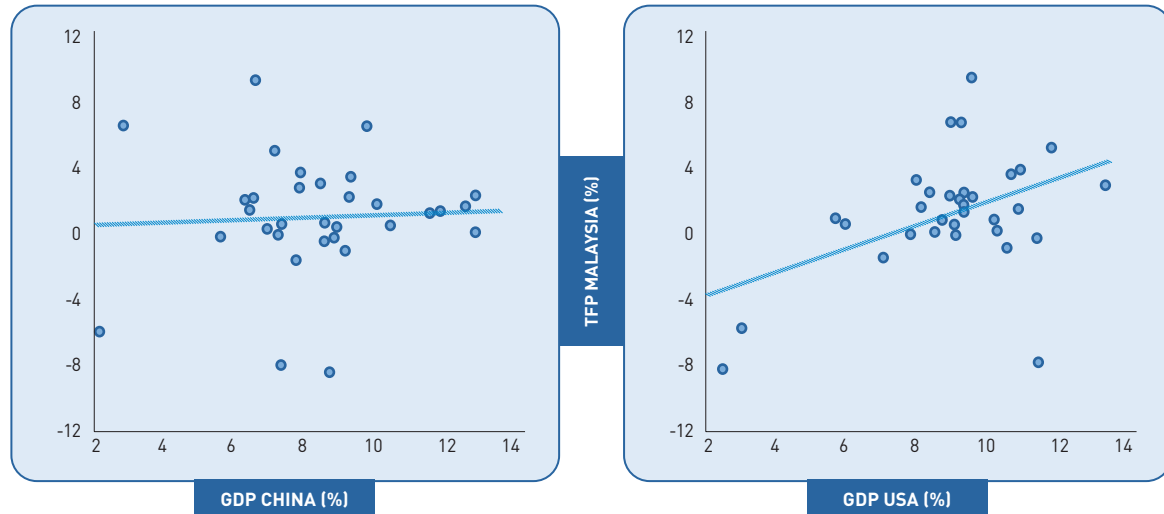
This association could reflect Malaysia's profound connection to the USA via capital markets, investment linkages, multinational corporate networks, and technological transfers. When

the USA's economy expands, it may catalyse productivity spillovers to countries like Malaysia through demand for high-value exports, FDI, and innovation diffusion, especially in electronics and services.

This relationship is consistent with the broader literature on productivity spillovers and global economic linkages. Previous studies have shown that trade and investment linkages with technologically advanced countries positively influence productivity in developing and middle-income economies.

In the context of ASEAN, Elsadig (2008) found that foreign direct investment (FDI) from developed countries, especially those with high technology content, significantly contributes to TFP growth through technology transfer and improved production processes.

Figure 12 : Growth in Malaysia's TFP and China's and the USA's GDP



Similarly, Keller (2004) emphasised that international knowledge spillovers, particularly from developed nations, are critical channels for productivity improvements in less advanced economies.

The analysis aligns with findings by Wan et al. (2023), who observed that Malaysia's exports to China are often concentrated in lower value-added commodities or intermediate inputs, offering limited productivity gains. The Malaysia-China trade structure appears more volume-driven than efficiency-oriented, resulting in fewer dynamic spillovers to TFP.

The contrasting impacts of the USA and China GDP growth carry important policy implications.

Malaysia must maintain strong trade ties with both economies, but greater emphasis should be placed on deepening economic engagement with advanced economies offering higher-quality FDI and technological upgrading opportunities. This

includes strategic positioning within innovation-intensive global value chains and enhancing absorptive capacity through human capital development and domestic R&D support.

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Policy Implications

Workforce Quality

Labour quality demands bold educational reforms and targeted training. Public-private initiatives should reshape curricula for in-demand skills like data analytics, software engineering, and green technology. Funding should link to measurable learning outcomes to ensure maximum returns on investment. By elevating digital literacy, technical proficiency, and vocational education, Malaysia can raise wages, enhance social mobility, and foster a resilient, high-productivity workforce, propelling its global competitiveness.

Competitive Advantage

Innovation drives high-value transformation by fostering robust public-private collaborations, cluster-based development, and R&D incentives that catalyse breakthrough ideas. Simplifying start-up regulations, strengthening intellectual property protection, and broadening venture funding can spur entrepreneurial growth. Leading industries, including electronics, green technology, and halal, gain momentum by specialising in advanced production. Aligning policy, academic, and industry efforts for rapid technology diffusion will rejuvenate Malaysia's global competitiveness and boost productivity.

Capital and Technology Investment

Though capital accumulation fuels growth, overreliance on physical infrastructure reduces productivity potential. Policies should reroute investments towards high-impact ICT, automation, and intangible assets for faster technological adoption and more substantial returns. Tax incentives, streamlined approvals, and robust financing can encourage private-sector digital transformation. A firm policy on intellectual property development and innovation clusters can raise TFP. The focus should be on quality rather than quantity, ensuring capital aligns with skills and drives sustainable productivity.

Regulatory Efficiency

Transparent governance and efficient regulations ensure lasting productivity and competitiveness. Malaysia should reduce administrative hurdles, stabilise policies, and optimise economic oversight. Ministerial-level committees, can unify government bodies, businesses, and civil society. This coordinated approach aligns with the MADANI Economy vision, fortifying resilience while spurring sustainable, high-value growth.

Key Takeaways

Malaysia's economic growth is transitioning from primarily input-led expansions to productivity-driven approaches focusing on digital capital, intangible investments, workforce upskilling, and robust regulatory frameworks for resilience.

Labour quality remains a key challenge, demanding stronger education, upskilling, and technology adaptation to sustain growth, boost global competitiveness, and close gaps with 12MP productivity targets.

Capital accumulation once propelled growth, but shifting focus to intangible, ICT-focused investments and R&D is critical for driving innovation, raising TFP, and ensuring long-term, sustainable economic performance.

Enhancing productivity and competitiveness requires efficient governance, a transparent business climate, and infrastructure upgrades, allowing Malaysia to innovate rapidly, attract investments, and remain resilient.

CHAPTER TWO

Structural Realignment in Sectoral Productivity Landscape





Structural Realignment In Sectoral Productivity Landscape

Malaysia's sectoral productivity growth highlights the urgency of addressing deep-rooted structural inefficiencies. Strengthening capital utilisation in services and accelerating sectoral upgrading are critical to sustaining productivity gains. Bold, targeted reforms are needed to drive inclusive and resilient economic growth.

Structural Shifts

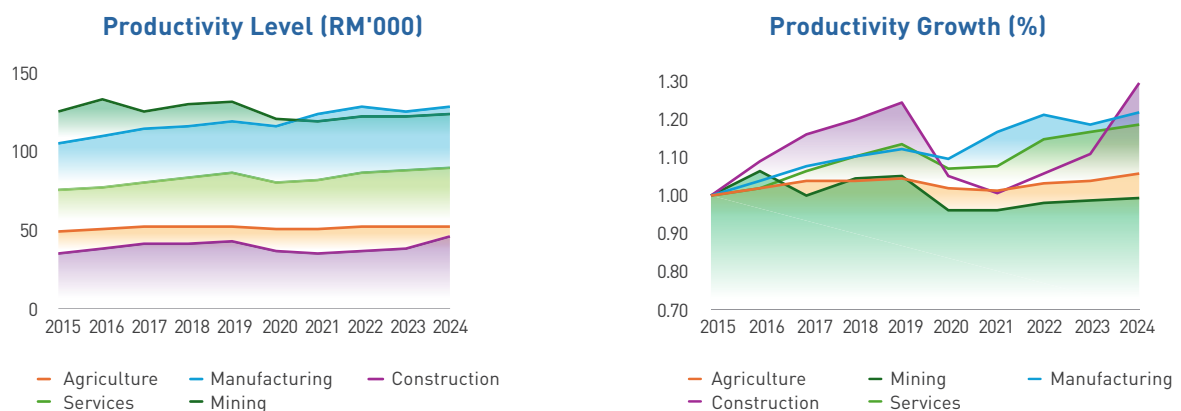
Different sectors exhibit varying productivity levels and growth patterns, reflecting their unique structural characteristics, degrees of technological adoption, and resilience to external shocks. By analysing productivity levels and relative growth trajectories across key sectors, a clearer picture emerges of how Malaysia's economic landscape is evolving.

The manufacturing sector maintained the highest productivity levels across the 2015 - 2024 period, with the services sector gradually narrowing the gap. Mining recorded relatively higher productivity levels in earlier years but remained largely stagnant in recent periods, while the agriculture and construction sectors consistently occupied the lower end of the productivity spectrum.

Meaningful recovery in the construction sector emerged after 2021, indicating delayed structural improvements likely tied to post-pandemic recovery and renewed construction activities.

Malaysia's economic sectors exhibit varying productivity levels and growth patterns, reflecting their unique structural characteristics, degrees of technological adoption, and resilience to external shocks.

Figure 13 : Sectoral Productivity Trends, 2015-2024



When viewed through productivity growth patterns, standardising each sector's 2015 baseline to allow for growth comparison, a different narrative emerges. Construction and services recorded the strongest growth trajectories, progressively closing the gap with the manufacturing sector.

This suggests the beginning of a convergence trend, where previously lagging sectors are now accelerating. The agriculture and mining sectors, despite maintaining baseline performance levels, lagged behind in relative growth, reinforcing a pattern of divergence in sectoral productivity dynamics.

These productivity landscapes point to shifting structural dynamics within Malaysia's economy. While the manufacturing sector continues to anchor the nation's overall productivity base, the rise of the services and construction sectors highlights their growing importance in driving economic transformation.

Malaysia's productivity landscapes point to shifting structural dynamics within the economy. While the manufacturing sector continues to anchor the nation's overall productivity base, the rise of the services and construction sectors highlights their growing importance in driving economic transformation.

At the same time, the persistent lag in the agriculture and mining sectors indicates the urgent need for targeted policy interventions to prevent structural divergence and to ensure inclusive, broad-based productivity gains across all sectors.

Understanding the drivers behind the upward productivity trends in the manufacturing, construction, and services sectors requires examining the role of the capital-labour ratio. The capital-labour ratio measures the amount of capital, such as machinery, equipment, technology, and infrastructure, available per worker within an economy or a sector.

Greater capital availability per worker, including access to more advanced machinery, digital tools, or automation, allows workers to produce more output in less time, directly enhancing labour productivity.

Capital-labour ratio growth is associated with higher productivity in the manufacturing and construction sectors, confirming the critical role of sustained capital investment in these industries.

In services, increases in capital per worker do not reflect a strong correlation with productivity improvements. This suggests that capital accumulation alone is insufficient to boost productivity in services.

This could be due to structural inefficiencies such as capital misallocation or investment in non-productive assets, skill mismatches, and the inherently labour-intensive nature of many services subsectors, such as in retail and food & beverage industries. Addressing these underlying issues is essential to unlocking higher productivity gains in the services sector.

SECTORAL DISPARITIES REVEAL LIMITS OF CAPITAL DEEPENING STRATEGIES

Examining the relationship between the capital-labour ratio and labour productivity offers insights into sectoral structural dynamics.

A strong positive association indicates that higher capital intensity per worker translates into greater output per worker, signalling effective capital deepening. Conversely, a flat or negative relationship suggests that increased capital investment may not be efficiently utilised, reflecting diminishing returns or structural bottlenecks that constrain labour productivity growth.

Manufacturing and construction sectors demonstrate a strong positive relationship, where higher capital-labour ratios are associated with higher labour productivity levels. This suggests that investments in machinery, equipment, and infrastructure have effectively raised worker efficiency within these sectors.

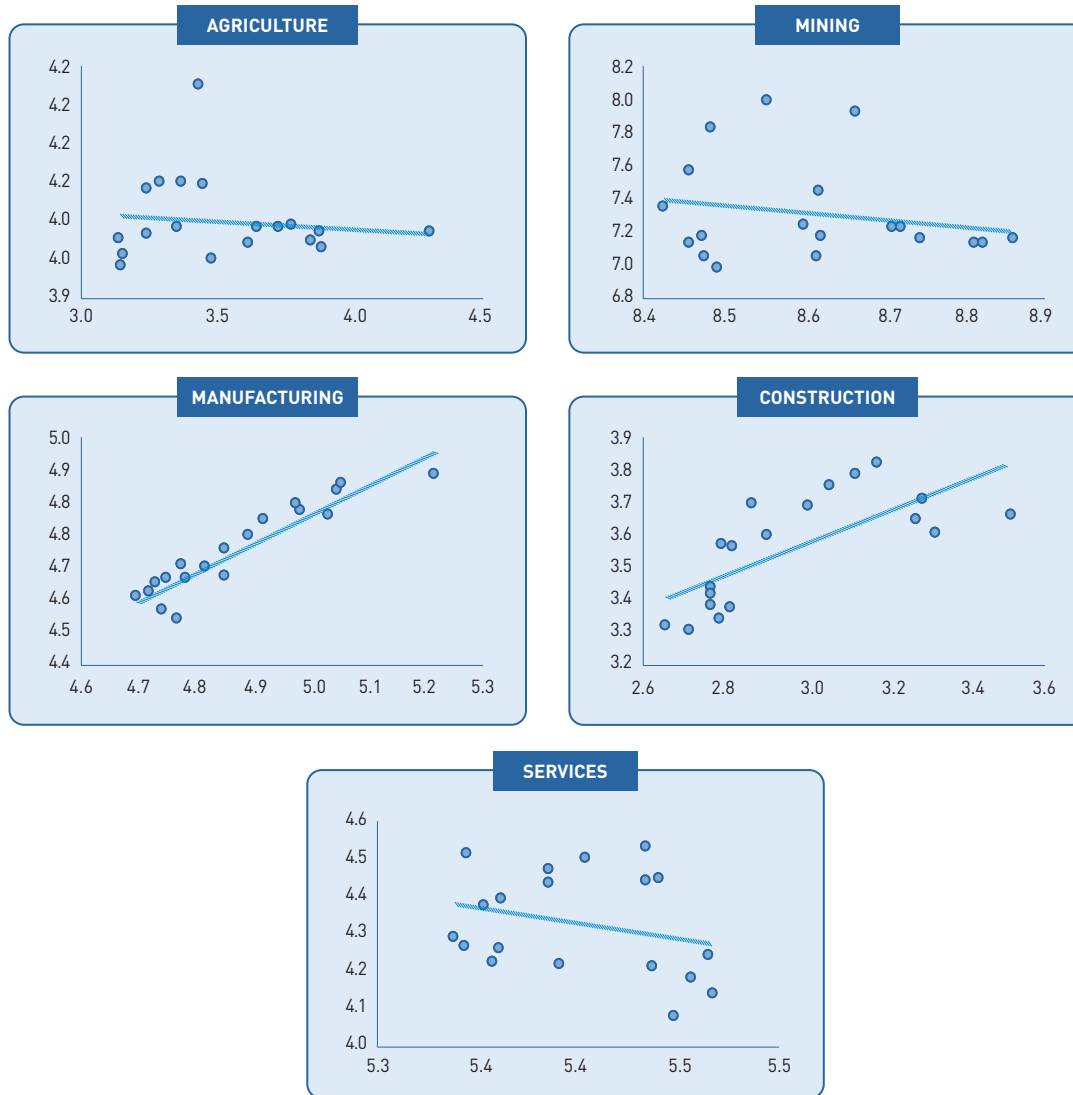
Conversely, the agriculture, mining, and services sectors exhibit relatively flat or even slightly negative trends, indicating a decoupling between capital intensity and productivity gains. In these sectors, expanding the capital base alone has not yielded proportional improvements in labour output, possibly due to technology saturation, labour market rigidities, or structural inefficiencies.

Simply increasing capital inputs is insufficient to drive labour productivity growth. While capital deepening strategies have paid off in sectors like manufacturing and construction, broader structural reforms, innovation promotion, and workforce upgrading are required, particularly in agriculture, mining, and services.

Tailored interventions to enhance the quality of both capital and labour are crucial to unlock the next wave of productivity gains and sustain Malaysia's transition towards a more resilient and high-performing economy.



Figure 14 : Relationship between capital-labour ratio and productivity growth



Notes: X-axis represents the capital-labour ratio (net capital stock per worker), while Y-axis represents labour productivity (value added per worker). Each dot corresponds to an annual observation within the respective sector.

Source : Calculated based on data obtained from the Department of Statistics Malaysia, DOSM (2024)

Labour-Driven Growth

A decomposition of GDP growth into labour input and productivity contributions provides a clearer understanding of the structural dynamics.

Productivity-driven growth signifies enhanced efficiency, whether through innovation, technology adoption, skills development, or capital deepening, whereas labour-driven growth often reflects extensive labour utilisation rather than intensive economic advancement. Striking the right balance between these two drivers is critical to ensuring long-term economic resilience.

In the context of Malaysia's sectoral economy, this decomposition reveals a mixed pattern. Certain sectors are shifting towards productivity-led growth, indicating structural improvements and efficiency gains, while others continue to rely on employment expansion to sustain output. These differences highlight the varying degrees of transformation and competitiveness across sectors.

For the services sector, growth has remained predominantly labour-driven between 2016 and 2024, as indicated by the consistent contribution of labour expansion to overall economic growth. Although productivity growth in services has been positive, its contribution remains comparatively modest, suggesting that sectoral growth continues to rely heavily on employment gains rather than efficiency improvements.

Certain sectors are shifting towards productivity-led growth, indicating structural improvements and efficiency gains, while others continue to rely on employment expansion to sustain output.

The construction sector has shown a positive shift towards productivity-led growth in recent years, particularly after 2021. The sharp increase in productivity contributions, notably in 2024, indicates that the sector is catching up, benefiting from the resumption of activities, capital investments, and structural reforms.

Manufacturing has consistently remained productivity-driven throughout the period, maintaining its role as a key contributor to national productivity growth, even amid temporary disruptions during the pandemic years.

The agriculture sector demonstrates an interesting transition. Prior to 2020, growth was predominantly labour-driven. However, post-pandemic, the sector began to exhibit early signs of productivity-led growth, albeit at a modest scale.

This suggests initial gains from mechanisation or process improvements, although the long-term sustainability of these gains remains uncertain.

Meanwhile, the mining sector continued to record weak productivity contributions, with volatile labour trends and limited overall growth momentum, reflecting persistent structural challenges.

Shifts in labour utilisation and productivity growth across sectors between the periods 2015–2019 and 2021–2024 clarify the decomposition of sectoral GDP growth.

In the services sector, growth in productivity and employment progressed almost in parallel. This emphasises that services growth remains primarily labour-driven rather than capital-driven. Given its labour-intensive nature, the services sector output tends to scale with workforce size.

Figure 15 : Decomposition of GDP into Labour and Productivity Growth, 2016-2024

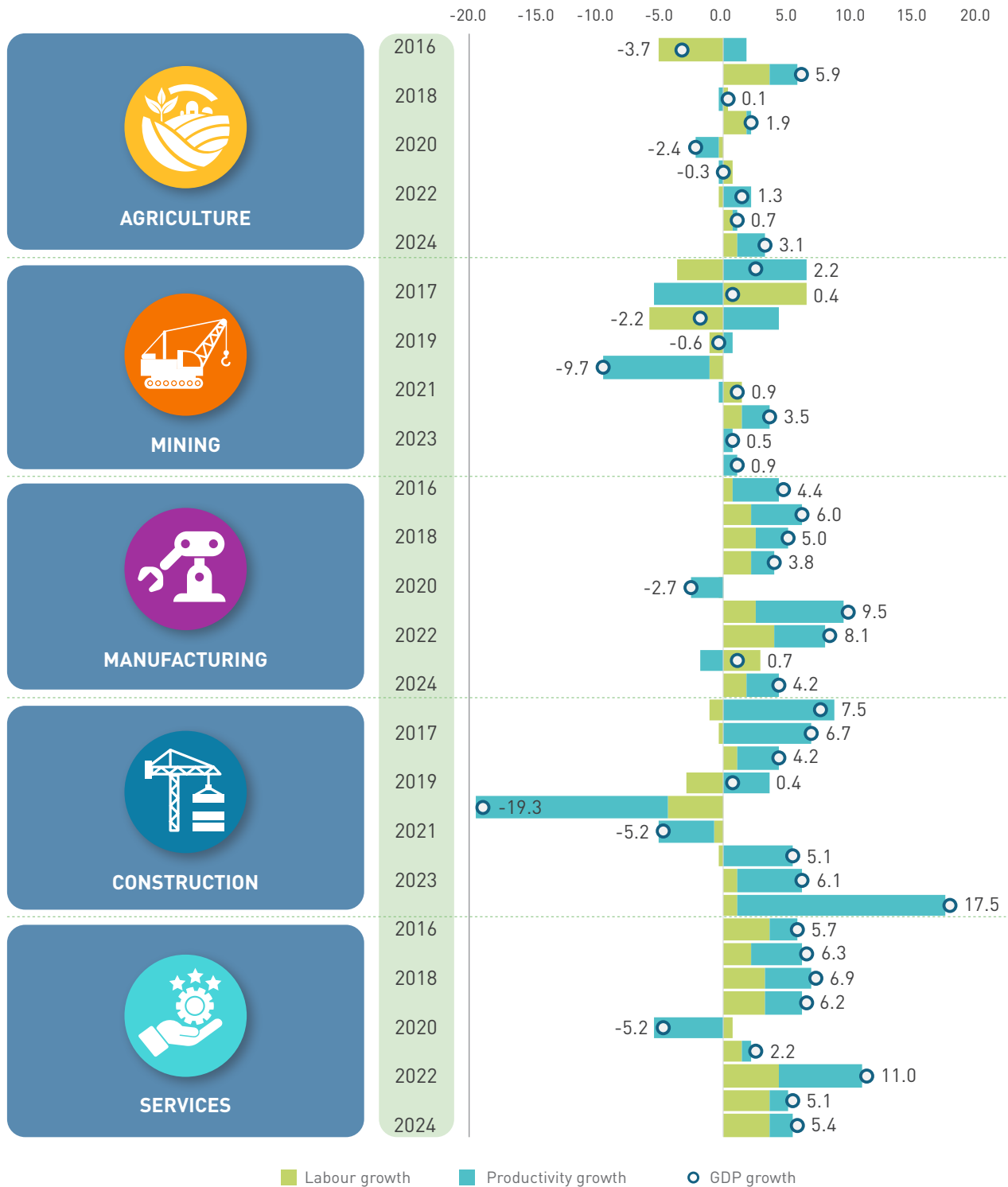
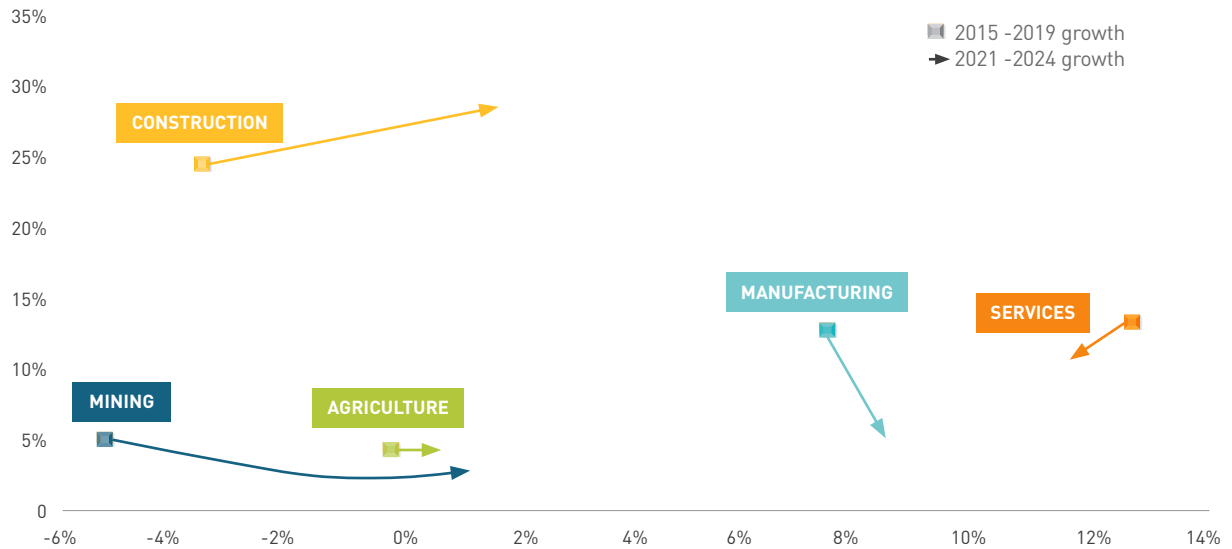


Figure 16 : Sectoral Shifts between Labour Utilisation and Productivity, 2015–2024



Source : Calculated based on data obtained from Department of Statistics Malaysia, DOSM (2025)

The construction sector displays a more encouraging trajectory. Post-pandemic, it moved upward and rightward, indicating concurrent improvements in both productivity and employment. This supports the observation that the sector's structural shift was more efficiency-driven, moving beyond reliance solely on workforce expansion.

Manufacturing presents a slightly different picture. Although productivity levels remain relatively high, marginal productivity growth has weakened as employment expanded during the post-pandemic period. This does not suggest an absolute decline in productivity but indicates increasing input dependency, potentially due to rising operational costs, uneven automation, or a slower transition into higher-value activities.

The agriculture and mining sectors remain positioned close to the origin, demonstrating minimal change in both productivity and employment, reflective of ongoing structural stagnation or slow transformation.

These differentiated trajectories across sectors highlight the importance of looking beyond headline growth rates to understand the quality and structure of sectoral expansion. Each sector comprises diverse subsectors, each with distinct structural advantages and challenges, necessitating specific and tailored interventions.

MPC's Productivity Nexus initiative exemplifies such targeted and sector-specific intervention. Assessments from the Productivity Nexus initiative indicate positive impacts on overall productivity growth, reinforcing the importance of focused, collaborative approaches in driving sustainable economic transformation.

