MALAYSIA DIGITAL

MDEC™

HORIZON

A PERSPECTIVE OF MALAYSIA'S DIGITAL ECONOMY

HORIZON 2023/2024

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Preparing for a Future Workforce shaped by Gen AI

Blazing the Trail towards Women's Empowerment in Digital and Technology Ecosystem

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FOREWORD

YB TUAN GOBIND SINGH DEO

MINISTER OF DIGITAL

Salam Perpaduan and Salam Malaysia MADANI to esteemed readers.

The second edition of Horizon comes at a pivotal time in our history as we stand at the precipice of a new era, one defined by the boundless potential of technology. As we embark on this extraordinary journey of digital transformation, Horizon emerges as our compass. In a world rapidly reshaped by artificial intelligence and data-driven innovation, the opportunity is now to craft a future where technology serves as a catalyst for human progress. By building a vibrant digital ecosystem, we can unlock the full potential of our society and economy, creating a world that is not only connected, but inspired.

The Ministry of Digital is at the vanguard of Malaysia's digital revolution, propelling our nation to the forefront of ASEAN as a premier hub for digital innovation and investment. By cultivating a fertile ground for digital investment, constructing a robust digital infrastructure, facilitating partnerships, offering incentives and nurturing world-class talent, we are forging a path to becoming a global digital powerhouse.

Moving forward