Productivity Nexus Sectors

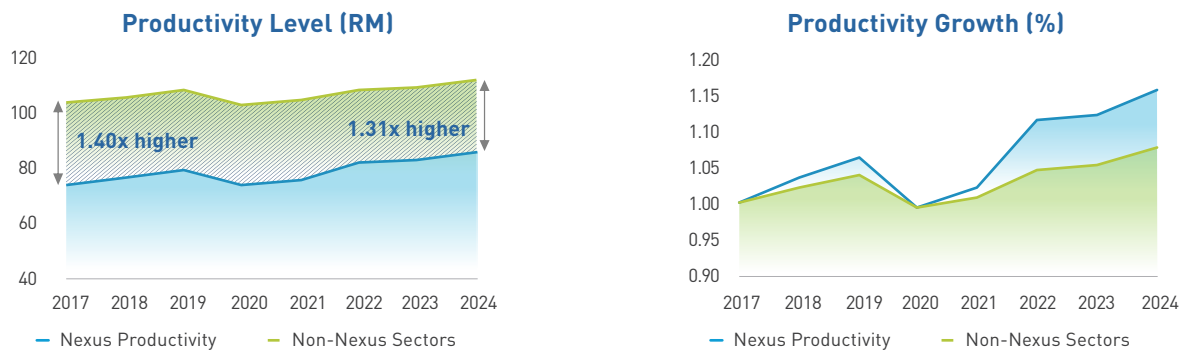
MPC's Productivity Nexus are strategic industry groups established to drive productivity improvements through targeted interventions, collaboration, and best practice dissemination.

Nexus plays a catalytic role in advancing innovation, digitalisation, and value-added growth across the economy. Evaluating the Nexus sectors' performance relative to the national average is essential for assessing the effectiveness of targeted policy measures.

Although the productivity levels of the Nexus sectors remain relatively lower than those of the rest of the non-Nexus sectors, recent trends indicate significant improvement. The productivity gap narrowed from 1.40 times in 2017 to 1.31 times in 2024.

This convergence becomes more apparent when viewed through productivity growth trajectories. Starting from a common base year in 2017, the productivity of the Nexus sectors expanded more rapidly than that of the rest of the sectors. This positive trend reflects the growing impact of Nexus programmes implemented at the sectoral and firm levels.

Figure 17 : Productivity of Nexus Sector and the Rest of the Sectors (Non-Nexus), 2017-2024



Notes : Non-Nexus sectors refer to all national economic sectors that are not classified under the Productivity Nexus categories.
Sources : Calculated based on data from Department of Statistics Malaysia, DOSM (2025)

PRODUCTIVITY NEXUS SECTORS

The Malaysia Productivity Blueprint (MPB), launched in 2017 under the Eleventh Malaysia Plan, introduced the concept of the Productivity Nexus as a strategic approach to boost sector-specific productivity through industry-driven initiatives.

The Nexus framework focuses on strengthening Malaysia's key economic sectors by addressing sectoral bottlenecks, enhancing competitiveness, and fostering collaboration between the public and private sectors. As part of the MPB's continuous refinement, the number of priority Nexus subsectors was expanded to 11 in 2023 to align with Malaysia's evolving economic structure and national priorities.

The formulation of the Nexus sectors was guided by a structured evaluation framework based on five criteria: contribution to GDP, share of workforce, opportunity for productivity improvement, potential multiplier effects, and readiness for productivity enhancement.

These 11 priority Nexus subsectors span across four major economic pillars – Agriculture, Manufacturing, Construction, and Services – and collectively contribute approximately 40% of Malaysia's GDP and 48% of total national employment.

Under the Nexus program, MPC works closely with industry stakeholders to drive tailored productivity improvement initiatives. Although the challenges differ across sectors, MPC's interventions consistently target four critical areas: advancing technology adoption, strengthening talent development, facilitating regulatory improvements, and enhancing industry structure.

Through this approach, the Nexus serves not only as a coordination platform but also as a catalyst for sustained sectoral transformation and national productivity growth.



Figure 18 : Key Criteria of Nexus Productivity Classifications

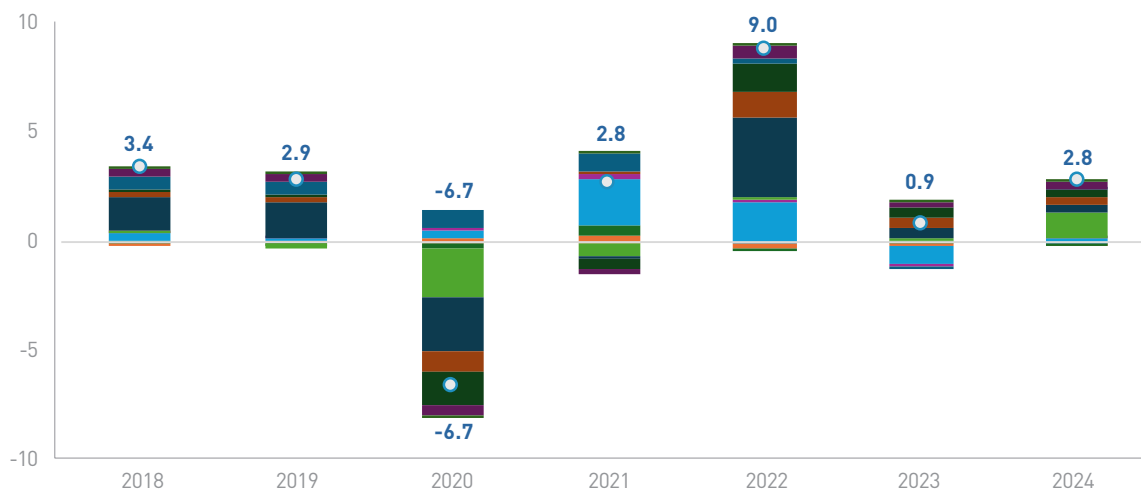


Source : Labour Productivity Fourth Quarter 2024 [DOSM, 2025]

Assessing the contribution of each Nexus subsector to overall productivity growth provides insights into Malaysia's evolving productivity landscape. The landscape reflects sectoral performance, the economic weight, and structural changes that shape broader

productivity dynamics. By observing how sectoral contributions shift over time, a clearer picture emerges of the sectors driving momentum and those requiring further structural reforms.

Figure 19 : Contribution of Each Sector to the Productivity of Total Nexus



Sectoral Contribution (%)	2018	2019	2020	2021	2022	2023	2024	Average 2018-2024
■ Retail and Food & Beverages	45.5	46.6	26.0	2.4	39.1	13.8	11.0	26.3
■ Electrical and Electronics	11.8	2.6	4.2	37.2	19.5	29.4	6.2	15.8
■ Construction & Built Environment	2.2	7.4	23.2	10.7	1.3	6.3	40.9	13.1
■ Tourism	3.0	3.7	16.7	7.4	14.2	15.5	9.3	10.0
■ Logistics	5.5	7.3	9.4	3.3	11.8	15.6	12.8	9.4
■ ICT	18.9	16.1	9.3	14.4	2.2	0.5	2.2	9.1
■ Professional Services	9.3	11.2	4.8	5.9	7.2	9.2	10.4	8.3
■ Agro-food	0.5	2.2	1.9	5.0	2.9	4.0	1.7	2.6
■ Chemicals and Chemical Products	1.6	1.0	3.3	8.6	0.4	0.4	1.6	2.4
■ Private Healthcare	1.3	1.5	1.0	2.4	1.1	3.2	3.6	2.0
■ Machinery and Equipment	0.4	0.4	0.3	2.8	0.4	2.0	0.4	1.0
○ Nexus Productivity	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes : Sectoral contributions refer to the absolute share of each Nexus sector's productivity growth to the overall productivity growth of the Nexus sectors, regardless of the direction of growth (positive or negative).

Source : Department of Statistics Malaysia, DOSM (2025).

Between 2018 and 2020, retail and food & beverages dominated productivity contributions, accounting for nearly half of total gains during the early period. ICT and logistics also registered significant contributions, leveraging early digital adoption trends and resilient supply chain activities.

The pandemic period disrupted these patterns – while retail's influence declined sharply from 2020 onwards, subsectors such as tourism, construction and built environment, and electrical and electronics (E&E) assumed greater importance, responding to new demand structures and recovery dynamics.

From 2021 to 2024, a noticeable shift occurred. E&E emerged as a consistent high contributor, especially in 2021 and 2023, reflecting Malaysia's growing integration into global technology value chains.

Construction and built environment recorded a strong rebound, culminating in 2024 as the largest contributor across all sectors, signalling revived infrastructure activity and operational restructuring post-pandemic.

Meanwhile, tourism, logistics, and professional services showed steady growth in contribution, indicating deeper structural realignments towards services and mobility-driven sectors.

Subsectors like agro-food, chemicals & chemical products, and machinery & equipment maintained low and relatively stagnant contributions throughout the period.

The evolving patterns suggest that Malaysia's productivity drivers within the Nexus sectors are becoming increasingly diversified. The declining share of traditional sectors like retail, alongside the rising influence of high-technology and services sectors, points to a positive structural transition.

Sustaining this momentum requires continued investments in innovation, skills development, and sectoral upgrading, ensuring that both traditional and emerging sectors contribute meaningfully to a more resilient and high-value economy.

The declining share of traditional sectors like retail, alongside the rising influence of high-technology and services sectors, points to a positive structural transition.

Higher-Performing Nexus Sectors

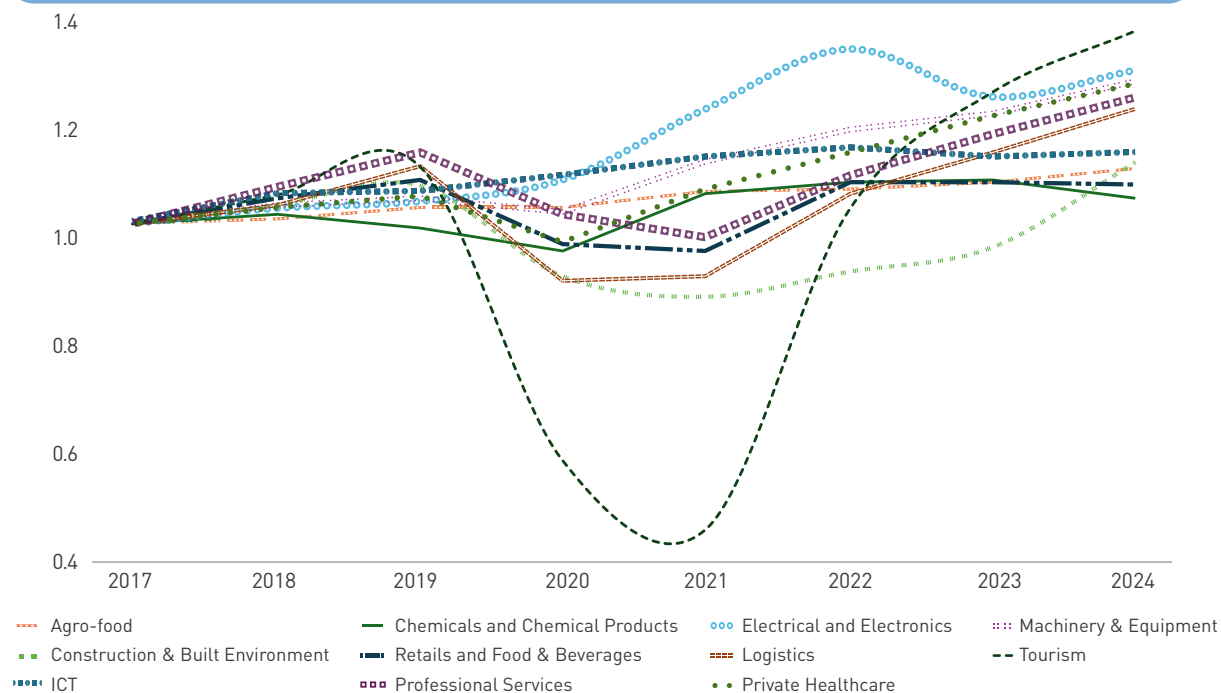
Some sectors, despite large economic weight, show moderate growth, while others, starting from a lower productivity base, demonstrate rapid catch-up gains driven by sectoral restructuring, investment shifts, or technological upgrading.

The productivity index of priority subsectors indicates that this dynamic is particularly evident in construction & built environment, and tourism, which recorded notable productivity rebounds by 2024 after significant contractions during the pandemic, surpassing their pre-pandemic levels.

Subsectors like retail and food & beverages and ICT, which initially recorded high productivity levels, exhibited a flatter trajectory, indicating maturing growth or structural saturation. E&E, professional services, and machinery & equipment demonstrated both strong productivity levels and steady growth, positioning them as emerging pillars for future productivity gains within the Nexus framework.

These findings reinforce a key insight that structural transformation is underway, with more diversified productivity drivers emerging beyond the traditionally dominant sectors. High-technology, knowledge-based, and infrastructure-linked sectors are steadily gaining prominence, reflecting a positive shift towards a more resilient and innovation-led economy.

Figure 20 : Productivity Index of Priority Subsectors (2017=100), 2017-2024



Source : Calculated based on Department of Statistics Malaysia, DOSM (2025) data

A deeper set of structural dynamics inherent to each Nexus subsector underpins the divergence in productivity performance across sectors. Two distinct clusters emerge: one comprising subsectors converging towards higher productivity at an upper-tier and another consisting of those persistently lagging behind at a lower-tier.

These differences are far from incidental as they arise from variations in sectoral organisation, labour reward structures, and the degree of domestic versus export market orientation.

The lower-tier group, including agro-food, chemicals & chemical products, retail and food & beverages, digital, and construction & built environment, shares several defining characteristics.

These sectors are predominantly domestically oriented, with high local demand and limited trade exposure. They tend to be more labour-intensive, evidenced by their larger employment shares, retail and food & beverages, for example, represent 21.2 per cent of total employment, the highest among all Nexus subsectors.

Although chemicals & chemical products and digital subsectors are not inherently labour-intensive, their stagnating productivity may point to deeper operational inefficiencies. A common feature across this group is a relatively low compensation of employees (CE) to value-added ratio, indicating that workers receive a smaller proportion of the economic value they generate.

This weakens incentives for upskilling, innovation, and retention, especially in contexts where wage levels are misaligned with output contributions. In contrast, the upper-tier group, including machinery & equipment, electrical & electronics, tourism, logistics, professional services, and private healthcare, exhibits more favourable structural characteristics.

These sectors are generally less labour-intensive, as shown by their modest employment shares, yet they record higher CE-to-value-added ratios (e.g., tourism: 57.8%, logistics: 43.2%, professional services: 43.5%). This implies that while fewer workers are employed, they tend to be more productive, likely a result of higher wages, better skillsets, and stronger alignment between compensation and performance.

Table 7 : Production structure of Productivity Nexus (%)

NEXUS SECTORS	SUPPLY-SIDE					DEMAND-SIDE	
	GDP Share	Domestic content	Import content	CE-to-value added	Employment Share	Local demand	Export demand
Agro-food	3.6	23.7	7.4	8.7	3.8	88.4	11.6
Chemicals and Chemical Products	2.3	52.3	21.6	17.9	0.7	18.4	81.6
Retails and Food & Beverages	10.3	34.6	7.7	33.7	21.2	54.7	45.3
Digital	6.3	40.2	9.6	22.6	1.6	82.9	17.1
Construction and Built Environment	4.2	54.4	15.6	77.2	9.1	91.5	8.5
Machinery and Equipment	0.6	44.2	30.8	63.0	0.7	26.4	73.6
Electrical and Electronics	6.3	51.9	27.6	51.7	3.1	17.1	82.9
Tourism	1.0	44.3	8.2	57.8	1.3	80.6	19.4
Logistics	2.4	55.0	8.3	43.2	2.4	66.1	33.9
Professional Services	2.2	32.0	6.9	43.5	2.5	49.4	50.6
Private Healthcare	0.7	37.0	6.9	78.2	1.0	100.0	0.0

► Notes : (1) GDP share represents the subsector's contribution to total gross domestic product, reflecting its economic weight within the national economy. (2) Domestic content refers to the percentage share of domestic intermediate inputs to total output. (3) Import content indicates the share of imports used in the production process, relative to total output (%). (4) Compensation of employees (CE)-to-value added represents CE share to value added, serving as a proxy for labour intensity and remuneration structure. (5) Employment share indicates the proportion of employment in each sector to total employment. (6) Local and export demands reflect the share of total output consumed by domestic and foreign consumers, respectively.
Source : Input-Output Table, Department of Statistics Malaysia, DOSM (2023)

These sectors are more globally integrated. Machinery & equipment (73.6%) and E&E (82.9%) exhibit substantial export orientation. Although tourism and private healthcare are domestic in nature, their strong post-pandemic recoveries point to demand-side resilience and operational adaptation, both of which contribute to productivity gains.

Altogether, these structural distinctions underscore why certain sectors are achieving faster productivity convergence, while others remain stagnant. Subsectors that are globally connected, capital-intensive, and offer better labour returns are more likely to sustain productivity growth.

For the lower-performing group to catch up, interventions must go beyond technology adoption and capital investment. They must also target improvements in job quality, workforce incentives, export capabilities, and institutional support structures.

Subsectors that are globally connected, capital-intensive, and offer better labour returns are more likely to sustain productivity growth.

Despite the aggregate productivity growth observed in Productivity Nexus subsectors, outpacing national averages, firm-level realities reveal a more nuanced landscape. Many firms continue to grapple with deep-rooted operational and regulatory constraints.

Findings from a targeted survey of firms within these sectors, revealing persistent challenges related to skills development, technological integration, and the regulatory environment – the barriers that, if left unaddressed, could inhibit long-term transformation.

FIRM-LEVEL CHALLENGES IN SECTORAL TRANSFORMATION

Despite encouraging productivity trends across many Productivity Nexus sectors, businesses continue to encounter structural and operational barriers that threaten to impede sustained growth.

Findings from the recent Malaysian Business Productivity and Operations Survey, conducted by MPC, indicate that while the majority of firms are actively pursuing productivity enhancements, critical transformation bottlenecks remain deeply entrenched.

95 per cent of surveyed firms reported persistent skill shortages, and only 56 per cent expressed satisfaction with the quality of talent produced by the education system. This skills mismatch is constraining firms' ability to scale, adopt emerging technologies, and drive innovation.

Beyond workforce-related challenges, regulatory and digital transformation barriers also surfaced as key impediments to growth. Half of the respondents cited regulatory compliance as a major constraint, particularly due to the complexity and overlap of existing regulations – an issue felt most acutely by SMEs.

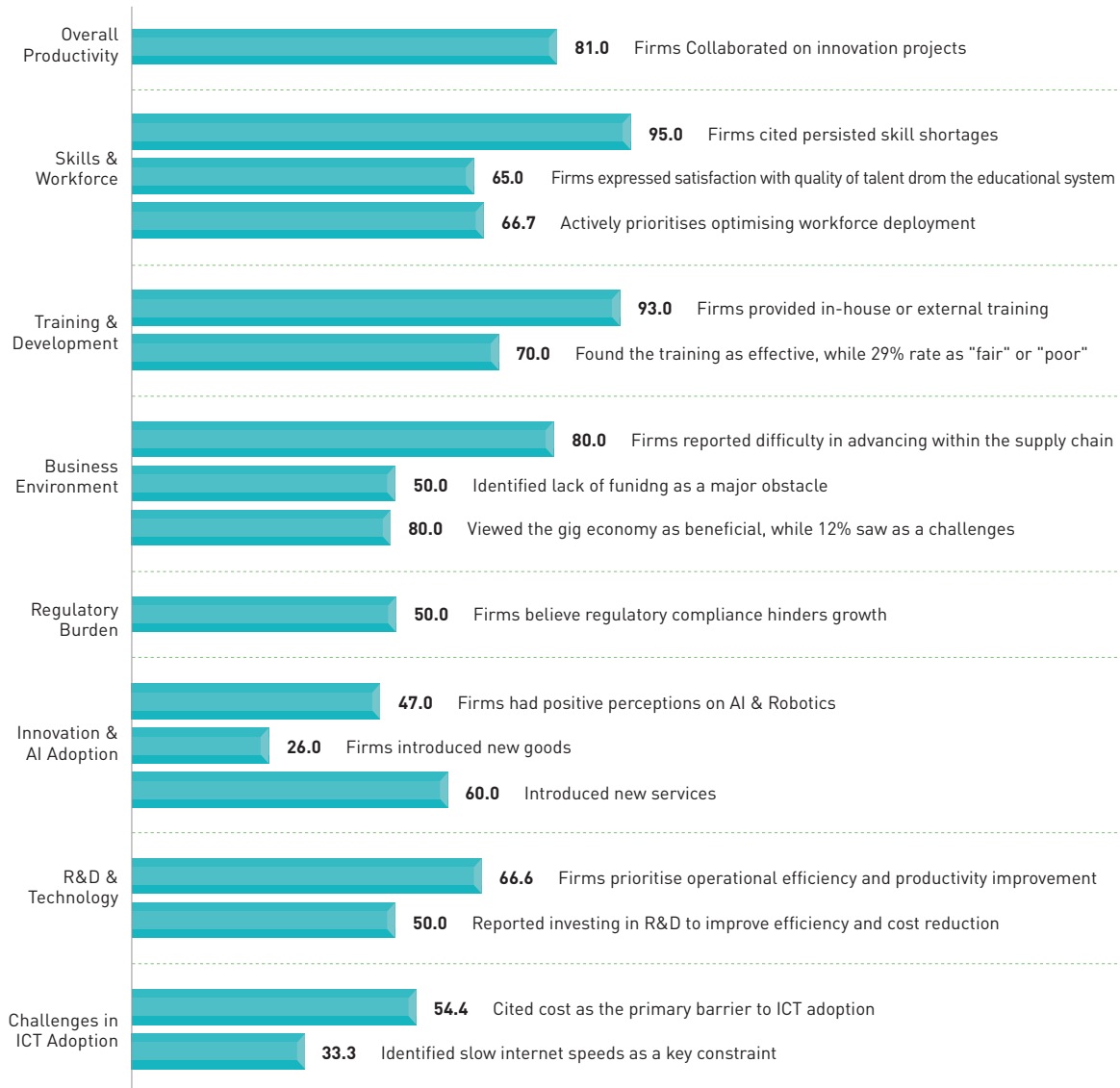
More than 50 per cent of firms identified high costs as a major barrier to ICT adoption, while one-third pointed to inadequate internet infrastructure as a significant limitation. These insights underscore that even within technologically advanced sectors, uneven digital readiness and policy-related frictions continue to hinder competitiveness.

The survey findings convey a clear and urgent message – sectoral productivity gains must be supported by conducive structural conditions. While firms are taking proactive steps to streamline operations, upskill employees, and introduce innovative solutions, these efforts are often constrained by systemic issues.

Addressing this requires immediate and coordinated action to strengthen both technical and soft skill pipelines, accelerate regulatory reforms, and invest in robust, sector-specific digital infrastructure. These enablers are critical for sustaining productivity momentum and positioning Productivity Nexus sectors as key drivers of national economic transformation.



Figure 21 : Key Findings from Malaysian Business Productivity and Operations Survey (%)



Source : Malaysia Productivity Corporation, MPC (2025)

Policy Implications

Expanding Productivity Nexus Framework

To further accelerate Malaysia's productivity transformation, additional Productivity Nexus initiatives should be strategically established in emerging and innovation-intensive sectors beyond the existing eleven subsectors.

This expansion will harness untapped growth potential in advanced manufacturing, renewable energy, green technology, biotechnology, and creative industries. Such diversification will strengthen structural resilience, enhance economic competitiveness, and sustain long-term productivity growth.

Enhancing Workforce Quality and Institutional Support

A more capable workforce requires close alignment between education and industry needs, reskilling and upskilling programmes tailored for high-impact sectors, and fairer compensation models that reward performance.

Regulatory and institutional reforms must streamline overlapping regulations, reduce compliance burdens on businesses, and better coordinate public and private sector initiatives. Strengthening collaborative platforms, such as the Productivity Nexus, will enable more robust sector-specific policies and holistic economic transformation.

Strengthening Capital Utilisation and Digital Capabilities

Malaysia must refine its current capital-deepening strategies by focusing on quality over quantity. Targeted policy incentives are needed to guide capital investments into productivity-enhancing technologies like automation, advanced manufacturing tools, and digital solutions.

Enhancing the nation's digital infrastructure and subsidising the high cost of ICT adoption for SMEs can drive technological uptake, enabling both traditional and emerging sectors to unlock greater efficiency gains.

Promoting Inclusive and Innovation-Led Sectoral Growth

Policymakers should expand research and development incentives, encourage advanced technological adoption, and foster cross-sector synergies, especially within high-potential industries like construction, manufacturing, and professional services.

Interventions must address structural bottlenecks in underperforming sectors and rural regions through improved digital infrastructure, skills development, and market access. By achieving balanced growth across all key sectors, Malaysia will strengthen its economic resilience, sustain higher productivity levels, and transition towards a more innovation-driven, inclusive economy.

Key Takeaways

Sectors exhibit different productivity trajectories, with manufacturing leading, services catching up, and agriculture and mining stagnant, signalling urgent policy reforms.

Delayed construction improvements and renewed post-pandemic activity highlight key structural transitions, clearly underscoring the importance of sustained, targeted policy measures.

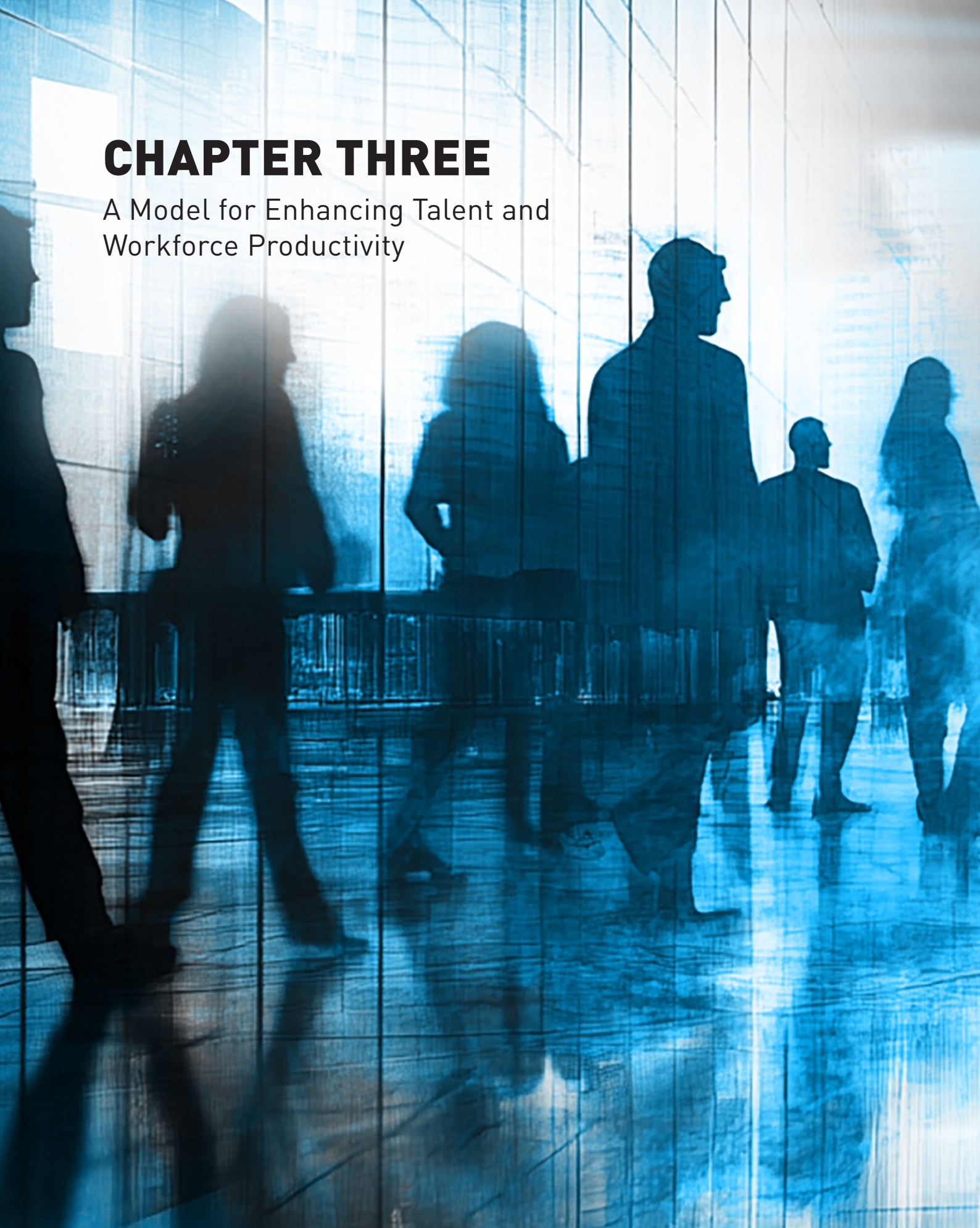
Capital-labour ratio growth boosts productivity in manufacturing and construction, but may not deliver similar gains in services, demanding structural corrections.

Labour-driven growth prevails in services, while manufacturing and construction shift towards higher productivity, exposing sectoral imbalances that warrant policy interventions.

Productivity Nexus initiative fosters targeted improvements, yet many firms face skill gaps, regulatory hurdles, and digital barriers undermining productivity progress.

CHAPTER THREE

A Model for Enhancing Talent and
Workforce Productivity





A Model for Enhancing Talent and Workforce Productivity

Investment in human capital remains a catalyst for economic growth, and Malaysia's allocation of 4.6 per cent of GDP to education demonstrates a strong commitment to developing a skilled workforce. Despite this substantial investment, there is significant potential for enhancing productivity and closing the gap with countries with lower education spending, such as Singapore (2.8%) and Japan (3.3%).

A key issue is the overconcentration of non-formal education at International Standard Classification of Education (ISCED) Levels 2 and 3 at 65.8 per cent,

whereas industry demands higher-level competencies. Consequently, businesses must retrain workers, increasing operational costs, with companies covering 65 per cent of training expenses.

To strengthen this effort, the Flexitivity model is introduced as a reformative framework that harmonises non-formal education with industry needs. Flexitivity helps unlock Malaysia's full potential for sustained economic growth and a more competent workforce by emphasising competency-based and productivity-focused learning pathways.

Expenditure on Education

Investment in human capital is crucial in ensuring sustained economic growth by enhancing workforce productivity, fostering innovation, and strengthening competitiveness.

Effective human capital development gives individuals the necessary skills and knowledge to drive industrial transformation, advance technology, and improve business productivity. These factors contribute to wealth generation by increasing income levels, expanding job opportunities, and reinforcing long-term economic resilience.

At the national level, human capital investment is often assessed through the ratio of education expenditure to GDP. This indicator reflects the commitment of governments, private entities, and international organisations to developing human capital and is closely monitored under the Sustainable Development Goals (SDGs).

Higher investment in education strengthens human capital development growth. Nevertheless, increased expenditure alone does not guarantee productivity gains, as other factors, such as pedagogical quality, industry alignment, and holistic implementation, strongly influence education outcomes.

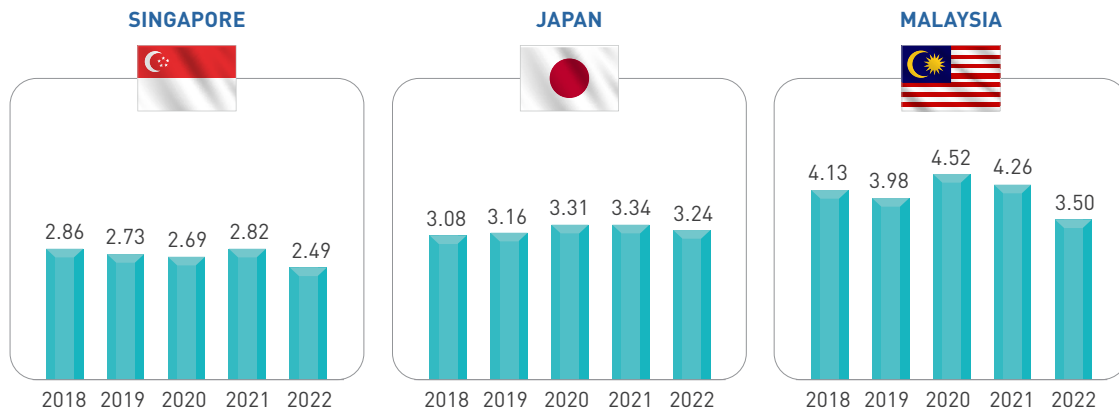
A high allocation of public funds for education underscores a government's emphasis on fostering a skilled workforce. UNESCO's Institute for Statistics (UIS), which tracks and publishes data on education spending as a proportion of GDP, reported that Malaysia's education expenditure averaged 4.6 per cent of GDP between 2011 and 2022. This is higher than that of Singapore and Japan, which allocated 2.8 per cent and 3.3 per cent, respectively.

A high allocation of public funds for education underscores a government's emphasis on fostering a skilled workforce.

Human capital investment is often assessed through the ratio of education expenditure to GDP, reflecting all parties commitment to developing human capital.

Despite this substantial investment in education, Malaysia's productivity lags behind that of these countries. This raises an important question: To what extent does education expenditure contribute to productivity improvements in Malaysia?

Figure 22 : Share of Education Expenditure to GDP, 2018-2022 (%)



Source : UNESCO Institute for Statistics.

An analysis comparing education expenditure and productivity growth for Malaysia, Singapore, and Japan from 2001 to 2022 provides evidence that higher education expenditure does not necessarily translate into increased productivity.

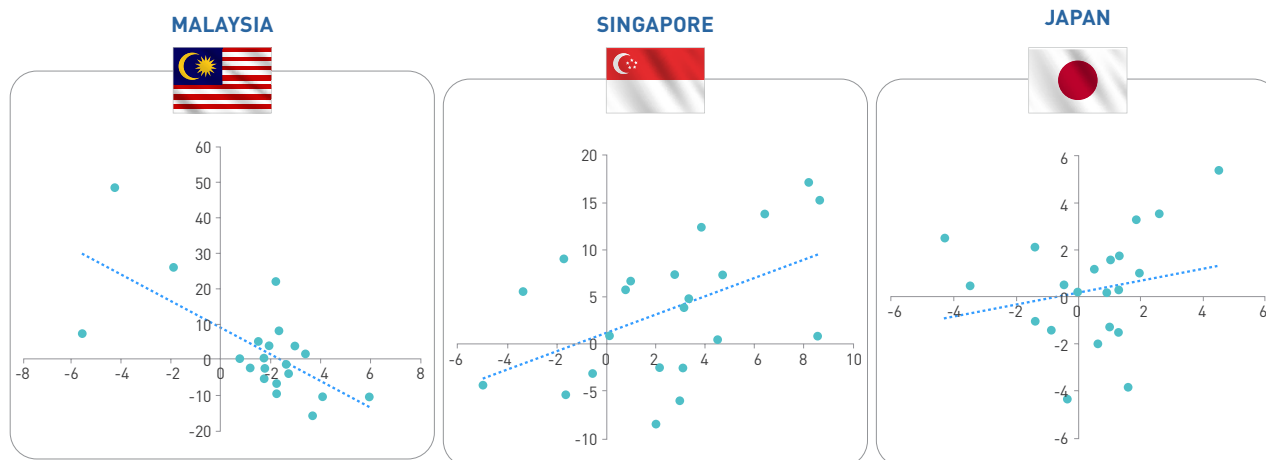
For Malaysia, the trend line indicates a negative correlation between education spending and productivity growth, suggesting that increased investment in education has not converted into higher productivity. In specific periods, productivity declined despite higher education expenditure.



Figure 23 : Education Expenditure and Productivity Growth, Selected Countries, 2001-2022

RELATIONSHIP BETWEEN EDUCATION EXPENDITURE AND PRODUCTIVITY GROWTH, 2001-2022

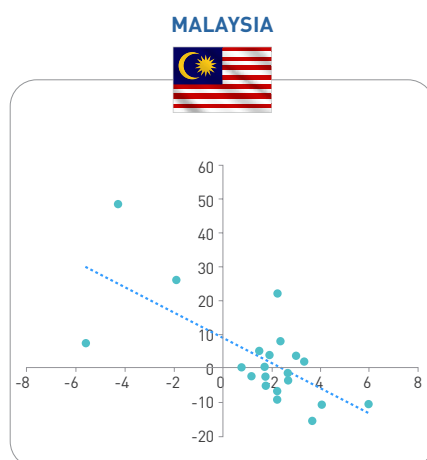
Notes : Productivity is expressed as GDP constant 2015 US\$ per worker. Data on productivity are sourced from the World Bank while education expenditure obtains from UNESCO Institute for Statistics. These graphs plot the percentage growth of productivity against the percentage growth of education expenditure in Malaysia, Singapore and Japan.



Further slicing confirms a negative relationship between education expenditure (both development and operating) and productivity growth over different time periods, highlight the need to focus on quality rather just expenditure.

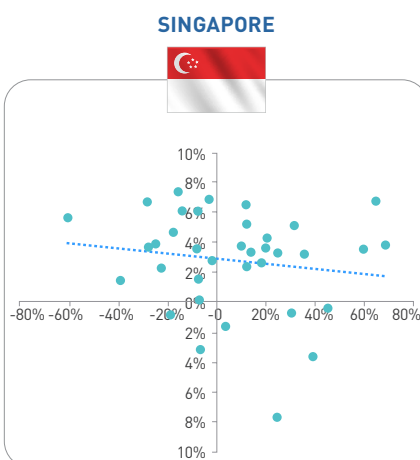
RELATIONSHIP BETWEEN EDUCATION EXPENDITURE AND PRODUCTIVITY GROWTH, 2001-2022

Education expenditure-to-GDP

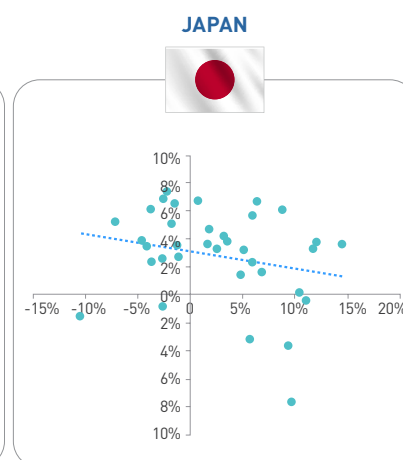


RELATIONSHIP BETWEEN EDUCATION DEVELOPMENT EXPENDITURE, EDUCATION OPERATING EXPENDITURE AND PRODUCTIVITY GROWTH, 1971-2023

Education development expenses-to-GDP



Education operating expenses-to-GDP



Data definition : Long-term investments in Malaysia's education sector, including building new schools and universities, upgarding facilities, investing in digital learning infrastructure, and supporting research and innovation.

Data sources : Tabulated based on data from Ministry of Finance (2024) and Department of Statistics Malaysia (2024)

Data definition : The recurrent costs required for the daily functioning of the education sector in Malaysia. It includes salaries and allowances for teachers and staff, operational costs such as utilities and learning materials, student financial aid, and maintenance of educational facilities

Data sources : Tabulated based on data from Ministry of Finance (2024) and Department of Statistics Malaysia (2024)

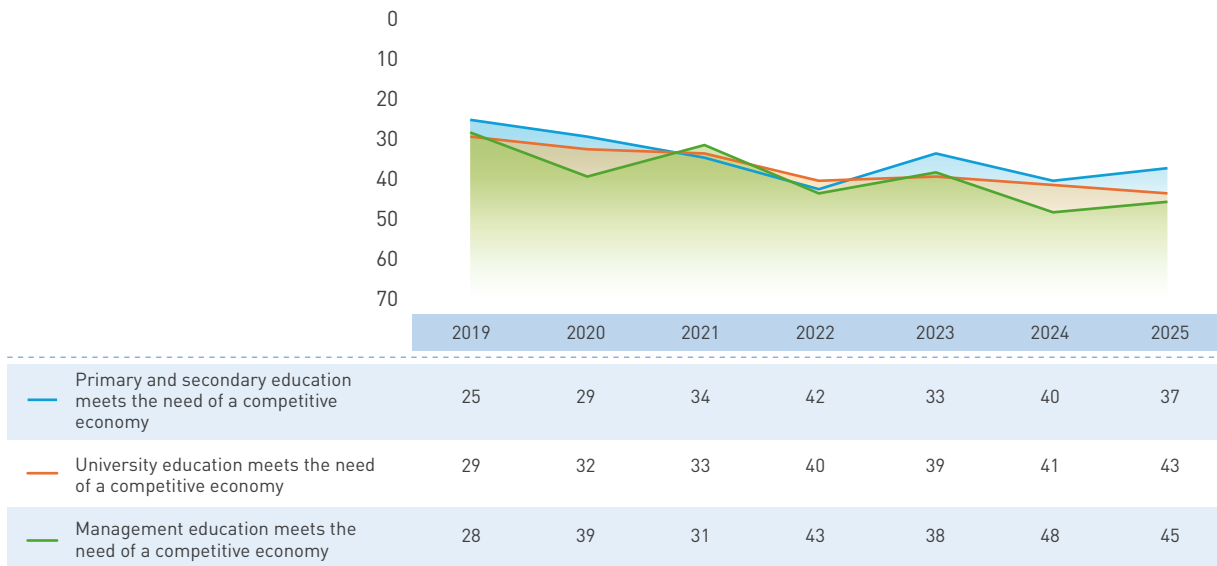
A positive correlation is observed for Singapore and Japan, where increased spending on education is generally associated with productivity gains. Although the relationship is not strictly linear, it indicates that an efficient allocation of education resources supports economic growth. Singapore, in particular, demonstrates that a well-managed education investment strategy can yield tangible economic benefits.

When education effectively aligns with productivity goals, it highlights opportunities to optimise the allocation and utilisation of educational resources efficiently.

If rising education expenditure does not correspond with measurable productivity improvements, this may point to underlying challenges in the education system or structural barriers that limit the effective deployment of human capital.

Education is one of the subfactors under the WCR Infrastructure factor. The subfactor measures various aspects of education, including public expenditure on education, pupil-teacher ratio, students' enrolment, higher education achievement, illiteracy, and the assessment of education.

Figure 24 : Malaysia's Rankings in WCR Indicators Related to the Quality of Education, 2019 – 2025



Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD)

Since 2015, Malaysia's ranking in Education subfactor was below the average line in between 34 and 44. In WCR 2025, Malaysia ranks 44th from 69 economies. Top performing economies in Education subfactor are Switzerland, Hong Kong SAR, Luxembourg, Denmark, and Sweden.

Across these top performing economies, education is treated as a strategic pillar of competitiveness, characterised by strong industry alignment, practical skills training, innovation-driven curricula, vocational pathways, and continuous workforce upskilling.

Several indicators under the WCR Education's subfactor measure the alignment between educational offerings and economic competitiveness, as perceived by industry management.

A critical observation is the declining trend across all three educational categories, namely primary and secondary education, university education, and management education. This indicates growing industry concerns regarding the quality and relevance of Malaysia's education system. The declining trend suggests significant gaps between the skills taught and those required by businesses, adversely impacting productivity and efficiency.

Educational Landscape

Educational transformation requires a comprehensive understanding of the learning pathways that shape an individual's journey towards the productive labour market.

Formal education, consisting of primary, secondary, and tertiary levels, provides structured learning and foundational knowledge. Ensuring quality education requires integrating non-formal and informal education to address evolving labour market demands. A balanced and adaptive education system increases workforce readiness and economic productivity.

For education to drive productivity, structural reforms must align learning systems with industry requirements. Non-formal education is critical in reskilling and upskilling, ensuring workers can adapt to technological advancements and market shifts. Meanwhile, informal learning occurs through personal and work-related experiences and is a complementary tool for lifelong learning and knowledge retention.

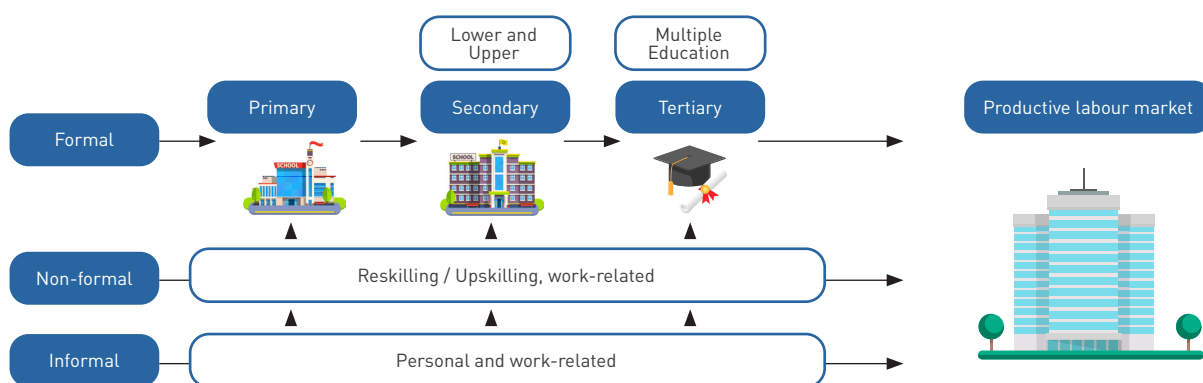
By bridging formal education with non-formal and informal learning, policymakers can create a flexible, responsive, and inclusive education system that fosters continuous skills development and supports a highly adaptable workforce.

To achieve quality education reform, interventions should enhance all three learning dimensions. Formal education must strengthen foundational skills and critical thinking, non-formal education should provide accessible and demand-driven training, and informal learning should be leveraged for innovation and professional growth.

Bridging formal education with non-formal and informal learning creates a flexible, responsive, and inclusive education system that fosters continuous skills development and supports a highly adaptable workforce.

Figure 25 : Guiding Principles for Educational Transformation

Visualizing the almost ideal measure for education attainments



Definition of non-formal :

Institutionalised, intentional, and planned system by education providers. The main characteristic of non-formal education is that it is an addition, alternative, and/or complement to formal education in the lifelong learning process of individuals.

Definition of informal :

Defined as forms of learning that are intentional or deliberate but are not institutionalised. It is consequently less organised and less structured than either formal or non-formal education.

Governments, educational institutions, and industry stakeholders must collaborate to ensure that education systems are structured and dynamic, allowing seamless transitions between learning pathways. A well-integrated education framework will lead to a more competitive and productive workforce, capable of driving long-term economic sustainability.

In Malaysia, a well-developed system exists for formal education, but concerns about its quality and effectiveness persist. Non-formal and informal education are actively practised, but there is room for improvement for a structured recognition framework to collect data, certify learning outcomes, and align with international standards such as ISCED.

This structural gap can hinder the full potential of lifelong learning in enhancing workforce productivity and addressing the shortcomings of formal education. Given that non-formal education often serves as a more effective tool for skill enhancement and workforce adaptability, establishing a recognition body to certify and integrate these learning pathways is essential.

Formal education must strengthen foundational skills and critical thinking, non-formal education should provide accessible and demand-driven training, and informal learning should be leveraged for innovation and professional growth.

Non-formal and informal education are actively practised in Malaysia. Still, there is room for improvement for a structured recognition framework to collect data, certify learning outcomes, and align with international standards.



THE SWEDISH MODEL FOR NON-FORMAL EDUCATION

MYH as the recognition body for industry-driven programmes

Sweden's Higher Vocational Education (HVE) system, under the governance of Myndigheten för Yrkeshögskolan (MYH), is tasked with bridging the gap between education and labour market demands through a robust framework of functions and responsibilities.

The HVE system in Sweden is distinguished by its adaptability and focus on addressing labour market needs. A notable feature is the flexibility of study programmes, which range from short courses lasting 6 weeks to 6 months to more comprehensive programmes of 1–3 years.

The flexibility allows individuals to acquire targeted skills quickly or pursue broader qualifications, catering to job seekers and those looking to upskill.

HVE programmes are available nationwide, ensuring equitable access across Sweden, regardless of regional disparities. The system is built on the principle of free or subsidised education, reducing financial barriers for learners.

This is supported by the Swedish Board of Student Finance, which provides financial assistance to students, further enhancing accessibility. These features make the HVE system a model of inclusivity and responsiveness, aligning education with workforce demands while supporting lifelong learning for all citizens.

Programme Design and Approval

Employers and educational institutions collaboratively develop HVE programmes. The process of establishing HVE programmes ensures that the courses meet industry and educational standards, providing relevant and high-quality training opportunities.

Sweden's Industry-Based Educational Programmes

Key features of the programme

How they establish HVE Programmes



APPROVAL AND ALLOCATION OF FUNDS : HVE PROGRAMMES 2023

Number of applications	1258
Number of grated application	477
Approval rate	37,9%
Number of study places applied for	143 743
Study places starting autumn 2024	13 722
Total number of new study places	40 702

Courses and programs change over time to respond the labour market needs

- Education options
- Programme
- Courses
- YH flex (Fast track to YH degree)
- Single courses
- Assignment training (For companies and other employers)

Elements of the assessment process

- Do the applications from the education providers respond to labour market needs?
- The co-financing of employers and industry
- Regional location
- Results of previous study programmes

Source : National Agency for Higher Vocational Education, Sweden

STEP 1

Initiatives from employers

The process begins with proposals initiated either by employers or education providers. Employers identify gaps in the workforce or emerging industry needs and propose programmes to address these challenges.

Education providers may also identify areas where additional training or skills development is required, aligning their proposals with labour market demands.

STEP 2

Proposal development

Training and education providers take these initiatives and develop detailed programme structures, including curriculum, learning outcomes, and delivery methods. These proposals address the identified skills gaps while adhering to existing vocational education standards.

STEP 3

Submission to MYH

Once the programme proposal is finalised, it is submitted to MYH for accreditation. This submission includes detailed documentation, including programme objectives, industry relevance, available resources, and alignment with national and regional skill priorities.

STEP 4

Accreditation by MYH

MYH reviews each proposal to ensure it meets labour market needs, curriculum quality, and delivery capacity. Approved programmes move forward, while rejected proposals receive feedback for improvements.

In 2023, data on the approval and funding allocation for HVE programmes highlights the scale and selectivity of the process. A total of 1,258 applications were submitted, of which 477 were approved, with an approval rate of 37.9 per cent. The total number of study places applied reached 143,743, with 13,722 study places scheduled to start in autumn 2024.

In total, 40,702 new study places were approved, demonstrating the significant capacity of the programme to meet educational demands while maintaining strict standards.

HVE programmes are characterised by their employer-driven approach, focusing on vocational training aligned with the European Qualifications Framework (EQF) Levels 5 and 6 (equivalent to ISCED 5 and 6).

This ensures that the qualifications awarded are recognised across the European Union and meet high international standards. Additionally, the system is designed to adapt continuously to labour market shifts, enabling rapid updates to programmes to address emerging trends, technologies, and skills demands.

Flexitivity Model



Before designing the Flexitivity model, MPC, in collaboration with the Department of Statistics Malaysia (DOSM) and other stakeholders, conducted a pilot Malaysia Adult Education Survey (MAES).

The study examined the landscape of non-formal education and its contribution to increasing the mean years of schooling among the adult population in Malaysia.

A dedicated survey was designed to collect empirical data, facilitating a comprehensive assessment of the key determinants influencing educational attainment and their implications for educational planning and development.

The Flexitivity model is a progressive approach to non-formal education in Malaysia, designed to address structural gaps in workforce training by ensuring direct alignment with industry needs and productivity outcomes.

NON-FORMAL EDUCATION IN MALAYSIA IS MAINLY AT ISCED LEVEL 2 AND 3

The Malaysia Adult Education Survey (MAES) was conducted to map non-formal education in Malaysia against the international standard. The sampling was based on the national Labour Force Survey (LFS), which was determined based on a stratified sampling approach, accounting for respondents aged 25 years and above in the urban and rural areas. A total of 616 responses were collected.

The mapping of non-formal education programmes with the International Standard Classification of Education (ISCED) reveals a significant concentration at ISCED Level 2 and 3, which account for 65.8 per cent of all identified programmes. This indicates that most non-formal education in Malaysia focuses on basic foundational skills and intermediate-level competencies, rather than advanced or higher-level skills needed for workforce specialisation and productivity growth.

Only 9 per cent of programmes are mapped to ISCED Level 5, which is typically associated with higher-level competencies in entrepreneurship, leadership, and technical expertise.

This distribution contrasts with best-practice European benchmarks, where non-formal education is more prevalent at higher ISCED levels to enhance workforce productivity and competitiveness.

The findings highlight a structural gap in the alignment of Malaysia's non-formal education programmes with labour market needs, compelling industries to provide additional training and upskilling for workers that should have been provided by formal education.

This increases business operational costs and resource utilisation. 65 per cent of training expenses are borne by companies, while only 10.8 per cent receive full third-party funding, placing a significant financial burden on businesses.

Addressing this imbalance through targeted policy reforms and structured upskilling initiatives is crucial for improving workforce productivity, business profitability, and economic sustainability.

Mapping of non-formal education with ISCED was conducted based on benchmarks from European countries, utilising CEDEFOP's database on non-formal adult learning programs.

RESULT OF MAPPING

Using non-formal education data collected from a pilot Malaysia Adult Education Survey (MAES)

547

Programmes have been identified after excluding duplicate programs.

	Overall	Courses	Seminar/ Workshop	OTJ Training
ISCED Level 2	28.7%	30.6%	33.0%	22.5%
ISCED Level 3	37.1%	32.4%	27.2%	33.1%
ISCED Level 4	25.2%	22.4%	30.4%	37.6%
ISCED Level 5	9.0%	14.6%	9.4%	6.7%

The distribution of non-formal education programs is concentrated in ISCED 2 and 3 with a domination of 65.8% or about two-thirds on non-formal modules

Benchmarking and methodological approach

Based on the database, five countries provide the detailed mapping :

Belgium • Croatia • Ireland • Lithuania • Spain

The country maps from ISCED Level 1 to Level 5 based on :

ISCED Level 1 : Basic literacy and numeracy skills

ISCED Level 2 : Foundational skills and core competencies

ISCED Level 3 : Intermediate-level skills with practical applications

ISCED Level 4 : Advanced technical and professional competencies

ISCED Level 5 : Higher-level competencies in entrepreneurship and leadership

Mapping of non-formal education with ISCED

The concentration of non-formal education in ISCED 2 and 3 can be explained by the skill mismatches between the supply (formal education) and the demand (employers).

Mismatch requires industries to train basic ISCED-level skills

26.6%

respondents experience skill mismatches

Percentage of non-formal by ISCED-Level 2, 3 and 4

ISCED-Level 2	28.7%
ISCED-Level 3	37.1%
ISCED-Level 4	25.2%

Industries are compelled to provide training for foundational skills that should have been addressed by formal education...

Cost implications for industries

Sponsored by the company	65.0%
Self-financing	21.7%
Fully funded by third party	10.8%
Self-financing and third party	1.5%
Others	1.0%

... resulting in increased operational costs as industries need to re-train the workers

Call for formal education intervention

The need for formal education intervention to address skill mismatches

Formal education interventions are essential to reduce skill mismatches by providing foundational competencies at the appropriate stages.

Reducing financial burden on industries

Helps industries minimise financial burdens by reducing the need for costly retraining programmes.

The findings also highlight the critical role of training alignment within the Progressive Wage Policy. Training is essential to this policy, ensuring that wage growth is linked to productivity improvements.

Implementing structured, productivity-focused training presents a valuable opportunity to elevate skills, enhance productivity, and reinforce the effectiveness of wage reforms.

To maximise the impact of the Progressive Wage Policy, training programmes must be designed to enhance worker capabilities, drive economic efficiency, and prevent the repetition of unproductive labour market dynamics.

PROGRESSIVE WAGE POLICY (DGP) PILOT PROJECT

In line with the broader national objective of fostering inclusive economic growth, Malaysia has introduced the implementation of the Progressive Wage Policy (*Dasar Gaji Progresif* - DGP). DGP seeks to ensure that wages better reflect workers' productivity and skill levels, motivating companies to invest in talent development as a core competitive strategy.

The DGP pilot project has attained a 74% achievement rate, with 37 out of the targeted 50 companies successfully recognised under the scheme. Engagement sessions for productivity improvement programmes, including further PoC activities and progressive wage policy recognition, commenced in April 2025. These sessions will serve as platforms for knowledge exchange, problem-solving, and refining practices based on real-world industry feedback.

The Flexitivity model represents a progressive approach to non-formal education in Malaysia, designed to address structural gaps in workforce training by ensuring direct alignment with industry needs and productivity outcomes.

Flexitivity is an innovative and dynamic recognition system that effectively integrates competency training, skill improvement training, reskilling/upskilling, and industry-driven complementary exercises, ensuring alignment with labour market demands. The model surpasses traditional non-formal education frameworks, which often operate in isolation from labour market demands.

Flexitivity integrates competency training, skill improvement training, reskilling/upskilling, and industry-driven complementary exercises, aligning with labour market demands.

By embedding productivity validation mechanisms, this model ensures that non-formal learning pathways contribute meaningfully to workforce readiness, reducing skill mismatches and enhancing economic efficiency.

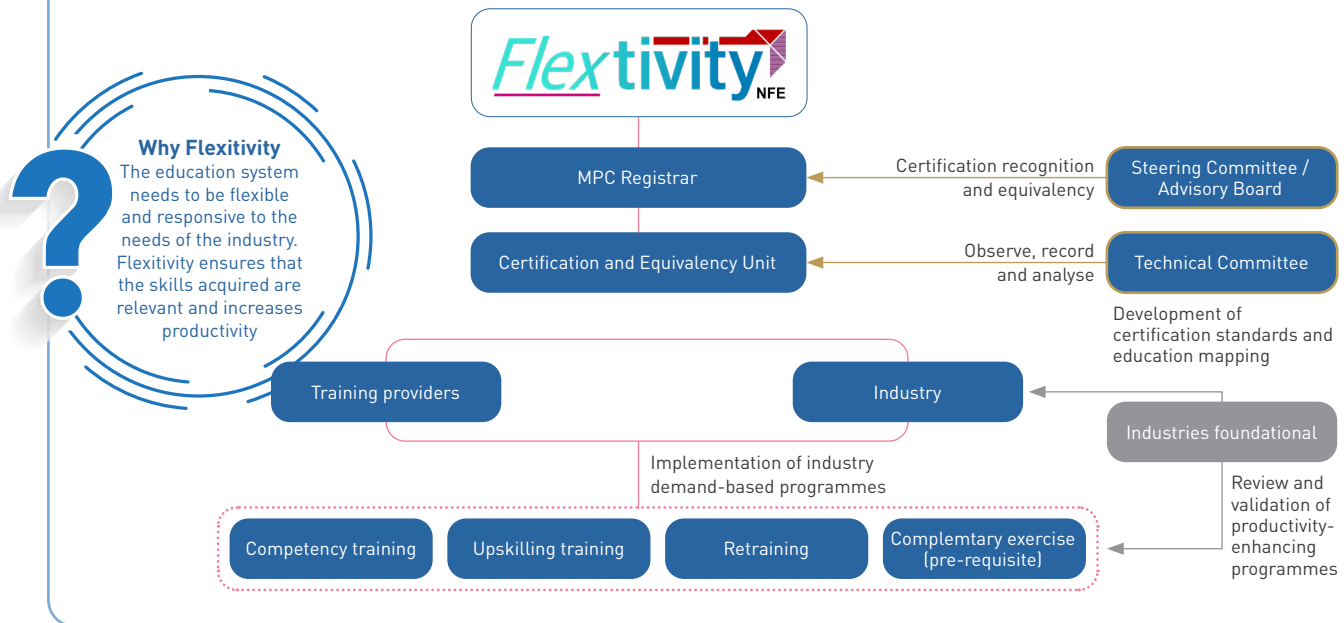
A key differentiator of the Flexitivity model is its industry-centric approach, where training providers collaborate closely with employers to design and implement demand-based programmes. This ensures that non-formal education is recognised and equated to measurable productivity gains.

The involvement of a certification and equivalency unit, productivity experts, and a steering committee further reinforces the model's credibility, making it a scalable solution for bridging the education-to-employment gap. By prioritising skills directly relevant to industry growth, Flexitivity positions Malaysia's non-formal education system as a strategic enabler of workforce transformation and national economic competitiveness.

Figure 26 : Flexitivity Model for Industry-Driven Educational Programmes

Operation of the Recognition Body based on the Flexitivity Model

The Flexitivity model is a flexible non-formal education recognition framework for the industry in developing workforce skills, with the requirement that the non-formal education programmes offered are productivity-oriented



Policy Implications

Policy Framework

A holistic and flexible policy framework is critical to optimise education investments for productivity gains. By unifying formal, non-formal, and informal learning under industry-centric, quality-assured systems, Malaysia can enhance workforce resilience, reduce business training costs, and bolster long-term economic competitiveness.

Structured collaboration with international bodies would foster benchmarking and continuous improvement. Integrating best practices, particularly in accreditation and curriculum development, ensures that Malaysia's non-formal education maintains global relevance. This external validation raises professional standards, strengthens cross-border employability, drives sustained human capital growth, and fosters socio-economic progress.

A Non-formal Education Recognition Framework

Policymakers should accelerate the establishment of a recognition framework, such as Flexitivity, that standardises non-formal education programmes against international benchmarks like ISCED. This mechanism boosts the credibility of lifelong learning pathways and ensures their direct correlation with measurable productivity gains. Incentivising industry participation through tax reliefs, grants, or wage-subsidy schemes can stimulate robust partnerships with training providers.

Reinforcing Education Investment

A strategic policy response must reinforce the formal education system while elevating the status of non-formal and informal learning. Mandated collaboration between education institutions and industries is vital to align curricula with labour market demands, ensuring students exit formal education with in-demand competencies. This approach would reinforce education investment for productivity, reduce skill mismatches and minimise the financial burden on companies to retrain workers.

In addition, comprehensive and frequent data collection would highlight evolving labour market needs, inform curriculum updates, and foster dynamic feedback loops among policymakers, educators, and employers.

A strategic policy response must reinforce the formal education system while elevating the status of non-formal and informal learning.

Key Takeaways

With Malaysia's significant investment in education, bridging remaining productivity gaps can unlock new growth opportunities.

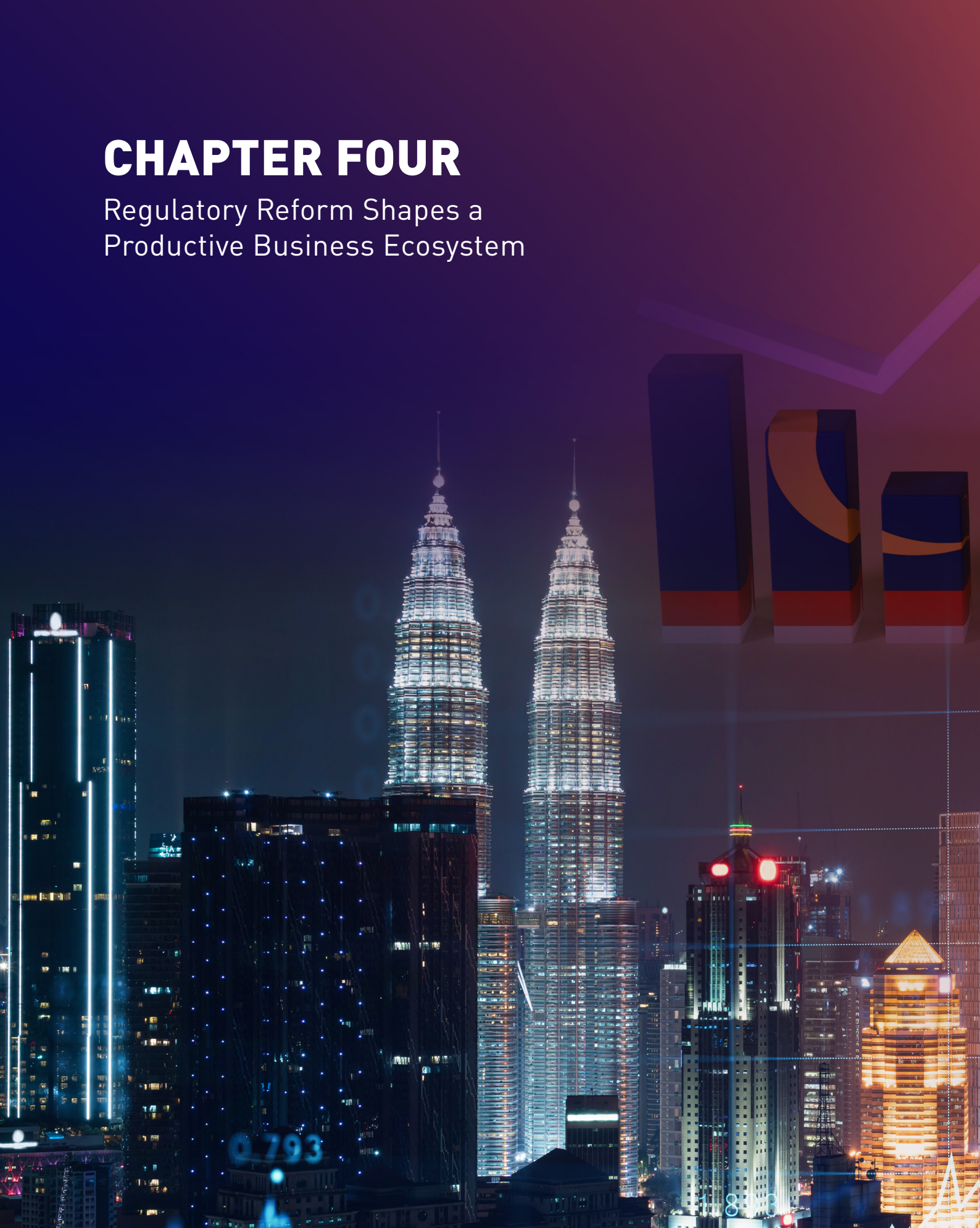
Expanding non-formal education beyond ISCED Levels 2–3 nurtures valuable advanced competencies and significantly strengthens Malaysia's workforce productivity and competitiveness.

The Flexitivity model delivers dynamic alignment between non-formal education and industry requirements, improving workforce readiness and accelerating productivity gains nationwide.

Stronger integration of formal, non-formal, and informal education pathways boosts long-term productivity and economic competitiveness.

CHAPTER FOUR

Regulatory Reform Shapes a
Productive Business Ecosystem





Regulatory Reform Shapes A Productive Business Ecosystem

Regulatory reform is fundamental to creating a conducive business environment, essential for stimulating economic growth and enhancing national competitiveness. Continuous regulatory improvement is a strategic priority, underpinned by initiatives designed to streamline processes, eliminate bureaucratic inefficiencies, and promote greater transparency and predictability.

Effective regulatory frameworks are particularly crucial for attracting investments, nurturing entrepreneurship, and facilitating the seamless integration of businesses into global markets.

In recent years, Malaysia has actively pursued comprehensive structural regulatory reforms, notably through the Public Service Reform Agenda (Agenda Reformasi Perkhidmatan Awam – ARPA) led by the Chief Secretary to the Government, supported by the Special Taskforce of Agency Reform (STAR), a centralised platform to guide and monitor efforts to manage and reduce inefficient bureaucracy affecting the rakyat and businesses.

The introduction of the ILTIZAM Act, passed in March this year and soon to be implemented, further advances the national agenda to enhance the productivity and efficiency of public service delivery, ensuring that businesses and the rakyat are not burdened by unnecessary regulatory practices.

Competitive Government Efficiency

Economies that combine efficient, predictable government with productive, well-managed firms occupy the top tier of global competitiveness, as evidence in WCR 2025. Switzerland, Singapore, and Hong Kong SAR take the first three positions in 2025, ranking in the top tier for policy credibility and business dynamism. WCR analysis emphasises that government efficiency is crucial to economic resilience and social cohesion, underscoring its importance for productivity and growth.

There is a strong positive alignment between the Government Efficiency and Business Efficiency factors, reflected in the overall competitiveness of an economy. The top 10 performers in WCR 2025 rank within the top 12 for both Government Efficiency and Business Efficiency. This tight clustering signals more than coincidence: efficient and credible public institutions reduce transaction costs, mitigate uncertainty, and attract private investment, which in turn enhances firm-level productivity and competitiveness.

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The contrast with mid-table ASEAN peers reinforces this point. Malaysia (overall 23rd) sits at 25th for Government Efficiency and 32nd for Business Efficiency; Thailand (30th) at 32nd and 24th; Indonesia (40th) at 34th and 26th; and the Philippines (51st) at 51st and 46th.

These factor scores map directly onto less robust overall standings, indicating that regulatory frictions, uneven public service delivery suppress productivity and scaling potential. Regulatory reform to boost government efficiency is not administrative housekeeping, but it shapes the business ecosystem within which firms invest, innovate and expand.

Table 8 : Competitiveness Rankings, Overall and Selected Factors

Economy	Ranking (n=69)		
	Overall Competitiveness	Government Efficiency	Business Efficiency
 Switzerland	1	1	6
 Singapore	2	3	8
 Hong Kong SAR	3	2	2
 Denmark	4	6	1
 United Arab Emirates	5	4	3
 Taiwan (Chinese Taipei)	6	8	4
 Ireland	7	5	11
 Sweden	8	9	9
 Qatar	9	7	5
 Netherlands	10	12	7
 MALAYSIA	23	25	32
 Thailand	30	32	24
 Indonesia	40	34	26
 Philippines	51	51	46

Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD)

Where the government provides predictable rules, efficient approvals, disciplined public finances, and digital, user-centred services, firms respond with better management practices, sustained capital deepening, and stronger competitiveness. Sound and service-oriented regulations create the conditions for a virtuous cycle of business efficiency and economy-wide productivity.

Regulatory reform to boost government efficiency is not administrative housekeeping, but it shapes the business ecosystem within which firms invest, innovate and expand.

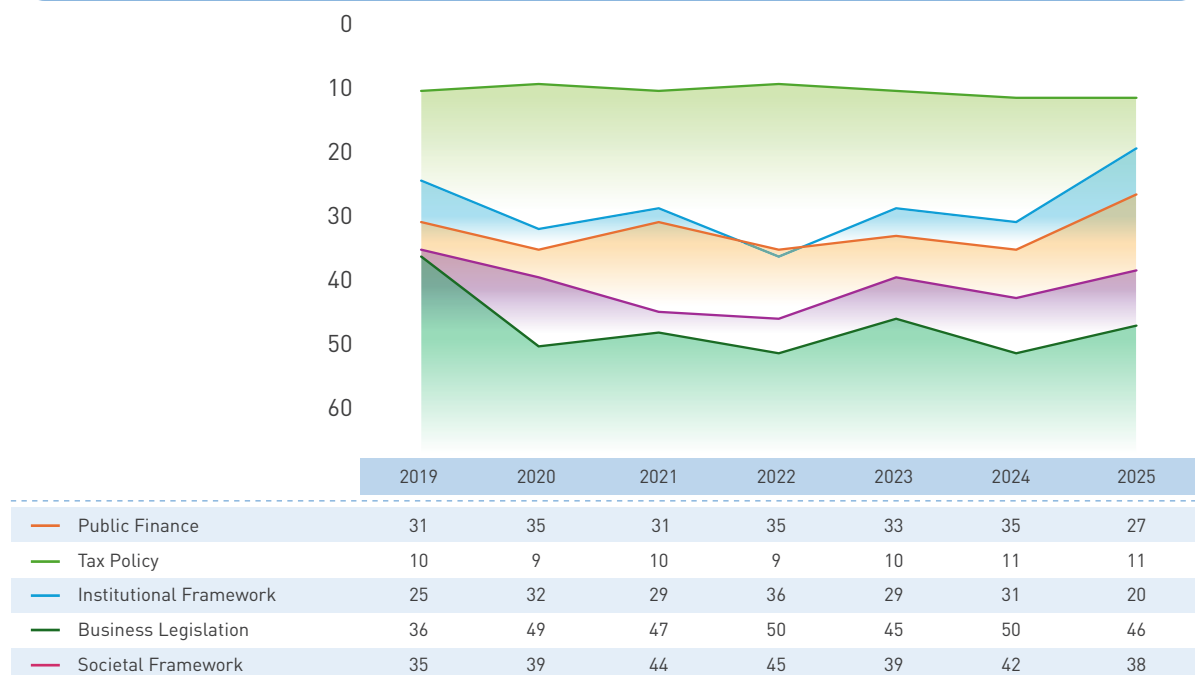
WCR measures an economy's government efficiency competitiveness based on five sub-factors: Public Finance, Tax Policy, Institutional Framework, Business Legislation, and Societal Framework.

Malaysia's 2025 Government Efficiency's sub-factors rankings signal a forward momentum and a more enabling backdrop for productivity.

Across the 2019–2025 series, the latest marks the broadest improvement since the pandemic years, with Public Finance and the Institutional Framework providing the strongest uplift. While there remains considerable scope to close the gap with the frontier, the trajectory is encouraging.

Public Finance shows the clearest step-change. The ranking improved to 27 in 2025, marking the best position in the seven-year series and an eight-place improvement over the previous year. After oscillating in the low-to-mid-thirties since 2019, the move signals stronger fiscal stewardship and rising confidence in the state's capacity to plan, prioritise and deliver. A firmer fiscal anchor reduces uncertainty, lowers risk, and preserves headroom for growth-enhancing, productivity-raising investments.

Figure 27 : Malaysia's Sub-Factors' Rankings under Government Efficiency, 2019 – 2025 (n=69)



Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD)

74

Tax Policy remains a bright spot. With a rank of 11 in 2025, consistently within the 9–11 range throughout the period, as Malaysia maintains a stable and competitive tax setting. Stability matters as predictable taxation allows firms to commit capital with longer horizons, supports reinvestment and reinforces Malaysia's proposition as a regional operating base. The ranks speak to reliability rather than experimentation, as predictability is paying off.

The most improvement is in the Institutional Framework, which increases from 31 in 2024 to 20 in 2025. This double-digit leap, the strongest annual turnaround in the series, points to clearer rules, more responsive administration and better coordination across agencies. As firms scale, integrate into global value chains and adopt new technologies, institutional quality becomes a decisive catalyst; when processes are transparent and decisions are timely, productivity accelerates.

The Societal Framework also edges higher, from 42 in 2024 to 38 in 2025, reversing an earlier decline. Although still mid-tier, this progress suggests a firmer alignment

between social outcomes and economic ambition, laying the foundations for sustainable participation, skills deepening, and talent retention.

Business Legislation is the outlier. The ranking improves from 50 in 2024 to 46 in 2025, recovering some ground but still in the lower third of the distribution and materially below Malaysia's performance in other sub-factors. This is where frictions concentrate for firms: procedural complexity, compliance burdens and coordination gaps can slow approvals and raise costs, diluting the advantages created by improved institutions and a stable tax regime. In effect, the policy intent is increasingly sound, yet the lived experience of regulatory interaction remains uneven.

Challenges in business legislation, including procedural complexity, compliance burdens and coordination gaps can slow approvals and raise costs, diluting the advantages created by improved institutions and a stable tax regime.

Business Legislation

The comparative rankings between Malaysia and Singapore, spanning from 1997 to 2025, illustrate distinct trends and notable differences in the regulatory competitiveness landscape of the two neighbouring economies.

Malaysia's ranking in Business Legislation has drifted downwards from a competitive position in the 2000s to the mid-40s in recent years, with a modest improvement in 2025.

By contrast, Singapore has consistently remained a top-tier performer, underscoring its position as a jurisdiction with clear rules, swift approvals, and predictable enforcement.

This matters for productivity because business legislation is where the rulebook meets the counter. It shapes the time-to-market, the cost of expansion, and the feasibility of new entry.

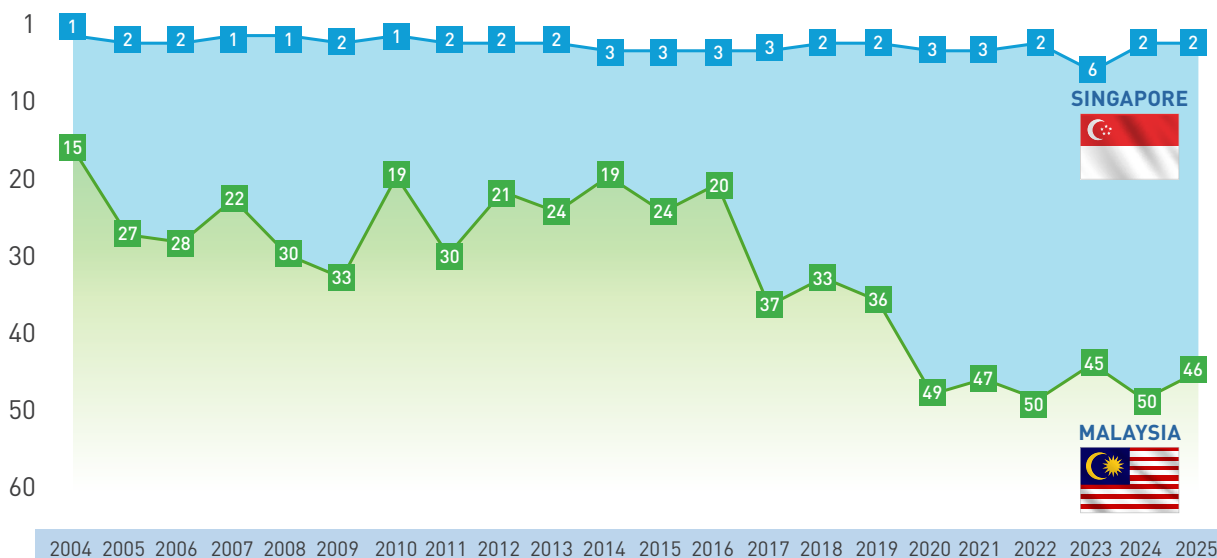
Business legislation is where the rulebook meets the counter. It shapes the time-to-market, the cost of expansion, and the feasibility of new entry.

Firms considering investment in higher-value activities may be deterred if approval processes are complex, regulatory interpretations differ across agencies, or timelines are unpredictable.

Malaysia has begun to stabilise its performance in WCR 2025, demonstrating the capacity to improve.

However, the challenge for the next phase is equally clear: business legislation still has substantial room for improvement. Tackling ineffective and inefficient bureaucracy is the decisive lever to convert regulatory intent into outcomes, unlock faster firm formation and scaling, and create a truly conducive, high-productivity business environment.

Figure 28 : Malaysia's Ranking in Business Legislation, 1997 - 2025



Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD)

Bureaucratic Hurdles

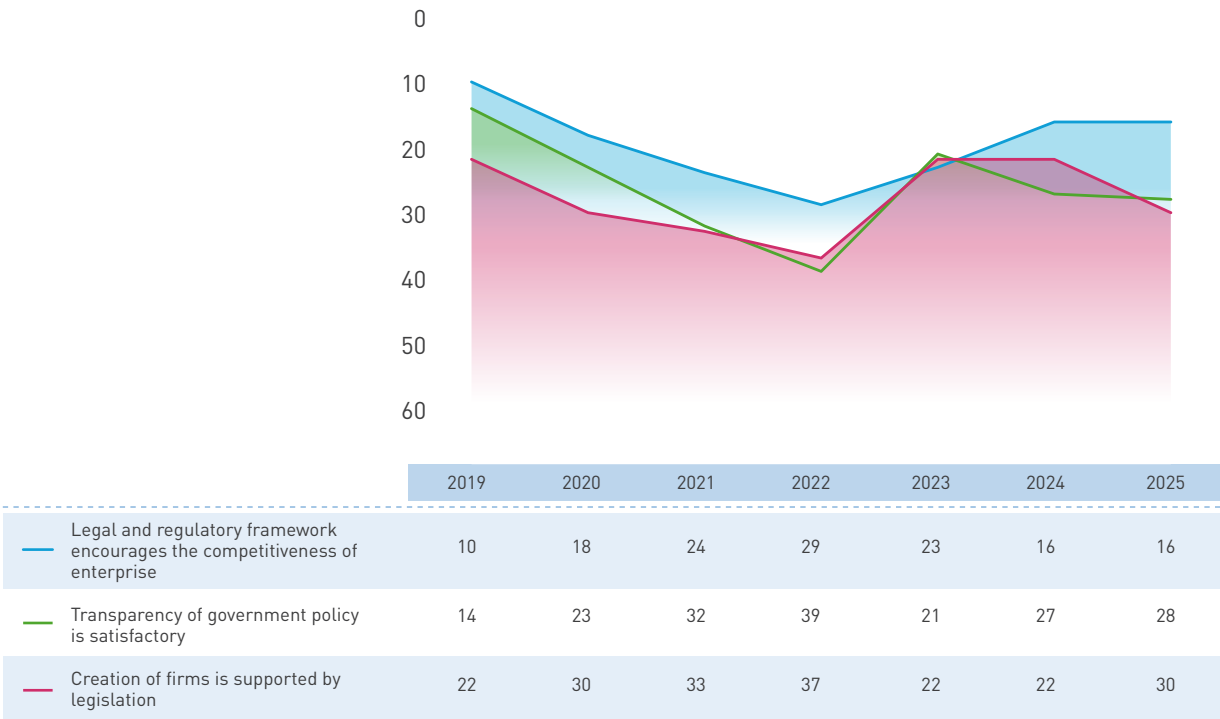
Several WCR perception-based indicators spotlight the need for regulatory reform to improve bureaucratic efficiency.

Perceptions of transparency in government policy, ranks 28th, indicate that, although the direction of reform is better communicated, important gaps remain between policy clarity and procedural predictability. Transparency should translate into smoother administrative journeys, and when it does not, firms attribute the friction to bureaucratic execution rather than policy intent.

Important gaps remain between policy clarity and procedural predictability.

A clear signal of that friction is the assessment of whether the creation of firms is supported by legislation, which lags at 30th place in 2025. Businesses appear to distinguish between supportive statutes and the practicalities of starting a business: multiple sequential approvals, duplicative submissions or unpredictable processing times dilute the benefits of good law. Ineffective bureaucracy occurs when a promising regulatory design is hindered by operational delays.

Figure 29 : Malaysia’s Ranking in Business Regulation-Related Indicators based on WCR Executive Opinion Survey (EOS), 2019 - 2025



Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD)

Continuous Reform - RKB

An effective bureaucracy is essential in good governance and efficient public administration. It ensures transparency, fairness, and structured governance, safeguarding citizens' rights, supporting business growth, and maintaining national stability.

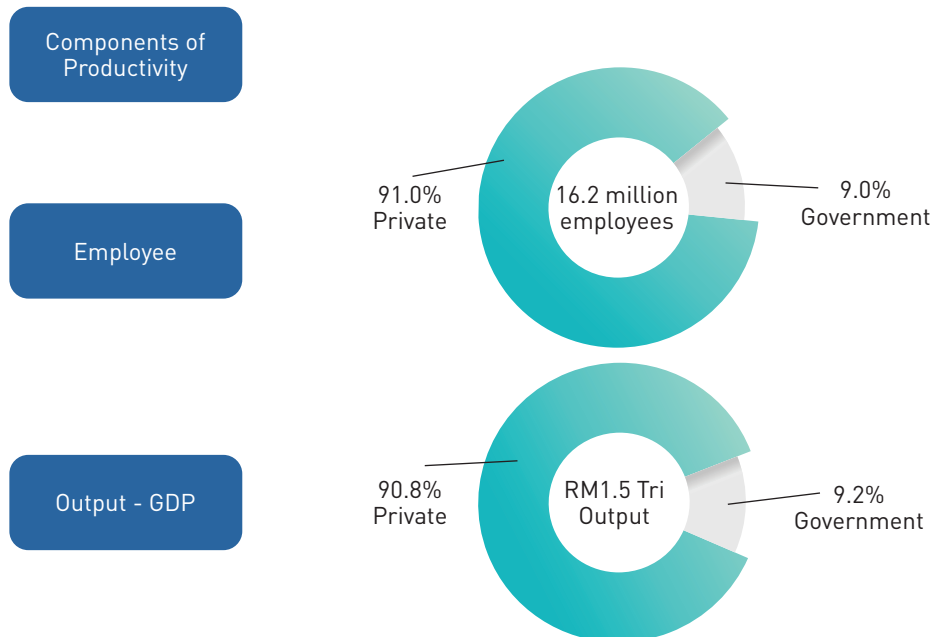
However, inefficient, excessive or outdated bureaucratic procedures, including slow processes and irrelevant regulations, can hinder productivity and dampen Malaysia's competitiveness. Given the private sector's contribution to productivity at more than 90 per cent of total employment and GDP, structural regulatory reform is imperative.

Malaysia's continuous regulatory reform through the *Reformasi Kerenah Birokrasi* (RKB) initiative is showing results

Malaysia's continuous regulatory reform through the *Reformasi Kerenah Birokrasi* (RKB) initiative is showing results.

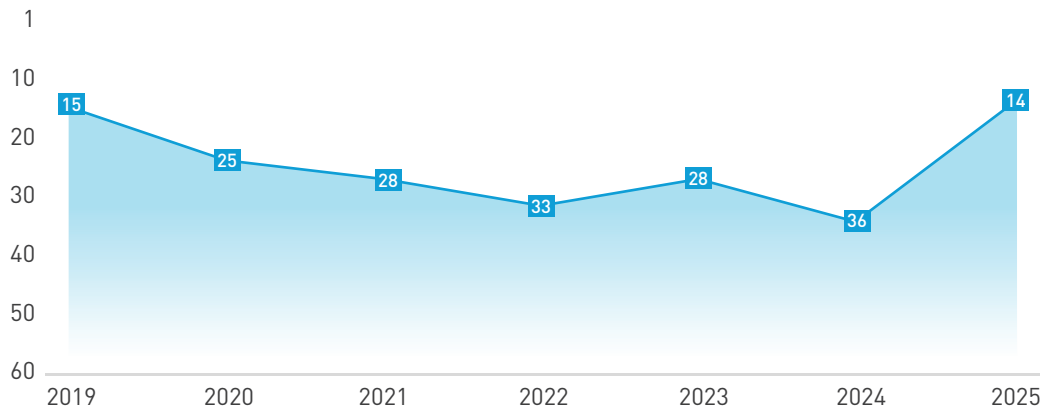
Malaysia's ranking in the Bureaucracy indicator improves significantly in WCR 2025, rising from 36th to 14th place. Prior to the improvement, historical trends indicate a gradual decline in the performance of this indicator since 2004, suggesting persistent challenges in regulatory efficiency and government service delivery. Inefficiencies manifest as procedural delays and compliance costs that burden both businesses and citizens, dampening economic dynamism and public satisfaction.

Figure 30 : Public and Private Sector's Contribution to Productivity



Source : Department of Statistics, Malaysia (DOSM), Analysis by MPC

Figure 31 : Malaysia's Ranking in Bureaucracy Indicator



Source : Department of Statistics, Malaysia (DOSM), Analysis by MPC

RKB aligns with the broader Public Service Reform Agenda (ARPA) and Good Regulatory Practice (GRP) principles, aiming to create a conducive regulatory environment that supports economic growth and elevates Malaysia's competitiveness globally.

The initiative is coordinated by the Chief Secretary to the Government through the Special Task Force on Agency Reform (STAR). This programme aims to systematically review and streamline existing regulations to foster efficient administration, reduce regulatory burdens, and enhance the ease of doing business, improving the productivity of both the public and private sectors.

RKB's reforms deliver significant benefits for both the private sector and citizens. For businesses, the programme reduces administrative burdens and compliance costs, enabling companies to focus on core activities such as production, innovation, and market expansion. Accelerated approval processes shorten project timelines, mitigating costly delays and fostering a regulatory climate conducive to innovation and international competitiveness.

For citizens, RKB simplifies access to government services, saving time and reducing costs associated with complex bureaucratic procedures. Enhanced responsiveness in public service delivery improves daily efficiency, allowing individuals to concentrate on productive economic and personal activities. These improvements collectively contribute to a more vibrant economy and improved quality of life.

RKB aims to expand its transformative impact with more than 1000 projects nationwide in 2025. A critical focus is strengthening collaboration with state and local governments to ensure reform benefits reach all communities. As of June 2025, over 100 RKB projects had been completed.

RKB aims to expand its transformative impact with more than 1000 projects nationwide in 2025.

ONE-HOUR APPROVAL BOOSTS PRODUCTIVITY

Majlis Bandaraya Kuala Terengganu (MBKT)'s bureaucratic reform addresses the bottleneck that has slowed minor repair and upgrade works. Previously, contractors and building owners waited up to two days while the Small Works Permit (PKK) moved through three manual layers of assistant engineer, section head and department director, creating downtime and risk for urgent work.

MBKT has replaced that sequence with risk-based approval at the counter, authorising qualified PKK applications within one hour. The change removes hand-offs, shortens queues and enables immediate mobilisation for critical tasks such as urgent roof repairs, preventing further property damage and business disruption.

The productivity dividends are clear and quantifiable, as per-application compliance costs fall from around RM6,730 to RM600, resulting in a saving of RM6,130 once idle labour, equipment downtime, penalty exposure, travel, applicant time, and government processing are accounted for.

For contractors, avoiding penalties of RM1,400 and eliminating up to 48 hours of labour idling delivers cash-flow relief and raises profit by approximately RM1,500 per project. Building owners benefit from faster fault rectification and lower remedial bills. On an annualised basis, MBKT estimates compliance-cost savings of RM811,440, reflecting fewer touchpoints and faster decisions across small works permits.

The reform expands opportunity and scale for the local ecosystem. 144 small local contractors are now able to secure more jobs, plan with greater certainty and grow their businesses as demand for materials and labour increases. The one-hour standard also frees municipal officer time for higher-value inspections and governance, without diluting safety or regulatory intent.

Aspect	Before	After	Impact
PKK approval time	2 days	1 hour	Immediate mobilisation
Approval workflow	Manual 3-tier review	Risk-based counter approval	Fewer hand offs and higher throughput
Per application compliance cost	RM6,730	RM600	RM6,130 savings
Penalty exposure	RM1,400 per case	RM0	Penalties avoided
Building owner repairs	Delays escalate damage and risks	Immediate rectification	Lower repair costs
Annual compliance cost	—	RM811,440 saved/year	Reinvestable savings, stronger ecosystem

DIGITALISATION DRIVES JOHOR HOUSING PRODUCTIVITY

Perbadanan Kemajuan Perumahan Negeri Johor (PKPJ) has transformed eRumah into a productivity engine by replacing paper-heavy workflows with a fully digital, data-rich pipeline. The application-to-offer period has been compressed from 60 days to just seven, and supporting documents have been reduced from 17 to five, eliminating rework and queuing while standardising quality at the source.

Since 2022, these changes have generated compliance-cost savings exceeding RM46 million and benefited over 157,000 applicants. Online submission, real-time eligibility checks, and open balloting are supported by public and internal dashboards that enable transparency and throughput, all within seven days of advertisement closure.

Unit-cost estimates for the eRumah digitisation indicate savings of approximately RM180 per application, amounting to about RM1.8 million per 10,000, providing a tractable measure of marginal gains to complement the aggregated RM46 million reported to date.

These productivity effects extend beyond one agency. eRumah is a model of how digitalisation can transform public service delivery, with complex tasks that once took a week now completed in minutes. By transitioning from opaque, manual processing to digital transparency with open balloting on Facebook Live, PKPJ enhances equality of opportunity and fosters public confidence.

To further enhance productivity, PKPJ's next phase introduces AI-assisted automatic checking and verification of application documents, accelerating right-first-time decisions while reinforcing checks and balances and internal efficiency.

Aspect	Before	After	Impact
Processing time	Offer in 60 days	Offer in 7 days	Faster allocation, lower friction
Supporting documents	17 items	5 items	Reduced burden, fewer errors
Application method	Paper, field checks	End-to-end online, real-time eligibility checks	Traceability and convenience
Transparency	Limited visibility	Open balloting on Facebook Live	Higher trust and legitimacy
Compliance cost	—	RM46m saved since 2022	Relief for citizens and administration
Unit cost benchmark	—	RM180 per application (RM1.8m/10k)	Evidence of marginal gains
Next phase	Manual verification	AI-assisted auto checks	Higher throughput, stronger controls

MUALLIM SPEED LANE TURBOCHARGES PRODUCTIVITY

Majlis Daerah Tanjong Malim's Muallim Speed Lane (MSL) tackles long industrial development lead times by replacing sequential, paperwork-heavy processing with a single, accelerated pipeline. Under the MSL, approvals are prepared in parallel, early technical alignment is secured, and Unit MyMudah coordinates agencies end-to-end through OSC 3.0 Plus. As a result, construction cycles are reduced from about 18 months to approximately 8-10 months, with operations commencing by the 12th month. The Certificate of Completion and Compliance (CCC) and the operating licence are issued within 24 hours, reducing idle capital and time to revenue.

The productivity gains are material. MSL has anchored a pipeline totalling RM286.14 million in industrial investment between September 2023 and May 2025, with 13 projects completed to CCC or progressing on-site, creating more than 1,000

jobs. The initiative has delivered compliance-cost savings of RM12,876,399 across 11 industrial building projects, reflecting fewer touchpoints, shorter decision windows and streamlined documentation.

MSL's design codifies what high-performing local authorities do - including early project briefing to surface issues, permission to start site works within 7 days of formal plan submission, concurrent approvals for planning, infrastructure, and building plans, continuous field monitoring, and clear criteria for land status, site readiness, infrastructure, and statutory studies.

By compressing the path from decision to production while maintaining regulatory compliance, MSL enhances Muallim's competitiveness as a responsive, investment-ready industrial hub.

Aspect	Before	After	Impact
Construction duration	18 months	8-10 months	Earlier revenue
Time to operation	Up to 24 months	10-12 months	Faster cycle to operations
Licensing	3 - 7 days post CCC	24 hours	Immediate start-up
Early site entry	Not permitted	Special permission within 7 days of submission	Accelerated work mobilisation
Approvals mode	Sequential across agencies	Concurrent via OSC 3.0 Plus	Idle time removed
Facilitation and monitoring	Ad hoc	Centralised coordination and field oversight	Faster issue resolution
Investment and jobs	—	RM286,142,211; 1,044 jobs	Stronger local supply chains
Compliance cost savings	—	RM12,876,399	Lower carrying and transaction costs

ONE-DAY BUSINESS LICENSE ACCELERATES ENTERPRISE

Majlis Daerah Kuala Pilah (MDKP) has transformed business licensing from a queue-bound process into a same-day service. The bureaucratic reform has accelerated approvals that previously took 5-10 days, and are now issued within one day, allowing micro, small, and medium enterprises to open earlier and earn revenue sooner.

The change is based on a fully online pathway with electronic forms, digital upload of supporting documents, integration with the council's ePBT back-office, and 24/7 status tracking. A structured rollout embedded new workflows across all divisions so that front-line decisions and back-office verifications move in step.

The productivity gains are significant for applicants, as out-of-pocket compliance costs fall from RM75 to RM350 per application to about RM15, with travel eliminated, printing minimised, and no

lost trading days. With roughly 3,000 applications a year, that shift delivers about RM1,005,000 in annual savings to local businesses. On the council side, streamlined processing and fewer counter transactions result in approximately RM140,000 in administrative yearly savings. Together, the economic benefits from faster time-to-trade and lower friction exceed RM1 million annually.

The reform enhances service quality and the council's reputation as an efficient, business-friendly, and people-centred organisation. The online channel and transparent status updates improve accountability and provide an auditable trail, with ePBT integration ensuring data consistency. MDKP demonstrates how local authorities can convert process redesign into tangible growth for small businesses and durable gains in public-sector productivity.

Aspect	Before	After	Impact
Approval time	5–10 days	1 day	Earlier market entry and revenue
Application channel	Counter, paper forms	Fully online, e-forms	Fewer visits; faster cycle
Document handling	Print and submit	Digital uploads	Lower printing cost; fewer errors
Status visibility	Ad hoc enquiries	24/7 tracking	Planning certainty for businesses
Applicant cost per case	RM75 - RM350	RM15	RM60–RM335 saved per case
Annual applicant savings	—	RM1,005,000	3,000 cases × per case savings
Administrative savings	—	RM140,000/year	Leaner processing and counters
Economic effect	Slower market entry	Faster time to trade	More than RM1 million annual uplift

ILTIZAM Act

The comprehensive reform package under the ILTIZAM Act is designed to modernise Malaysia's regulatory framework, fostering a conducive business environment, enhancing government service efficiency, and sustaining national competitiveness in an evolving global economy.

The Government Service Efficiency Commitment Act 2025 (ILTIZAM) introduces a pivotal reform requiring the mandatory review of all Acts and regulations every three years, effective from 2025.

ILTIZAM requires the mandatory review of all Acts and regulations every three years, effective from 2025.

The requirement for a three-year review cycle means that all existing regulations must be reassessed every three years to confirm their ongoing relevance and alignment with original policy goals.

Institutionalising regular regulatory reviews is critical to avoiding inefficiencies and supporting national productivity and competitiveness. Rapid technological advancement and global changes demand agile and adaptive regulation. The government can no longer adopt a "set and forget" approach, as obsolete regulations risk becoming burdensome and obstructive to innovation.

Without periodic reviews, regulations may lead to excessive compliance costs, delays in business approvals, and administrative inefficiencies. The COVID-19 pandemic demonstrated that inflexible regulatory systems undermine the government's capacity to respond swiftly to crises, affecting public welfare. Consequently, the government must adopt an "adapt and learn" approach to maintain regulatory relevance.

Under the Act, regulators must reduce regulatory burdens at 25 per cent within three years. Research by Boston Consulting Group indicates that a 25 per cent reduction in regulatory burden can increase GDP growth by approximately 1.62 per cent, based on studies in the European Union. Countries such as the Netherlands and Denmark have set similar targets, utilising the Standard Cost Model (SCM) to measure and manage regulatory costs.

Under the Act, regulators must reduce regulatory burdens at 25 per cent within three years.

The One-for-One regulatory principle is introduced under the Act that requires that any new regulation introduced be offset by the repeal of an existing regulation, preventing net increases in regulatory burden. This approach ensures regulatory systems remain efficient and balanced. Regulatory reviews focus on primary and subsidiary legislation with high compliance costs or outdated provisions.

The One-for-One regulatory principle is introduced, which requires that any new regulation introduced be offset by the repeal of an existing regulation, preventing net increases in regulatory burden.

Under the Act, the government is also mandated to establish a regulatory performance rating system to evaluate the efficiency, transparency, and effectiveness of regulations and policies across economic, social, and administrative sectors. This data-driven and transparent system will facilitate benchmarking, continuous reform, and bureaucratic streamlining.

Key features include empirical evidence-based assessments, stakeholder engagement, independent regulatory oversight, and international benchmarking against standards such as the OECD Regulatory Policy Outlook. The system aims to support economic growth, competitiveness, innovation, and efficient public administration.

Under the Act, the government is also mandated to establish a regulatory performance rating system to evaluate the efficiency, transparency, and effectiveness of regulations and policies.

Policy Implications

Enhance Business Legislation

A decisive push to simplify business legislation and close execution gaps would translate policy intent into lived experience. WCR 2025 ranks Malaysia 46th on the Business Legislation sub-factor, a weaker outlier alongside stronger positions in other sub-factors.

Frictions arise from sequential approvals, duplicative submissions, and unpredictable timelines. Policy follow-through therefore points to standardised interpretations across agencies, clearer published timelines, and consistent digital pathways. Greater transparency through dashboards and routine reporting of processing times and burden-reduction progress would build accountability and support faster firm formation, scaling, and competitiveness.

Operationalise ILTIZAM

The ILTIZAM Act provides the backbone for adaptive, burden-reducing regulatory governance. Regulators should operationalise the Act's triennial reviews, the target of a 25 per cent reduction in regulatory burdens within three years, and the One-for-One principle that offsets any new rule with a repeal.

A transparent regulatory performance rating would sustain discipline and comparability across agencies. Such an adapt-and-learn practice would keep regulations current, lower compliance costs, and enhance productivity and competitiveness.

Scale RKB Success Cases

A national fast-track and risk-based approvals model emerges as a clear implication from the local authority case studies. Such scaling would accelerate time-to-market, strengthen service quality, and attract jobs and investment.

Key Takeaways

WCR 2025 ranks Malaysia 23rd overall, with Government Efficiency at 25th and Business Efficiency at 32nd, demonstrating that credible institutions reduce uncertainty, lower transaction costs, and enhance firm productivity.

Regulatory reform is foundational to a productive business ecosystem. Scaling RKB and implementing the ILTIZAM Act will streamline processes, enhance predictability, and attract investment.

WCR ranking for Business Legislation sub-factor still lags at 46 from 69 economies, highlighting the country's persistent challenges for businesses and the public in accessing government services efficiently and effectively.

The ILTIZAM Act mandates triennial regulatory reviews, a 25 per cent burden reduction, a One-for-One rule, and a regulatory performance rating to institutionalise productivity-enhancing governance.

CHAPTER FIVE

Artificial Intelligence (AI) for
Productivity Acceleration





Artificial Intelligence (AI) for Productivity Acceleration

From automating routine tasks to optimising complex decision-making, artificial intelligence AI can help Malaysia “work smarter” rather than “work harder”. The Malaysian government recognises this potential: under the national MyDIGITAL initiative, it has set the target to boost overall economic productivity by 30 per cent by 2030, using 2020 as a baseline, with AI and digitalisation as central catalysts.

Uneven adoption among businesses and rural areas curtails productivity. Tackling infrastructure deficits, AI awareness, ROI concerns, and skills development is vital; AI’s capital deepening, transactional efficiency, and human capital enhancements promise growth.

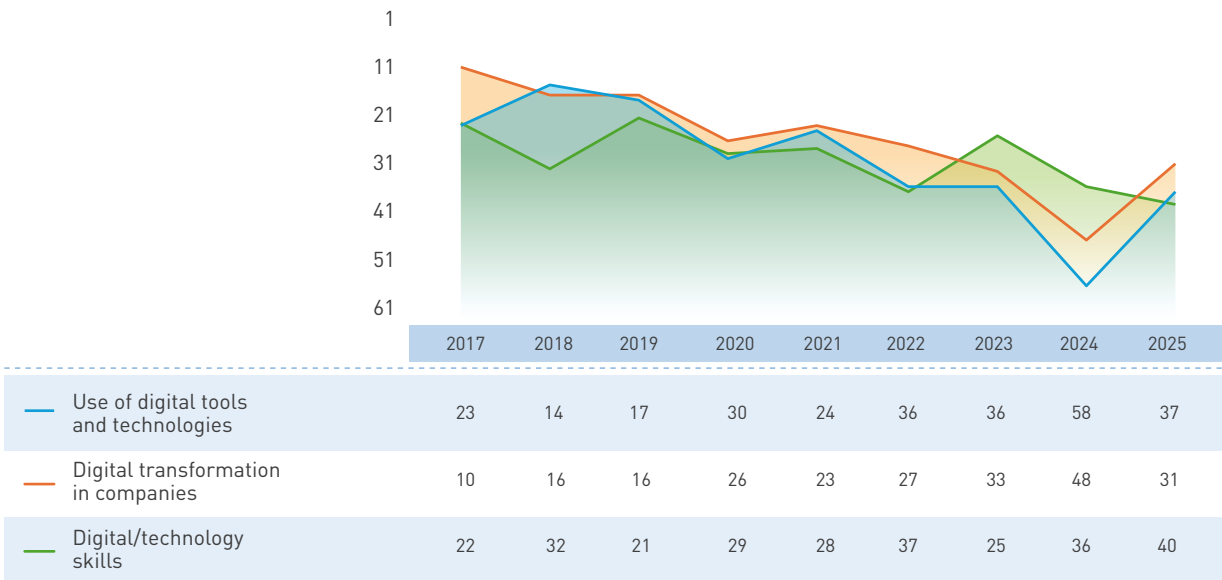
Digitalisation Gap

Malaysia has fairly modern infrastructure and a high internet penetration rate; however, the depth of digital adoption among businesses varies. Many firms, especially SMEs, have been slow to digitalise their operations.

Basic ICT usage is common, but more advanced technologies, such as AI, data analytics, cloud computing, and automation, are not widespread outside leading corporations. The uneven digitalisation contributes to uneven productivity.

Basic ICT usage is prevalent in Malaysia, but more advanced technologies, such as AI, data analytics, cloud computing, and automation, are not yet widely adopted.

Figure 32 : Malaysia’s Competitiveness Rankings in Digitalisation Indicators, 2017 - 2024



Source : World Competitiveness Yearbook (WCY), Institute for Management Development (IMD)

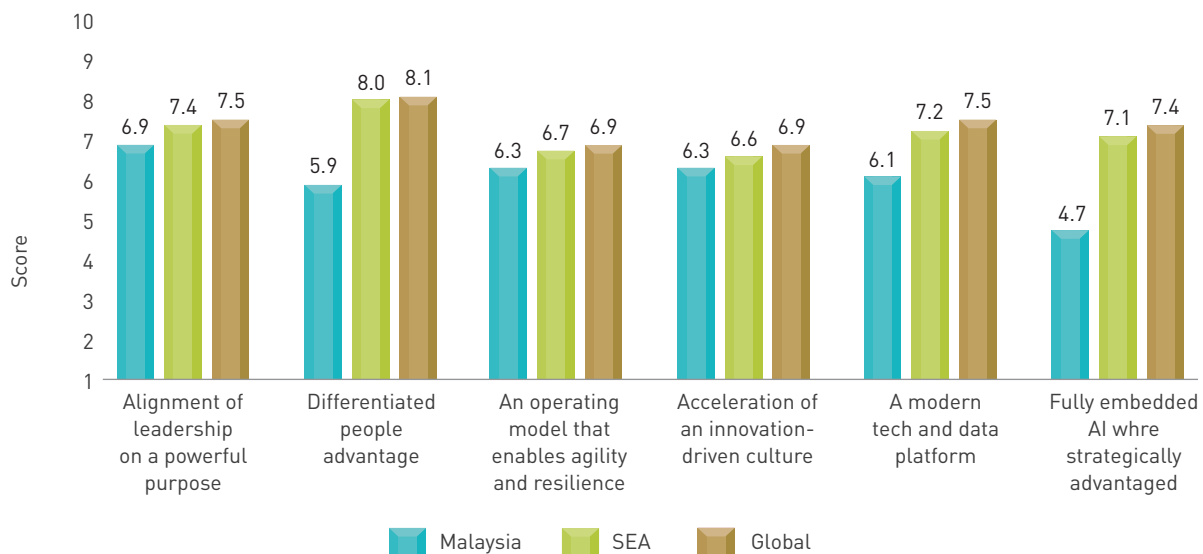
Malaysia's competitiveness in WCR digitalisation-related indicators, as perceived by the business community, has recorded a downward trend in the use of digital tools and technologies, digital transformation in companies, and digital skills.

The key barriers to technological diffusion across firms include limited awareness of available digital solutions, uncertainty regarding the return on investment and implementation complexity, and insufficient support for integrating AI into business operations. Digital

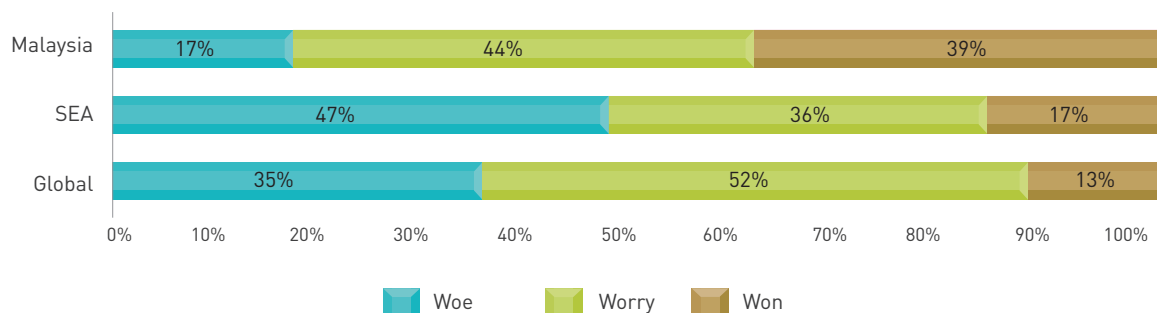
adoption, including AI utilisation, remains suboptimal, lagging behind productivity growth and widening the competitiveness gap.

Malaysian respondents posted an average score of 4.7/10 for embedded AI, compared with 7.1 across SEA and 7.4 globally, a gap of more than 2 points.

Figure 33 : Digital Readiness of Malaysian Companies Compared with Global and SEA



Overall Readiness to Successfully Digitally Transform



Note : "Win Zone" = score ≥ 8 ; "Worry zone" = score 6-8; "Woe zone" = score ≤ 5

Source : BCG Build for the Future Survey 2022; n=18 for Malaysia & Harnessing The Power Of Technology: Building A Strong Digital Economy for Malaysia's Future

Boston Consulting Group's Build for the Future Survey 2022 reported that Malaysian enterprises lag behind both South-East Asian (SEA) and global peers across every pillar of digital readiness, with embedded AI adoption being the most pronounced deficit. Malaysian respondents posted an average score of 4.7/10 for embedded AI, compared with 7.1 across SEA and 7.4 globally, a gap of more than 2 points.

For Malaysia, embedding AI at scale is no longer optional. Accelerated talent development, industry-

academia collaboration, and cloud-first, interoperable data platforms are immediate imperatives. Early movers that institutionalise AI now will secure a durable productivity lead as the next wave of digital competition unfolds.

A transformation is needed in how businesses operate and how work is done. AI enters the narrative as a powerful enabler that can break through the current productivity ceiling.

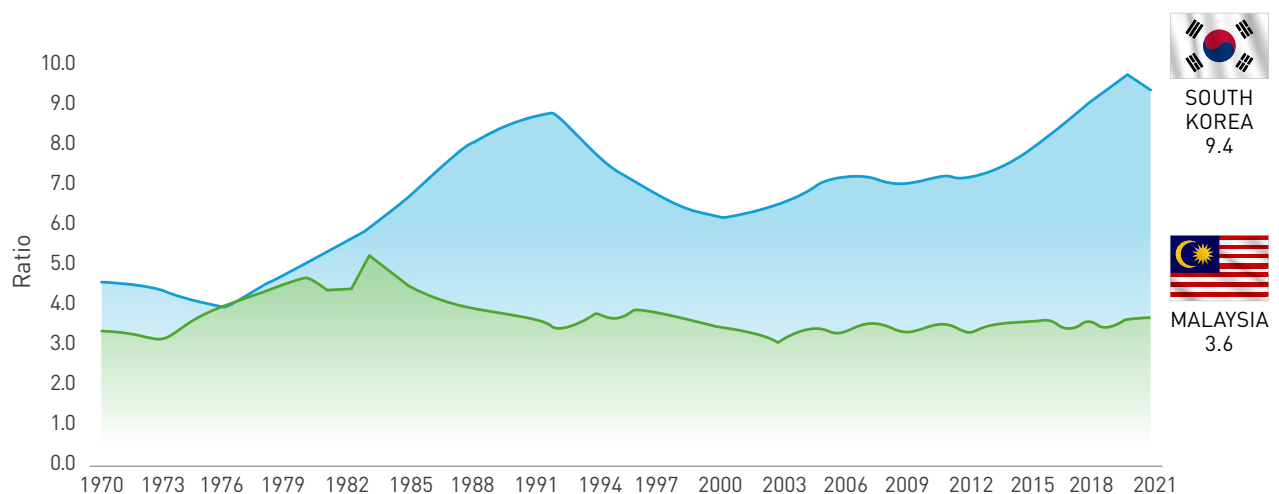
AI Capital Deepening

Capital productivity, a crucial indicator of economic efficiency, measures the effectiveness of capital investments in generating output.

South Korea demonstrated a significant improvement in capital productivity, reflecting a strong correlation between strategic investments in capital and robust output growth. Beginning from a ratio of 4.7 in 1970, South Korea witnessed improvement, peaking at approximately 9.3 around 2019.

Malaysia's capital productivity stood at 3.3 by 2020, a stark contrast to South Korea's 9.4. Both countries started at about the same point in the 70s

Figure 34 : Trends in Capital Productivity, South Korea VS Malaysia (1970-2020)



Source : Asian Productivity Organization (APO)

The substantial rise underscores South Korea's capability in effectively translating capital investments into higher productive outputs, aligning with its broader economic transformation characterised by advanced technology adoption and industry upgrading.

Conversely, Malaysia's trajectory shows a relatively stagnant and less promising trend, starting at a capital productivity ratio of 3.5 in 1970, rising modestly to reach a peak of just above 4.0 around the late 1980s before gradually declining to 3.3 by 2020.

The plateauing and subsequent decline reveal underlying inefficiencies, implying that Malaysia's capital investment strategies have not yielded proportionate gains in productivity. Such a scenario suggests limitations in the country's investment focus, potentially reflecting an over-dependence on traditional sectors and a delayed transition towards innovation- and technology-driven industries.

Malaysia's comparative underperformance indicates the need for a strategic shift towards enhancing capital productivity through innovation, technology integration, and industrial upgrading.

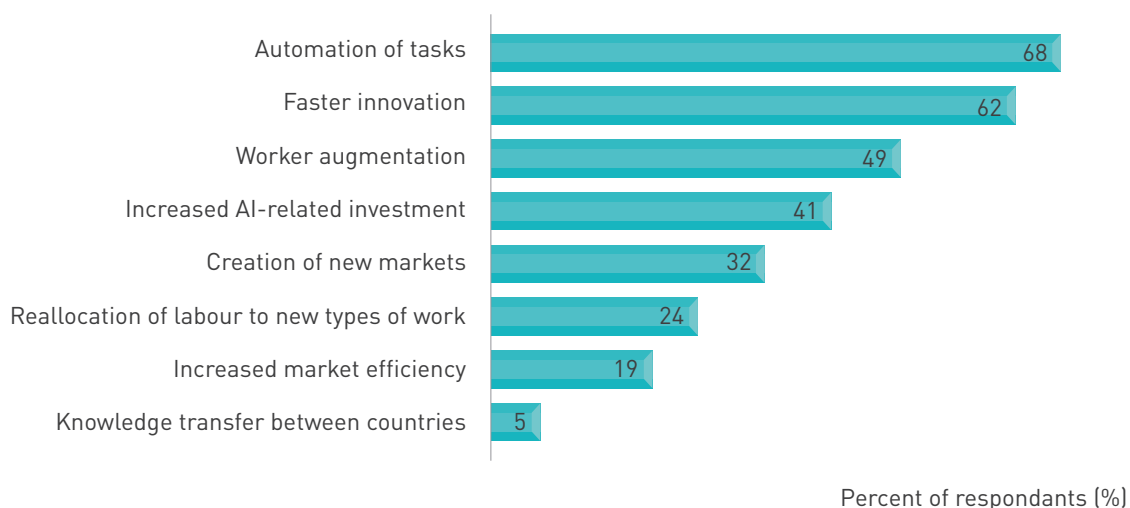
To mitigate this disparity, Malaysia must prioritise policies that encourage capital deepening and enhance the quality of capital investments to maximise productive returns and bolster sustainable economic growth.

AI serves as a quintessential capital-deepening instrument because it raises the quality, versatility, and utilisation rate of existing and new capital assets. In Malaysia's context, where the capital-productivity ratio has drifted downward to 3.3, AI-enabled machinery, cloud platforms, and software agents can inject technological intensity.

AI is an essential capital-deepening instrument because it raises the quality, versatility, and utilisation rate of existing and new capital assets

By automating cognitive and routine tasks, AI upgrades the vintage of capital without requiring proportional increases in plant and equipment expenditure; every robot, production line or service terminal endowed with machine-learning capability effectively embodies more embedded knowledge per ringgit invested.

Figure 35 : AI Impact Channels on Global GDP Growth



AI expands the frontier of capital productivity through continuous learning. Unlike fixed-function hardware, algorithms improve over time, allowing a static stock of capital to generate progressively higher output.

This dynamic efficiency aligns with the channels identified in the World Economic Forum's Chief Economists Outlook (May 2025), where 68 per cent of experts attribute GDP gains to task automation, 62 per cent to faster innovation, and 49 per cent to direct worker augmentation.

68 per cent of experts attribute AI GDP gains to task automation, 62 per cent to faster innovation, and 49 per cent to direct worker augmentation

These mechanisms shorten design cycles, enable predictive maintenance, optimise energy use, and orchestrate supply chains in real-time, each uplifting the marginal product of capital.

AI catalyses complementary intangibles, such as data lakes, digital twins, and sector-specific foundation models, that deepen the capital base qualitatively. Such intangible capital scales at near-zero marginal cost, amplifying returns on physical infrastructure.

The virtuous loop of data generation, model refinement, and process re-engineering creates a compound multiplier absent in traditional capital accumulation.

Additionally, AI facilitates labour reallocation to higher-value functions, permitting capital to be redeployed where it is most productive, as 24 per cent of global respondents anticipate.

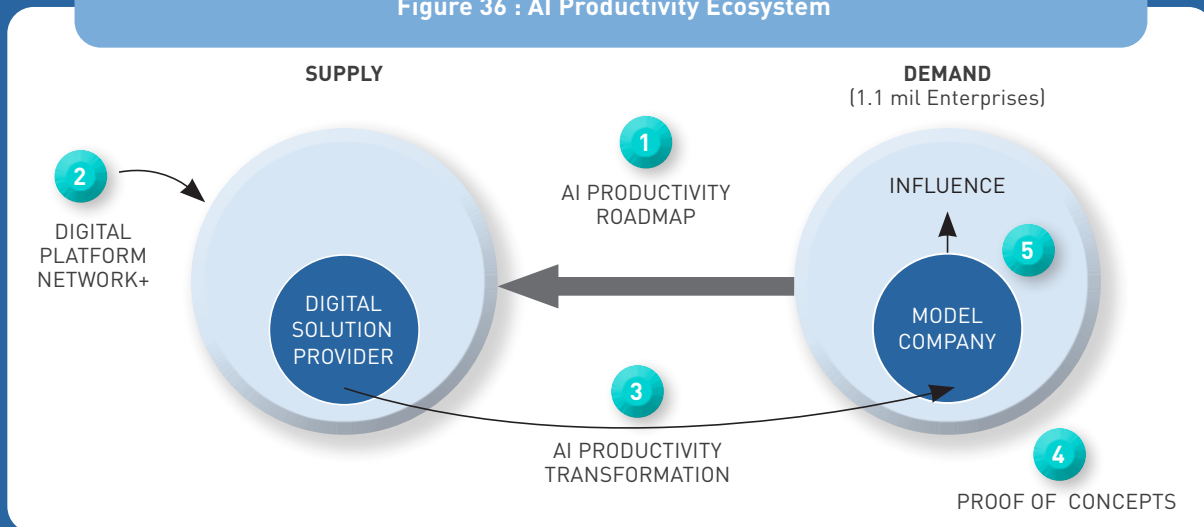
For Malaysia, sustained policy support for interoperable data platforms, talent pipelines, and industry-academia collaboration will therefore convert AI from a peripheral experiment into the central driver of capital deepening and long-term productivity growth.

The principal obstacle to large-scale AI adoption remains the structural disconnect between technology supply and enterprise-level demand. Bridging this gap requires a self-reinforcing ecosystem that both stimulates supply and organises demand, while providing robust implementation support. MPC's AI Productivity Ecosystem framework converts isolated initiatives into a cohesive programme.

Bridging the structural disconnect between technology supply and enterprise-level demand requires a self-reinforcing ecosystem that stimulates both aspects and provides robust implementation support

AI PRODUCTIVITY ECOSYSTEM

Figure 36 : AI Productivity Ecosystem



Source : MPC Illustration

The AI Productivity Ecosystem provides a structured framework that links supply and demand within the digital economy, ensuring that artificial intelligence (AI) adoption translates into measurable productivity growth. It is designed to guide enterprises through digital transformation while enabling solution providers to deliver targeted, scalable innovations.

At the centre of the ecosystem is the **AI Productivity Roadmap**, which serves as the strategic bridge between digital solution providers on the supply side and Malaysia's 1.1 million enterprises on the demand side. The roadmap ensures that innovation addresses real productivity challenges while guiding enterprises through four clear stages of AI adoption: awareness, pilot implementation, transformation, and scaling. By aligning adoption with national productivity targets, the roadmap enables structured and sustainable transformation.

Supporting the supply side is the **Digital Platform Network Plus (DPN+)**, a collaborative hub that broadens access to affordable and relevant AI tools, particularly for small and medium enterprises. DPN+ promotes interoperability, ensuring seamless integration with existing systems and minimizing upfront costs. It also consolidates AI roadmaps, directories of solution providers and enterprises, adoption programmes, and showcases of successful use cases, thereby accelerating and streamlining adoption.

On the demand side, **AI Productivity Transformation** requires enterprises to redesign processes, strengthen workforce capabilities, and embed data-driven decision-making. This transformation unfolds in four phases: discovery (readiness assessment and case study exploration); deployment (solution implementation); demonstration (measurement through the Productivity Impact Report, PIR); and dissemination (sharing proven results via the AI Productivity Impact Showcase). This structured pathway ensures sustainable productivity gains rather than incremental improvements.

A critical element of the ecosystem is the use of **Proof of Concepts (PoCs)** in model companies. These pilots validate AI solutions in real business environments, instilling confidence among enterprises while enabling providers to refine offerings. Model companies act as industry benchmarks, demonstrating measurable outcomes that inspire wider adoption.

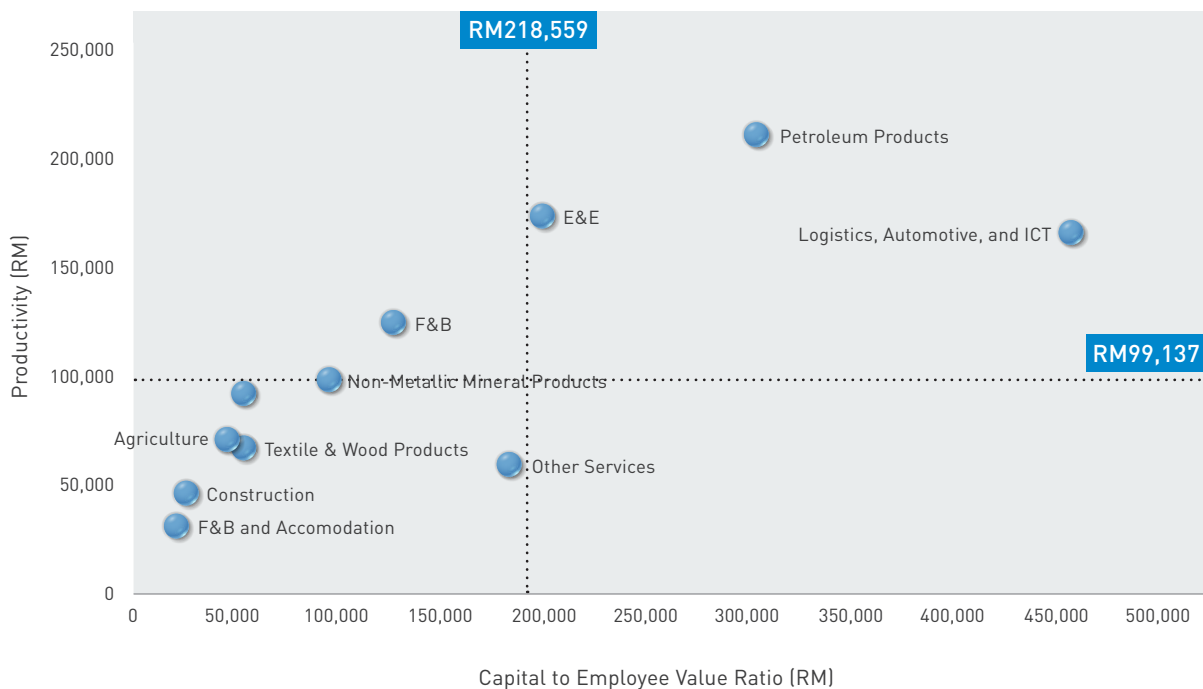
In conclusion, the AI Productivity Ecosystem is more than a framework; it represents a national movement to embed productivity-driven digital transformation across Malaysia. Its success will be measured not by adoption rates alone, but by tangible improvements in productivity, efficiency, and competitiveness across the economy.

Industry Applications

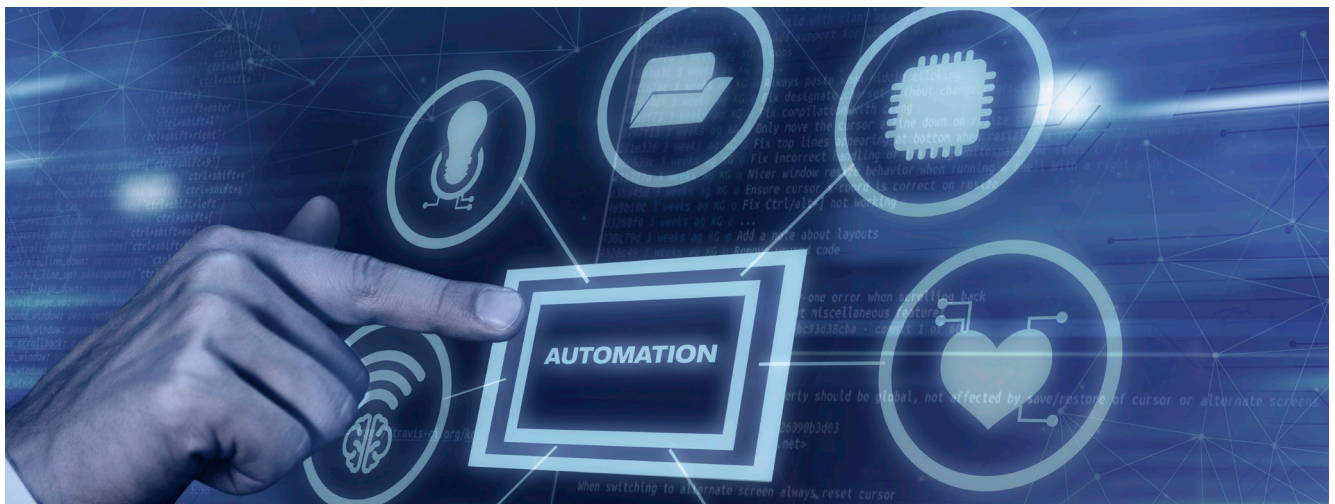
Maximising the impact of digital transformation on national productivity requires clear prioritisation of economic activities with the largest productivity gaps and the strongest potential for AI-driven improvement.

This strategic focus ensures that limited resources, such as financial, talent, or technology, are channelled into areas capable of delivering the greatest economic and social returns.

Figure 37 : Productivity and Capital to Employee Value Ratio, Selected Subsectors



Source : Department of Statistics, Malaysia (DOSM). MPC Analysis



CHARACTERISTICS	PRINCIPAL SUBSECTORS	IMPLICATIONS FOR AI POLICY
Labour-intensive, manual processes, limited mechanisation	Agriculture; Textile & Wood Products; Construction; Wholesale & Retail; F&B & Accommodation.	<u>Top Priority</u> AI-enabled automation, computer vision, and digital workflow tools can close sizeable productivity gaps
Capital efficient but still reliant on human decision-making in critical nodes	Electrical & Electronics (E&E); Food & Beverage (manufacturing); Non-metallic Mineral Products.	<u>Quick Win Segment</u> AI investments, such as predictive maintenance and quality analytics, can yield outsized returns because baseline productivity is already above average
Highly automated, technologically mature, concentrated employment.	Petroleum Products; Logistics, Automotive & ICT	<u>Selective Interventions</u> AI can optimise asset utilisation and sustainability, but the socio-economic multiplier is smaller due to lower employment density
Under performing despite heavy capital outlays	Other Services (capital dense niches)	<u>Diagnostic Studies First</u> AI may unlock latent capacity, yet the root cause of inefficiencies must be understood before large-scale programmes

CRITERIA FOR SECTORAL AI-IMPLEMENTATION		
	CRITERIA	RATIONALE
1	High Employment Density	Large workforces, especially in B40 or rural areas, ensuring that digital gains translate into broad-based income growth rather than capital-biased returns
2	Low Productivity and Digital Maturity	Output per worker and technology adoption both lag national averages, signalling “low hanging fruit” for AI uplift.
3	AI Scalability and Replicability	Processes that can accommodate machine learning, robotic process automation, and data analytics solutions across multiple firms.
4	Alignment with National Strategic Priorities	Direct contributions to food security, public healthcare, infrastructure modernisation, or industrial deepening.
5	Readiness for Public–Private Partnership	Active trade associations and supportive ministries willing to co-invest and oversee pilot to scale roll-outs.

AGRICULTURE

Agriculture accounts for over 10% of Malaysia’s workforce but contributes less than 8 per cent of the country’s GDP, underscoring its persistently low productivity. Smallholder farms with manual operations and underutilised data dominate the sector. AI technologies offer an opportunity to modernise farming and optimise resources.

AI APPLICATION	PRODUCTIVITY IMPACT
• Satellite imaging and drone data, combined with AI algorithms : Predict yields and detect early signs of pest infestation	• Potential 30 per cent increase in yield via precision farming practices
• IoT sensors : Provide real-time monitoring of soil moisture, weather, and nutrient levels	• Up to 20 per cent reduction in input costs through optimised water and fertiliser usage
• AI-enabled advisory systems : Offer planting, irrigation, and harvesting guidance tailored to local conditions	• Improved decision-making among smallholders, reducing reliance on trial-and-error methods
Recommendation : A national Agro-AI programme could deliver mobile dashboards with satellite-integrated insights and AI recommendations to 50,000 farmers in Bahasa Malaysia, enhancing inclusivity and accessibility.	

CHOP CHEONG BEE (CCB)

In collaboration with Infront Consulting and CelcomDigi Business, CCB deployed Microsoft Azure-powered smart farming solutions:

- AI-Driven Livestock Monitoring using image recognition reduced manual tracking time by 60 per cent.
- Predictive analytics lowered mortality rates by 10% and reduced waste by up to 15 per cent.
- Automation of routine tasks led to a 60 per cent reduction in labour time.
- IoT and 5G integration allowed real-time monitoring of environmental factors and livestock metrics.

CCB achieved a 10-point gain in broiler production index and now produces up to 340 million chickens annually.

▶ Source : <https://www.microsoft.com/en/customers/story/1647401864851077644-chop-cheong-bee-azure-en-malaysia>

CONSTRUCTION

Malaysia's construction sector continues to face challenges, including project delays, cost overruns, and limited adoption of digital technologies. AI integration offers a transformative opportunity to address these issues and enhance productivity.

AI APPLICATION	PRODUCTIVITY IMPACT
Digital Twins : Create real-time, data-rich simulations of physical construction sites to improve planning accuracy and risk mitigation	Reduction in average project delays by 20–30 per cent
AI-Based Scheduling : Forecast project delays by analysing factors, such as weather conditions, labour availability, and material supply chains	Decrease in material wastage by up to 15 per cent
Computer Vision : Detect unsafe practices and equipment failures, enhancing on-site safety	Improvement in site safety, leading to reduced downtime and lower insurance claims

Recommendation : An AI4Build initiative, spearheaded by the Construction Industry Development Board (CIDB) in collaboration with public and private sectors, could offer pilot grants and technical support to 5,000 contractors.

GAMUDA ENGINEERING

Gamuda Engineering is leading digital transformation within Malaysia's construction industry. The company has implemented a comprehensive digital ecosystem, including:

- Gamuda Digital Operating System (GDOS): A unified platform that consolidates project data, enabling real-time decision-making and collaboration across teams.
- Next-Gen Digital Industrialised Building System (IBS): Incorporating AI, Building Information Modelling (BIM), and IoT-enabled robotics to enhance precision, reduce reliance on unskilled labour, and minimise waste.
- Autonomous Tunnel Boring Machines (A-TBMs): Developed in-house, these machines utilise AI algorithms for autonomous control, improving tunnelling efficiency and safety.

Projects are completed up to 40 per cent faster, reliance on foreign labour has decreased by 55 per cent, and embodied carbon emissions have been reduced by 40 per cent

● Source : <https://gamuda.com/our-expertise/engineering-construction/digital-ibs/>

ERS ENERGY

ERS Energy specialises in solar power solutions, providing services such as solar PV system installation, engineering, procurement, and construction. The company developed a CRM system, automated workflows, and integrated departmental systems through APIs, replacing manual processes. ERS Energy's value creation is reflected in additional revenue, a 25 per cent increase in lead conversions, and a 33 per cent reduction in overtime.

HEALTHCARE

Malaysia's healthcare system faces mounting pressures due to an ageing population and a rising prevalence of chronic diseases. Some hospitals continue to rely on paper-based systems, which can lead to resource constraints and inefficiencies in patient care. AI offers a transformative solution to bridge the gap between increasing demand and limited capacity.

AI APPLICATION	PRODUCTIVITY IMPACT
AI-Assisted Imaging Diagnostics : Analyse medical images for early and accurate detection of conditions such as cancer, cardiovascular diseases, and stroke indicators.	Reduction in diagnostic time by up to 50 per cent, coupled with increased detection accuracy.
Natural Language Processing (NLP) : Summarise patient records and automate clinical reporting, enhancing documentation efficiency.	Decrease in outpatient wait times by approximately 30 per cent.
Hospital Automation : Manage bed allocations, outpatient flow, prescription dispensing, and supply chain logistics effectively.	Enabling medical staff to concentrate on complex care tasks by automating routine administrative functions.
Recommendation : A HealthAI initiative, in collaboration with the Ministry of Health, could integrate AI-based radiology and clinical decision support systems in 50 hospitals, starting with urban tertiary care centres.	

SUNWAY MEDICAL CENTRE

Sunway Medical Centre (SMC) has integrated AI into its radiology services. In partnership with Annalise.ai, SMC has adopted the Enterprise chest X-ray (CXR) technology, leveraging AI to detect up to 124 findings on chest X-rays within seconds. The integration enhances diagnostic speed and accuracy, allowing clinicians to prioritise urgent cases effectively.

Source : <https://www.itnonline.com/content/sunway-medical-centre-teams-annaliseai-improve-patient-care-malaysia>

COLUMBIA ASIA

Columbia Asia is an international private healthcare provider that offers optimum and affordable medical services through its hospitals and clinics. The company automates admissions and discharge processes, uses real-time tracking and visibility for staff and patients, and streamlines interdepartmental communication – reducing the waiting time for ward admission from 3 hours to 1 hour. This results in daily savings of 125 hours, which lowers monthly operational costs and improves customer satisfaction.

MANUFACTURING

Malaysia's manufacturing sector, particularly in the electrical and electronics (E&E), automotive, and machinery industries, is a cornerstone of the nation's export economy. However, many small and medium-sized enterprises (SMEs) continue to rely on outdated equipment and manual labour, limiting their productivity and competitiveness. AI and robotics offer transformative solutions to modernise operations and enhance efficiency.

AI APPLICATION	PRODUCTIVITY IMPACT
• Robotic Automation: Deploy robotic arms and automated assembly lines to handle repetitive or hazardous tasks, increasing precision and reducing human error.	• Increase in output per worker by up to 25 per cent through automation
• Predictive Maintenance : Analyse sensor data, forecast equipment failures before they occur, and schedule maintenance proactively.	• Reduction in equipment downtime by approximately 40 per cent via predictive maintenance
• AI-Driven Quality Control : Real-time inspection systems detect product defects, ensuring consistent quality and reducing waste	• Enhancement in product quality, leading to decreased material wastage
Recommendation : A Smart Factory initiative, proposed under the Ministry of Investment, Trade and Industry (MITI) and SME Corporation Malaysia, could support 10,000 SMEs in adopting affordable robotics and AI tools, complemented by upskilling initiatives and productivity benchmarking to ensure sustainable implementation.	

HEXA FOOD

Hexa Food Sdn Bhd, a Malaysian manufacturer specialising in herbs and spices, exemplifies successful AI adoption in the manufacturing sector. In collaboration with Huawei Malaysia, Hexa implemented AI and Internet of Things (IoT) technologies to modernise its production processes. The integration has improved operational efficiency, including enhanced quality control and reduced waste due to human error.

► Source : <https://theedgemalaysia.com/article/case-study-spices-iot>

LOGISTICS & RETAIL

Malaysia's logistics sector is integral to both domestic commerce and international trade, while the retail industry has shown rapid digital transformation, especially in the post-pandemic era. AI offers opportunities to enhance efficiency, reduce costs, and improve customer satisfaction in these sectors.

AI APPLICATION	PRODUCTIVITY IMPACT
Inventory Optimisation : Employ machine learning algorithms to analyse demand patterns, ensuring optimal stock levels and minimising instances of overstocking or stockouts	Reduction in logistics costs by up to 20 per cent through optimised routing and load management
Route Planning : Tools for fleet management to determine the most efficient delivery routes, reducing fuel consumption and delivery times	Enhanced customer satisfaction due to faster deliveries and improved product availability
Dynamic Pricing : Pricing engines that adjust product prices in real-time based on factors such as demand fluctuations, competitor pricing, and inventory levels.	Increased revenue per transaction through strategic, real-time pricing adjustments.
Recommendation : A Digital Commerce Accelerator, proposed to be led by the Malaysia Digital Economy Corporation (MDEC) in collaboration with logistics associations, could assist 100,000 SMEs in integrating AI tools into their inventory management, customer service, and delivery systems.	

POS MALAYSIA

Pos Malaysia Berhad has started its digital transformation journey to modernise operations and enhance customer experience. Recognising the challenges posed by legacy systems and the increasing demands of e-commerce, Pos Malaysia partnered with Minfy Technologies and Amazon Web Services (AWS) to revamp its Estimated Time of Arrival (ETA) prediction system.

By leveraging AWS's cloud services and AI capabilities, Pos Malaysia developed a scalable, real-time ETA prediction system. This system integrates data from various sources, including IoT-enabled delivery tracking and warehouse systems, to provide accurate delivery estimates. The implementation resulted in a 37 per cent improvement in ETA accuracy and a 70 per cent increase in operational efficiency.

Source : <https://www.minfytech.com/case-studies/pos-malaysia-eta>

DECATHLON

Decathlon Malaysia is a hub for sporting goods, offering over 5,000 sports products. The company introduced a ticketing system to streamline communication between the logistics, store, and warehouse teams. Its automated notifications provide timely updates and follow-ups, enhancing the speed of feedback. This streamlined communication reduced the response time from 14 days to 5 days.



Policy Implications

Digital Divide

Malaysia's productivity uplift target will not be met unless public policy systematically narrows the digital-adoption divide separating large firms from SMEs and rural enterprises.

Fiscal incentives, simplified grant schemes, and a continuously updated digital directory can lower discovery costs, de-risk first implementations, and make embedded AI solutions financially viable for smaller businesses. Without such demand-side stimulation, capital-biased productivity gains will concentrate in a few multinational corporations, intensifying regional and firm-level inequality.

Interoperability and AI Talent

There is a need for a whole-of-government commitment to enhance interoperable data infrastructure and talent pipelines. AI raises capital productivity only when algorithms can learn from large, high-quality datasets and when firms can hire or upskill practitioners who translate insights into process change.

Policies that mandate open, standards-based data exchanges, expand cloud-first procurement rules, and embed AI competencies throughout technical and vocational education will intensify the capital deepening effect, converting sunk ICT expenditure into compound productivity gains.

Sector-focused AI

The evidence supports sector-prioritised AI programmes that align with employment density and national strategic goals. Agriculture, construction, and healthcare host large B40 workforces, exhibit low digital maturity, and offer clear, replicable use cases that can quickly lift output and incomes.

By channelling public-private pilot funds, regulatory sandboxes, and outcome-based subsidies to these verticals first, policymakers can generate visible proof points, crowd in private investment, and accelerate diffusion to higher-productivity subsectors.

Key Takeaways

Digitalisation gaps persist - Malaysian business and rural enterprises score just 4.7 out of 10 for embedded AI adoption, compared to 7.4 globally, which hinders productivity and competitiveness.

Malaysia's capital-productivity ratio fell to 3.3 by 2020, signalling stalled investment returns and an urgent need for technology-driven capital deepening for sustainable growth.

AI's continuous-learning algorithms transform static assets into ever-improving resources, compounding value from data lakes, digital twins, and other intangible assets.

AI Productivity Ecosystem, comprising a provider directory, sector-specific solutions, readiness assessments, digital roadmaps, and proof-point showcases, creates a closed-loop engine that accelerates industry-wide diffusion.

Agriculture, construction, healthcare, manufacturing, and logistics are prime candidates for rapid, inclusive AI-driven productivity gains.

CHAPTER SIX

Productivity-Outcome-Based
Research and Development (R&D)





Productivity-Outcome-Based Research and Development (R&D)

Research and Development (R&D) catalyses a productive growth ecosystem, driving sustainable development and economic competitiveness. Nations that strategically invest in R&D consistently reap substantial benefits, including enhanced innovation, efficient resource utilisation, and improved economic resilience.

For Malaysia, cultivating a vibrant R&D environment is crucial to spur technological advancements and facilitate continuous improvements in productivity across sectors, ultimately achieving high-income status.

The emphasis on productivity-outcome-based R&D directs R&D efforts towards tangible improvements in economic productivity. This approach aligns scientific and technological innovation with clear outcomes such as higher output per worker, process efficiency gains, and enhanced competitiveness of industries.

By focusing on outcomes, research investments translate into real economic benefits rather than remaining academic exercises. The Government recognises that traditional growth drivers must be supplemented by innovation and efficiency gains, as envisioned in the 13MP.

Malaysia is still under-investing in R&D relative to its developmental aspirations. The outcomes of R&D, in terms of commercialised innovations, new high-tech industries, and productivity gains, have not yet met expectations. R&D outcomes must be translated into real economic and social benefits, rather than confined to laboratories.

The outcomes of R&D, in terms of commercialised innovations, new high-tech industries, and productivity gains, have not yet met expectations.

106

R&D Competitiveness

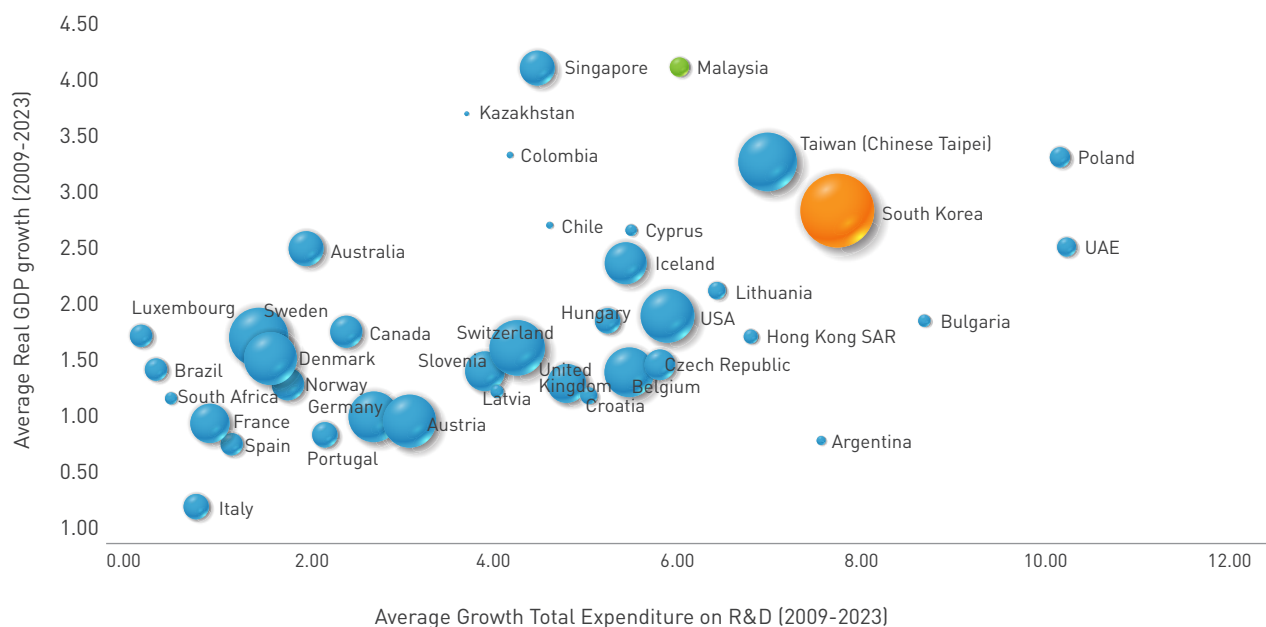
R&D-driven innovation increases productivity and technological progress, raising a country's output. Empirical evidence supports this link that across countries and over time, higher levels and growth rates of R&D activities are positively correlated with higher GDP growth. Economies that devote more resources to R&D tend to innovate more, become more productive, and grow faster.

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R&D produces new products, more efficient processes, and overall improvements in technology. These innovations enhance productivity, enabling more to be achieved with the same resources, which is a fundamental component of GDP growth. Notably, private-sector R&D tends to be especially effective in driving productivity gains.

According to the Institute for Statistics (UIS), nations are increasingly prioritising R&D. The proportion of global GDP spent on R&D rose from about 1.6 per cent in 2015 to roughly 1.9 per cent in 2020. This reflects a broad recognition that science, technology, and innovation are engines of growth.

Figure 38 : GDP Growth and R&D Investment, Selected Countries



Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD)

Note : The size of the bubble indicates the investment in R&D. The bigger the bubble, the bigger the size of the investment in R&D.

The proportion of global GDP spent on R&D rose from about 1.6 per cent in 2015 to roughly 1.9 per cent in 2020. This reflects a broad recognition that science, technology, and innovation are engines of growth.

However, a divide exists between higher-income and lower-income regions. Advanced economies in North America, Europe, and East Asia typically spend around 2–3% or more of their GDP on R&D, whereas many developing regions invest less than 1%. UIS further reported that countries with robust R&D investment tend to have strong high-tech industries, higher value-added output, and greater resilience, while those with minimal R&D investment often rely on lower-tech, lower-productivity activities.

In assessing an economy's R&D competitiveness, the Scientific Infrastructure subfactor, part of IMD's WCR under the broader Infrastructure factor, measures an economy's R&D capacity, scientific resources, and innovation support systems.

The subfactor encompasses both hard data indicators, which feature concrete metrics, such as R&D expenditures, research personnel, and scientific output, as well as soft data indicators, which comprise perception-based measures of the perceived quality of the scientific environment, including R&D legislation and knowledge transfer.

In essence, this subfactor measures the effectiveness of an economy's scientific and R&D ecosystem in fostering innovation and competitiveness.

Malaysia's overall standing in the subfactor is in the middle tier globally, reflecting strengths in certain outputs but clear gaps relative to leading economies.

Malaysia's overall standing in the WCR Scientific Infrastructure subfactor is in the middle tier globally, reflecting strengths in certain outputs but clear gaps relative to leading economies.

In WCR 2025, Malaysia's scientific infrastructure ranks 35th among 69 economies, a decline of 4 spots compared to its 31st place in 2024. The country's performance has been in the middle tier since 2021, in a declining trend. IMD data show Malaysia's scientific infrastructure score declined steadily between 2021 and 2024, with a mild uptick by 4.9 points in 2025.

Malaysia's overall ranking in the Scientific Infrastructure subfactor is reflected in most of its rankings in R&D-related indicators, which fall between the average and below-average tiers, ranking between 31st and 49th place among 69 economies in 2025.

Table 9 : Malaysia's Rankings in WCR 2025 in R&D-Related Indicators under the Scientific Infrastructure (n=69)

Indicator	WCR 2025 Rank
1. Total expenditure on R&D (\$) - US\$ Millions	33
2. Total expenditure on R&D (%) - Percentage of GDP	40
3. Business expenditure on R&D (\$) - US\$ Millions	34
4. Business expenditure on R&D (%) - Percentage of GDP	38
5. Total R&D personnel - Full-time work equivalent (FTE thousands)	31
6. Total R&D personnel per capita - Full-time work equivalent (FTE) per 1000 people	47
7. Researchers in R&D per capita - Full-time work equivalent (FTE) per 1000 people	49

Source : World Competitiveness Yearbook (WCY) 2025, Institute for Management Development (IMD)

This indicates a weakening of research capability and resources. One cited reason is a slowdown in R&D activities as Malaysia redirected resources to post-pandemic recovery efforts.

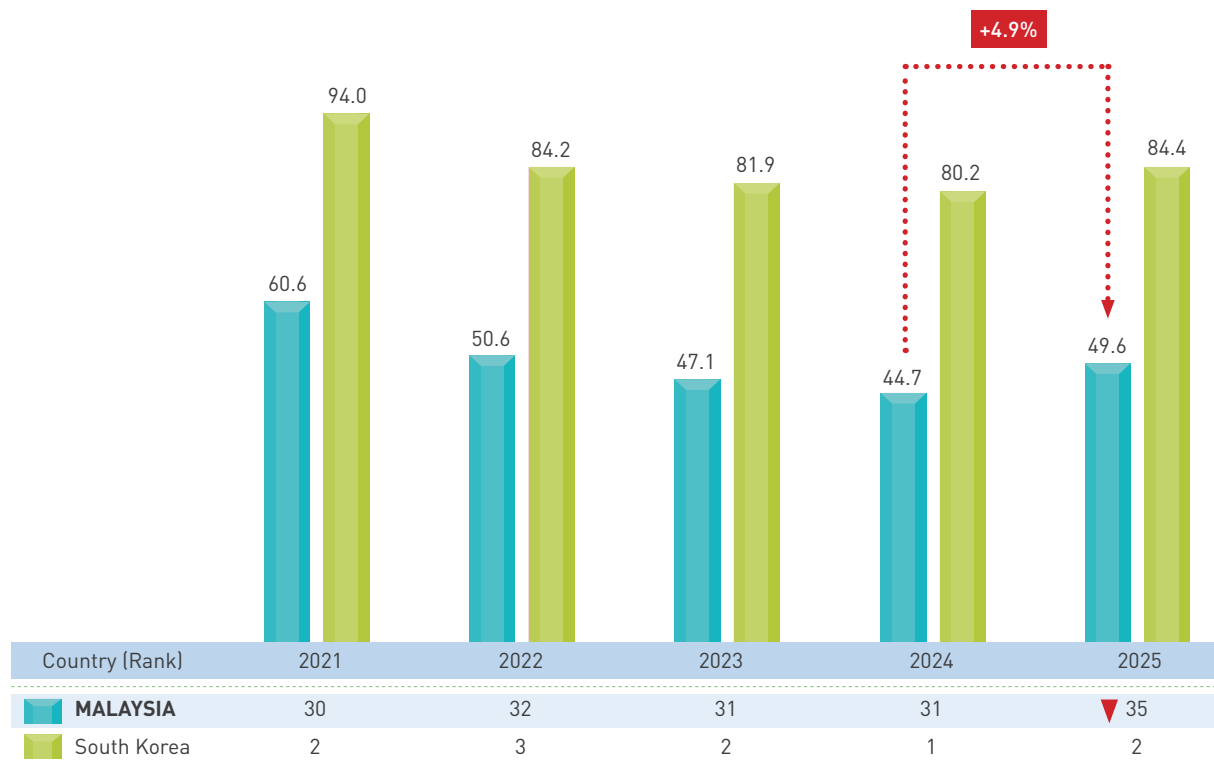
By contrast, South Korea's scientific infrastructure remains world-leading. Between 2021 and 2025, the country ranked among the leading economies, consistently occupying first or second place, with scores ranging from 80 to 94.

South Korea's outstanding performance has been underpinned by substantial and sustained investment in R&D and technological development. Its transformation from a low-income economy into an innovation-led, high-income economy aligns with Malaysia's aspirations.

Although both countries began from a similar starting point, South Korea's economy and productivity surged after 1985. The success of its policies to raise productivity through technology, innovation and a robust R&D ecosystem is evident in its consistent top positions in competitiveness rankings for Scientific Infrastructure and R&D expenditure.

Figure 39 : Malaysia and South Korea's Competitiveness Rankings in WCR Scientific Infrastructure, 2021-2025

Scientific Infrastructure's Score



Source : World Competitiveness Yearbook (WCY), Institute for Management Development (IMD)

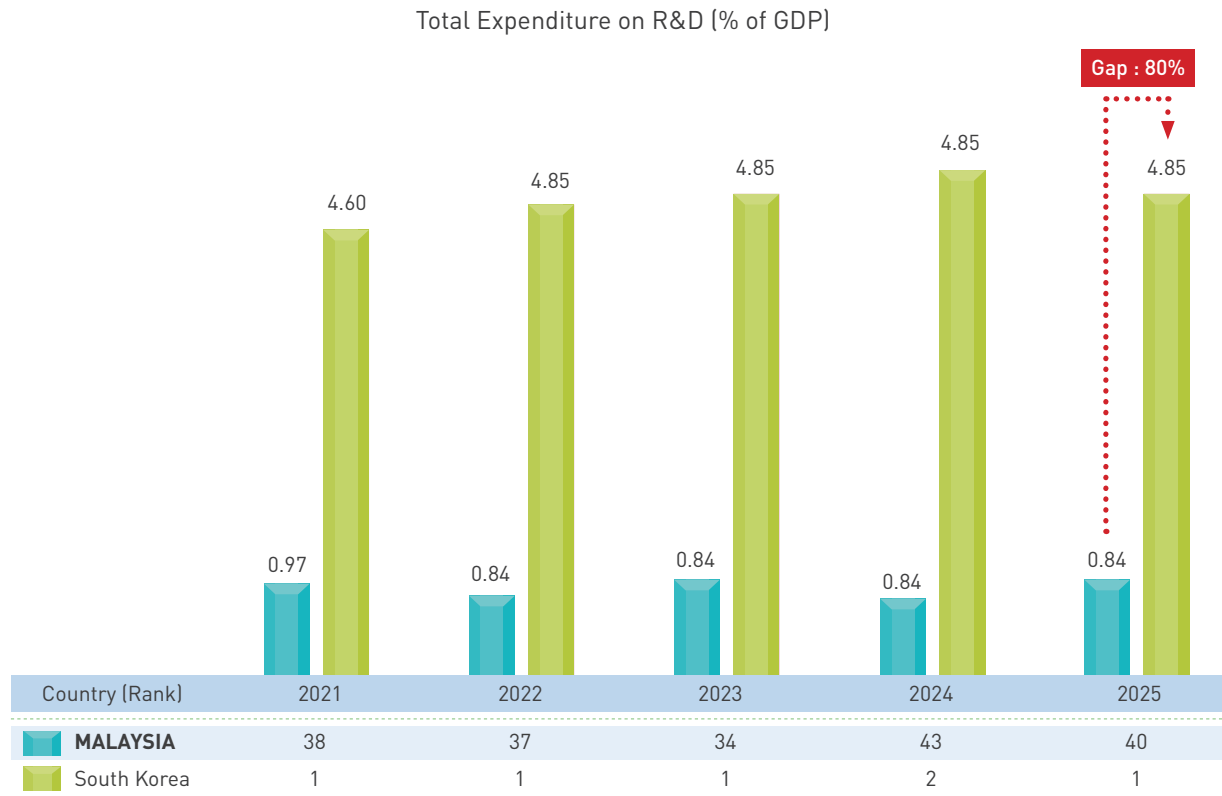
Over the five-year period from 2021 to 2025, Malaysia's competitiveness rankings for GERD showed a minimal upward trend, oscillating between around 0.8 per cent and 1.0 per cent. In 2021, Malaysia invested about 0.97 per cent of GDP in R&D, but this dropped to 0.84 per cent in 2022, then rebounded to 1.0 per cent in 2023, only to fall sharply to 0.80 per cent in 2024 before recovering to 1.0 per cent in 2025.

These swings indicate an inconsistent commitment to R&D funding as gains made one year were not sustained the next. Malaysia's global ranking in R&D expenditure reflected this volatility, starting around 38th in 2021, improving to 34th by 2023, then slipping to 43rd in 2024 before showing an improvement at 40th place in 2025.

In other words, Malaysia made marginal progress relative to other countries over the period. Malaysia's decline in R&D share as reported in WCR 2024 caused it to lose ground in the R&D competitiveness ranking, underscoring how sensitive its position is to even small funding changes.

From 2021 to 2025, Malaysia's competitiveness rankings for GERD showed a minimal upward trend, oscillating between around 0.8 per cent and 1.0 per cent.

Figure 40 : Total Expenditure on R&D (% of GDP), Malaysia VS South Korea, 2021 - 2025



Source : World Competitiveness Yearbook (WCY), Institute for Management Development (IMD)

In WCR 2025, the R&D investment gap between Malaysia and South Korea is reported at approximately 80 per cent. The gap represents a gulf in innovation capacity. It implies that Malaysia's researchers and innovators are operating with a fraction of the resources their South Korea counterparts enjoy. Over time, such a gap can become self-reinforcing that countries with higher R&D investment pull further ahead by developing new technologies and industries, while lower-investing countries struggle to keep up.

Unless Malaysia can dramatically and consistently raise its R&D investments, the gap will continue to contextualise Malaysia's innovation lag, a clear indicator of how much catching up is needed to reach parity with innovation leaders.

The challenge for Malaysia's policymakers is to narrow this gap in the coming years through sustained funding increases, incentives for private R&D, and effective innovation policies.

Unless Malaysia can dramatically and consistently raise its R&D investments, the R&D gap will continue to contextualise Malaysia's innovation lag, a clear indicator of how much catching up is needed to reach parity with innovation leaders.

R&D Performance

Malaysia's gross expenditure on R&D (GERD) grew significantly from the start of the century until the mid-2010s, before experiencing a downturn by 2020.

In 2000, Malaysia spent approximately 0.5 per cent of its GDP on R&D, but this increased to over 1.1 per cent by 2012. GERD continued to rise and peaked around 2016, reaching 1.42–1.44 per cent of GDP at approximately RM17.7 billion. This marked the high-water point of Malaysia's R&D intensity, nearly tripling the investment since 2008.

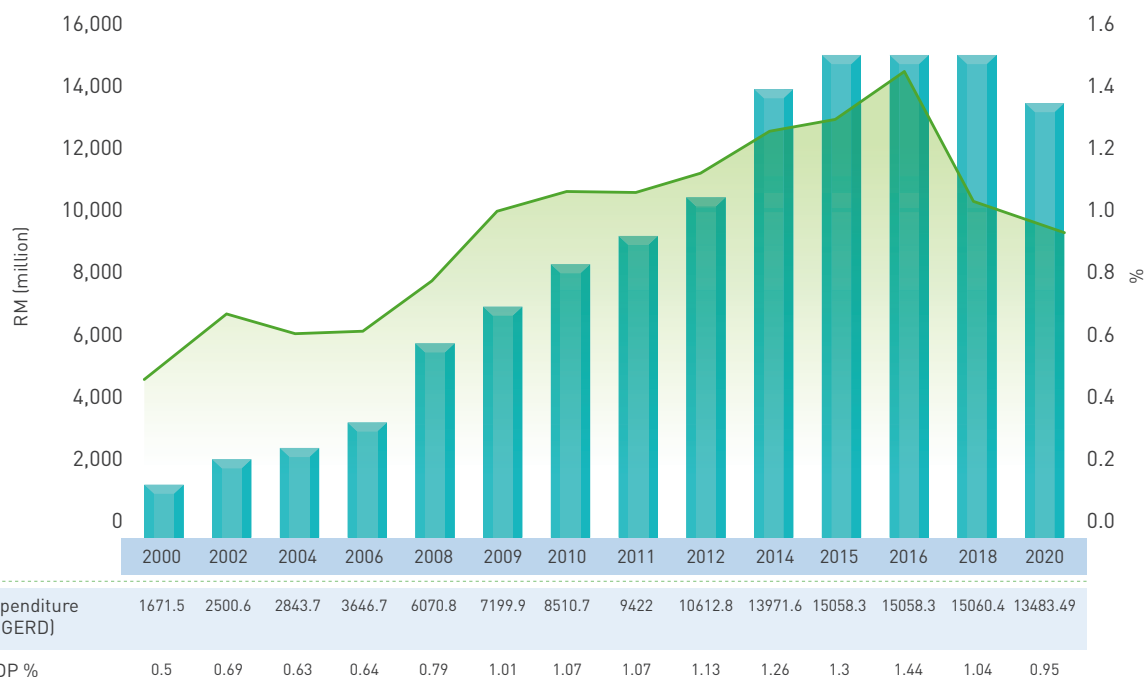
However, after 2016, the trend reversed, with R&D spending declining over the next few years. By 2018, GERD had decreased to RM15.06 billion, accounting for approximately 1.04 per cent of GDP, and by 2020, it further dropped to 0.95 per cent of GDP at approximately RM13.5 billion. Several policy initiatives and economic factors drove the robust growth in R&D investment during the 2000s and early 2010s.

The government made science and innovation a strategic priority as part of Malaysia's push towards a knowledge-based economy. For instance, in 2007, five public universities were designated as Research Universities (RU), signifying a commitment to bolster research capacity in higher education.

Substantial public funding schemes, including research grants and tax incentives, were introduced in the Eighth and Ninth Malaysia Plans to stimulate R&D in academia and industry.

These efforts could have led to dramatically higher R&D spending, as Malaysia's GERD nearly tripled from 2008 to 2016, rising from about RM6.07 billion in 2008 to more than RM15 billion in 2016. During this period, R&D intensity increased from approximately 0.6–0.8 per cent in the mid-2000s to above 1 per cent by 2010, reflecting steady growth in research investments.

Figure 41 : Malaysia's R&D Expenditure Trend, 2000 - 2020



After 2016, Malaysia's R&D investment trajectory reversed, with significant declines in 2018 and 2020. Shifts in government policy and priorities might have played a major role, as around 2017 – 2018, Malaysia underwent political changes and fiscal tightening.

Economic climate fluctuations also contributed. A downturn in global oil prices after 2014 affected Malaysia's public revenues, resulting in cuts to discretionary spending, which likely included reductions in R&D funding.

After 2016, Malaysia's R&D investment trajectory reversed, with significant declines in 2018 and 2020.

By 2018, growth in R&D-intensive sectors had slowed, and some firms scaled back research spending amid profit pressures. The late 2010s also saw Malaysia grappling with other urgent priorities, for instance, reducing national debt, which may have diverted attention from research investment.

By 2020, the COVID-19 pandemic struck, further impacting R&D investment. The pandemic forced the government to redirect funds towards public health and economic relief, while many companies cut R&D budgets to conserve cash during the crisis.

Although some COVID-related research was boosted, overall GERD fell in 2020 as non-essential research activities were scaled down. The net effect was GERD sinking to 0.95 per cent of GDP in 2020, the lowest level in over a decade.

In 2021, Malaysia's GERD reportedly fell to 0.9 per cent of GDP. This decline is concerning, as it indicates the country is drifting further from the 12MP target of 2.5 per cent by 2025.

In terms of global competitiveness, Malaysia's R&D investment level by 2020 lags behind that of leading innovative nations. At around 1 per cent of GDP, Malaysia's research effort is below the world average and eclipsed by countries like South Korea, as well as advanced peers such as Singapore and Japan.

This wide gap implies that Malaysia risks falling behind in developing cutting-edge industries and intellectual property generation. The country's ambitions to be a regional technology leader are challenged when R&D spending falls back.

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CREAM BOOSTS R&D IN CONSTRUCTION

Despite the growing momentum, the implementation of R&D in the construction sector still faces significant challenges, including limited access to funding, fragmented coordination among stakeholders, and a shortage of skilled researchers. Many innovations remain in pilot stages due to a lack of commercialisation pathways or awareness among industry players.

As the R&D arm of the Construction Industry Development Board (CIDB), the Construction Research Institute of Malaysia (CREAM) is pivotal in driving R&D and innovation in the Malaysian construction industry. Through a wide range of services and strategic partnerships, CREAM supports national construction policies and spearheads efforts to improve quality, productivity, and sustainability.

In a major milestone, CREAM has achieved the status of an Approved Research Institute (ARI) under Section 34B of the Income Tax Act 1967, as granted by the Ministry of Finance (MOF). This designation enables any individual or company that contributes to or funds research to CREAM to qualify for a Double Tax Deduction (DTD). CREAM has been accredited as a Certification Body, Accredited Laboratory, and Accredited Inspection Body under ISO/IEC 17065, ISO/IEC 17025, and ISO/IEC 17020, respectively, by the Department of Standards Malaysia.

Research and innovation have begun to deliver tangible productivity gains across Malaysia's construction sector. The adoption of technologies such as Building Information (BIM), Industrialised Building System

(IBS), and digital project management tools has streamlined workflows, improved cost-efficiency, and enabled better utilisation of resources. Innovations have also contributed to reduced rework, minimised material waste, and faster project completion.

Moreover, the upskilling of the construction workforce through training programmes led by CIDB has further amplified these gains, creating a more agile and digitally literate labour force. As a result, projects are being delivered with higher quality, enhanced cost control, and improved safety outcomes.

CREAM has also developed measurement tools to assess productivity in the construction industry, namely the Productivity Measurement Tool (PMT), which measures productivity in the construction industry at the macro level, and the Trade-Level Productivity Measuring Tool (TL-PMT), which measures productivity on construction sites at the micro level.

In the long term, continued investment in R&D will not only elevate the industry's performance metrics but also strengthen Malaysia's ability to deliver infrastructure that meets the demands of economic competitiveness, climate resilience, and sustainable development.

Contributed by: Ir. M. Ramuseren, Maria Zura Mohd Zain, Ts. Intan Diyana Musa, and Dr. Norashikin Rahmat.

Source: <https://www.cream.my/>



Declining Business R&D

R&D activities in Malaysia are conducted by Business Enterprises (BEs), Government Research Institutes (GRIs), Higher Learning Institutions (HLIs), and non-governmental organisations (NGOs). Between 2000 and 2020, a significant structural shift occurred in the country's R&D landscape, with a notable change in who performed R&D.

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In the early 2000s, BEs dominated R&D activities, accounting for roughly 58 per cent of total R&D spending in 2000, and rising to an overwhelming 85 per cent by 2006 as private-sector R&D surged.

During this period, the shares of GRIs and HLIs were comparatively small and even declined in relative terms. The GRI share fell from 25 per cent in 2000 to under 10 per cent by 2006, while the HLI share dipped from 17.1 per cent to around 10 per cent in that same timeframe.

This early dominance of business R&D indicates that private companies, including large firms and multinational corporations, were the primary drivers of Malaysia's R&D growth in the 2000s. Such a pattern was in line with policy aspirations for industry-led innovation, as Malaysia initially achieved a private-to-public R&D spending ratio even higher than the envisioned 70:30 split, favouring the private sector.

After the mid-2000s peak, the share of business R&D began to erode. From 2006 onward, the composition shifted as other sectors, particularly HLIs, ramped up their research involvement. By 2010, the BE share had dropped to around 65 per cent, and this decline accelerated into the 2010s. Universities and public research institutes gradually filled the gap.

A central structural turning point occurred in the mid-2010s as the long-standing dominance of business sector R&D gave way to a more balanced, if not reversed, composition.

By 2014, Malaysia's universities collectively conducted approximately the same amount of R&D as the business sector. The composition had shifted from industry dominance to a more balanced mix of public and academic sectors.

By 2020, this rebalancing trend reached an extreme. The data indicate that HLIs surpassed the industry as the largest R&D-performing sector. Universities were carrying out almost half of the nation's R&D, while the business sector's share declined to roughly one-third.

This represents a dramatic reversal from two decades earlier, a structural change where R&D activities shifted onto public-sector actors rather than private firms. Part of this shift can be attributed to purposeful increases in public R&D investment and part to a relative stagnation or reduction in private R&D spending in the late 2010s.

A dramatic reversal from two decades earlier indicates a structural change where R&D activities shifted onto public-sector actors rather than private firms.

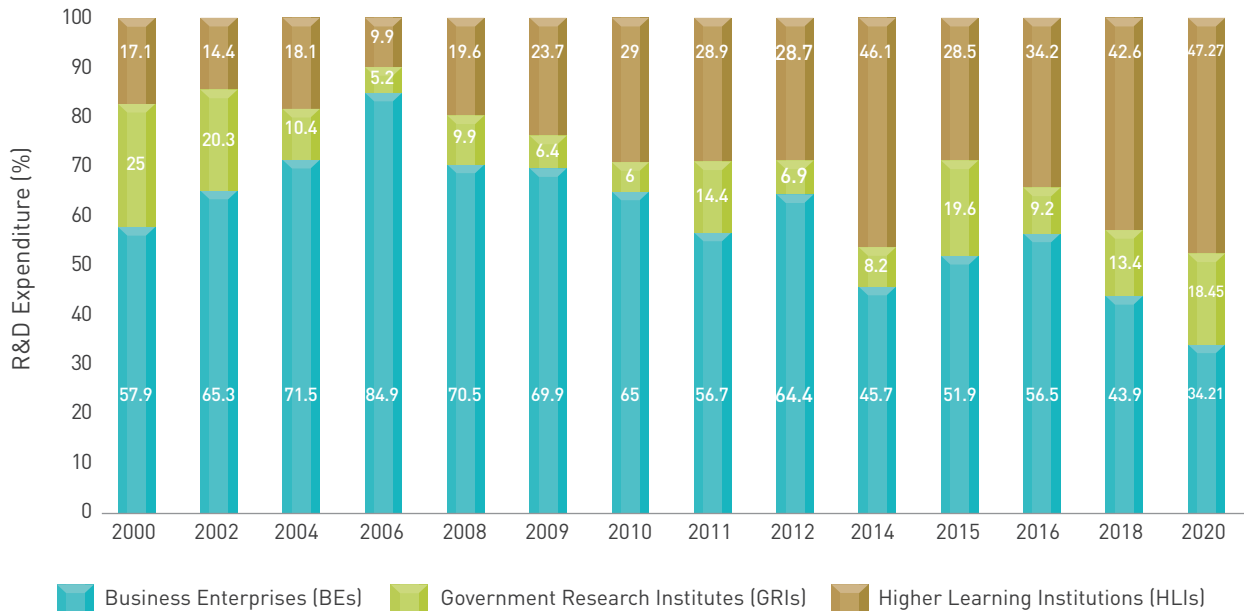
Malaysia's sectoral R&D mix in 2020 stands in contrast to most advanced, innovation-driven economies. In leading countries, business enterprises typically account for approximately 60 to 80 per cent of R&D, with universities and government labs playing supporting roles.

This structural change raises important considerations about the country's R&D and innovation ecosystem.

Malaysia's R&D profile is tilting towards universities and government institutes, expanding fundamental research and the talent pipeline, but the simultaneous retreat of business R&D is a clear warning signal.

With GERD to about 1 per cent of GDP, the country risks under-investing in development and commercialisation, the stages that convert ideas into marketable products and services. Public spending tends to sit upstream, without a strong industrial base; therefore, translating it into market-driven innovation will remain constrained.

Figure 42 : R&D Expenditure Distribution by Category, 2000 - 2020



Source : Malaysian Science, Technology Information Centre (MASTIC)

As public actors now generate a larger share of research, effective university–industry transfer becomes pivotal. Existing instruments, such as matching grants, innovation vouchers, and commercialisation programmes, help; yet, cultural gaps, misaligned incentives, and administrative frictions still blunt collaboration. The result is that too much research output remains in laboratories and too little reaches firms.

Too much research output remains in laboratories and too little reaches firms.

The consequences for business productivity are direct. Firm-level R&D builds proprietary capabilities; its decline suggests more reliance on imported technologies and fewer high-value productivity gains. SME participation is especially weak, limiting diffusion of innovation across the enterprise base and reinforcing productivity gaps with aspirational peers.

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Competition-wise, with only about one-third of R&D performed by businesses, speed-to-market and attractiveness for high-tech investment are at risk. Substantial public spending is strengthening human capital and research infrastructure; however, without complementary growth in industry-led R&D, scientific strengths will be challenging to convert into commercial advantage. Meeting ambitious R&D-intensity targets and keeping pace with innovation leaders will remain challenging if current patterns persist.

Without complementary growth in industry-led R&D, scientific strengths will be challenging to convert into commercial advantage.

Outcome-based R&D

Malaysia's growth ambition requires a decisive pivot from input-heavy to productivity-outcome-based R&D.

As evidenced by R&D impact: a 1 per cent rise in investment in technology, new products and services, and modern management is associated with a +0.39 per cent lift in GDP and +0.17 per cent in productivity per worker in Malaysia, versus +0.51 per cent and +0.30 per cent respectively in South Korea.

The largest gap lies in skills formation, at +0.29 per cent for Malaysia against +1.37 per cent for South Korea.

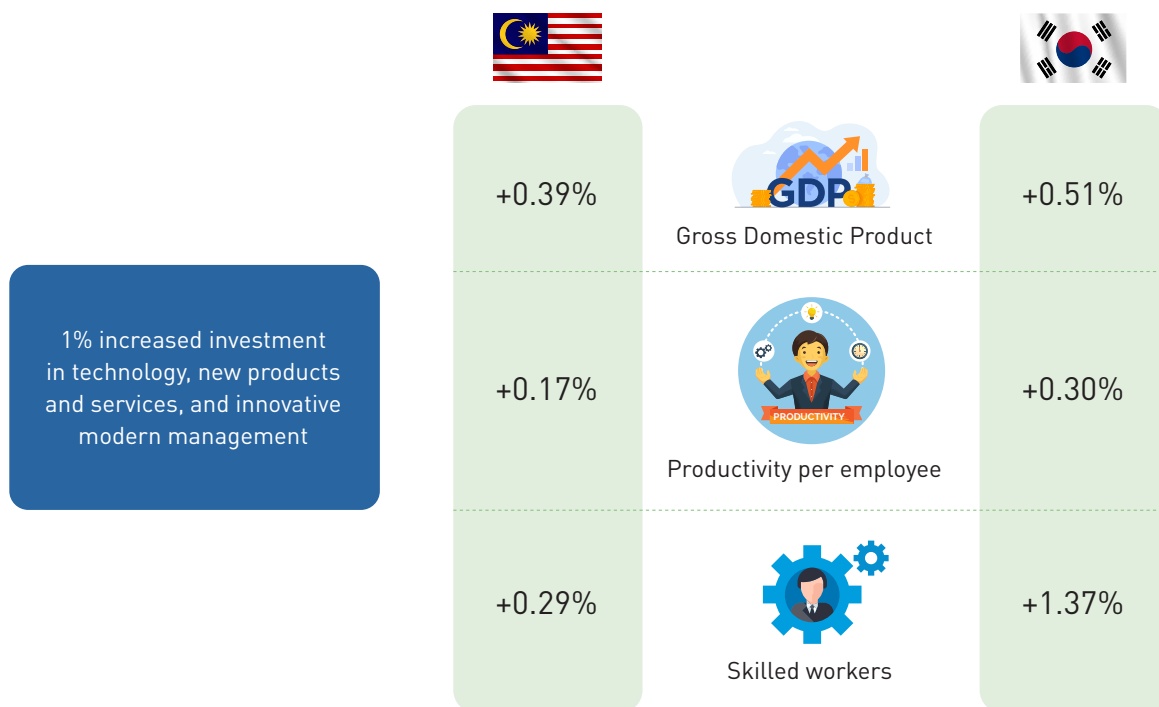
Malaysia's innovation efforts yield smaller productivity effects than a high-performing benchmark, and this weaker transmission is what limits the impact on GDP.

Malaysia's R&D system must be judged by, and steered towards, measurable productivity outcomes – commercialisation, unit-cost reductions, process yields, time-to-market, and adoption at the firm level – rather than spending totals alone.

Malaysia's growth ambition requires a decisive shift from input-heavy to productivity-outcome-based R&D.

This approach aligns R&D efforts with national productivity goals and the needs of industry, ensuring that innovation drives value-added in the economy. The 13MP reinforces this shift, setting targets, such as raising GERD/GDP to 2.5 per cent and increasing private sector R&D to 70 per cent.

Figure 43 : R&D Impact on GDP, Productivity, and Skilled Workers



R&D Satellite Account

A foundational step is to upgrade R&D metrics and data governance, enabling policymakers to “measure what matters” in the new outcome-based paradigm. For this, developing an R&D satellite account, a dedicated accounting framework that integrates R&D into the national accounts, is crucial. This elevates R&D visibility and treats R&D as a long-term economic asset rather than a mere expense.

The satellite account should align with international standards, such as OECD’s Frascati Manual, to capture the full contribution of R&D to GDP and productivity. By systematically tracking R&D investment, outputs, and value-added across sectors, the account addresses current data fragmentation and provides a robust evidence base for policy.

Crucially, it will shed light on the effectiveness of R&D spending, for example, by quantifying how much of GDP growth or productivity improvement can be attributed to R&D-driven innovation.

This evidence can help justify sustained public R&D funding and incentivise private investment by showcasing returns. A comprehensive R&D satellite account situates R&D squarely within the national economic narrative, enabling Malaysia to benchmark progress and identify gaps in real-time, while signalling to stakeholders that R&D is being managed as a strategic asset.

Upgrading R&D metrics and data governance enables policymakers to “measure what matters” in the new outcome-based paradigm.

PIRMS

Complementing the satellite account at the macro level is the Productivity & Innovation Results Monitoring System (PIRMS) at the micro level. PIRMS is envisioned as a robust online platform to monitor and evaluate the actual outcomes of R&D activities across ministries and programmes.

Rather than relying on simplistic output metrics, such as the number of projects or papers, PIRMS can track indicators including commercialisation rates, patents licensed, spin-off companies created, cost savings achieved in firms, improvements in productivity metrics, and other markers of innovation diffusion.

All R&D projects funded by the government should be registered in this centralised system, enabling end-to-end tracing from funding to final result.

This represents a critical shift in accountability, as agencies will need to report not only their spending and activities, but also the actual outcomes of those activities. A public-facing dashboard could share key performance data, promoting transparency and public awareness of R&D impacts.

Internally, PIRMS will feed into a cycle of continuous improvement as policymakers can identify which programmes or projects are delivering productivity gains and which are underperforming, allowing data-driven decisions to reallocate resources.

In essence, PIRMS operationalises the maxim “what gets measured gets done” by making productivity outcomes the metric of success. It also facilitates cross-ministerial learning: for example, if one sector’s R&D voucher programme yields exceptional productivity gains for SMEs, that model can be scaled or adapted elsewhere.

PIRMS operationalises the maxim “what gets measured gets done” by making productivity outcomes the metric of success.

Outcome-Based Funding

Armed with better metrics, R&D funding instruments will reward results and leverage greater private sector participation.

A flagship initiative is the introduction of productivity-linked R&D grants, exemplified by the Productivity Grant 2.0. This programme departs from traditional research grants by employing an innovative 40–40–20 co-funding model, where the government covers an initial portion, industry or other partners commit a matching 40 per cent, and the remaining 20 per cent is disbursed only upon achieving the agreed-upon performance targets.

By conditioning part of the funding on outcomes, the grant shifts the incentives that research teams must define from the start, focusing on the productivity or commercial outcomes they aim to deliver. As a result, firms are more likely to participate and co-invest.

Tying public R&D funding to clear productivity gains encourages more demand-driven and translational research projects. It addresses the low commercialisation, where only projects with credible paths to market or productivity improvements receive funding, and final grant tranches hinge on moving the innovation out of the lab.

By conditioning part of the funding on outcomes, Productivity Grant 2.0 shifts the incentives that research teams must define from the start, focusing on the productivity or commercial outcomes they aim to deliver.

At the same time, Malaysia recognises that SMEs and mid-tier firms must be active participants in the innovation ecosystem, not just large corporations or research institutes.

To spur innovation diffusion and adoption among smaller businesses, the productivity booster incentive scheme could be implemented. This programme provides grants or innovation credits to SMEs, which they can redeem for technology solutions, consulting services, or technical assistance that boosts their productivity.

In practice, an SME could use the incentive to collaborate with a university or tech provider to implement a new process automation or to acquire and adapt a proven technology relevant to their operations.

By lowering the cost barrier, the scheme directly incentivises SMEs to adopt R&D outputs and modern technologies, addressing the chronic under-participation of SMEs in R&D and innovation activities.

The incentive is essentially a targeted stimulus for productivity improvement at the firm level, and the outcomes are expected to be tangible and rapid. For instance, under the programme design, participating firms are expected to achieve at least a 10 per cent reduction in unit costs as a result of technology adoption.

Such quick wins enhance the performance of individual businesses and demonstrate the value of innovation to the broader SME community, creating a ripple effect of technology adoption.

R&D Clusters

Transforming R&D towards outcomes requires breaking down the silos between research producers and research users. Establishing productivity-focused R&D clusters through strategic, mission-driven collaborations will unite researchers, industry stakeholders, and government agencies around priority themes.

These clusters are mini-innovation ecosystems focused on solving specific productivity challenges or developing high-impact technologies. Within the cluster, research agendas can be co-created where industry voice sets the problems to be solved, academic and GRI researchers contribute R&D expertise, and policymakers can streamline regulatory or funding support for the cluster's projects.

R&D clusters are mini-innovation ecosystems focused on solving specific productivity challenges or developing high-impact technologies.

Combining expertise and aligning incentives directly addresses the long-standing issue of weak university–industry linkages. This should help bridge the cultural and incentive gaps that have hindered collaboration.

Each cluster is expected to serve as an end-to-end innovation pipeline in its focus area, from fundamental research to applied R&D, pilot testing, through to commercialisation and scaling in the market.

R&D Clusters operationalise the quadruple helix model at a practical level, aligning all parties to produce solutions for Malaysia's economic priorities, whether in high-tech manufacturing, green technologies, or digital services.

Beyond direct outputs, the cluster approach fosters social capital within the innovation system, a network of trust and cooperation between academia and industry, that is invaluable for sustained productivity growth.



Policy Implications

Shift to Outcome

Malaysia can enhance its R&D efforts to achieve a stronger economic impact by pivoting decisively to productivity-outcome-based R&D. Aligning projects with clear metrics, such as commercialisation, unit-cost reduction, process yields, and firm-level adoption, will anchor the 13MP ambition and translate research into growth. Framing today's GERD level as a springboard, not a constraint, positions Malaysia to accelerate innovation diffusion and sustainably lift labour productivity.

Business R&D

The evolving performer mix is an advantage if harnessed well. Universities' expanding role can be paired with mission-driven collaborations that make businesses co-owners of results and bring SMEs into the mainstream of innovation. Crowding-in business R&D through matching finance and adoption instruments will strengthen demand-pull, speed diffusion across supply chains, and convert public research into competitive products and processes.

Measure What Matters

Positive governance reforms can have a lasting impact. An R&D Satellite Account and PIRMS will "measure what matters", while outcome-linked grants, productivity vouchers and thematic R&D clusters will reward delivery, reduce duplication and coordinate ministries. A stop-scale-shift discipline, reported via transparent dashboards, can rebuild business confidence, raise the business R&D share, and ensure that every public ringgit buys measurable productivity gains and widely shared prosperity.

Key Takeaways

Malaysia must shift towards productivity-outcome-based R&D, as GERD hovers at 0.8–1.0 per cent of GDP. WCR rankings in Scientific Infrastructure and its indicators remain mid-tier to below average, and a nearly 80% gap to South Korea persists.

The performer mix has inverted: universities conduct nearly half, businesses about one-third, weakening demand-pull and commercialisation unless business R&D participation is deliberately increased.

An R&D satellite account and PIRMS will measure what matters, integrate data, track project outcomes, and enable stop-scale-shift decisions aligning funds with demonstrable productivity gains.

Outcome-linked Productivity Grants, SME productivity vouchers, and mission-oriented R&D clusters incentivise co-funding, accelerate adoption, and lift commercialisation, diffusing innovation across supply chains.

Sectoral evidence, demonstrates that outcome-based R&D is already delivering faster delivery, lower waste, safer sites, and scalable productivity improvements.

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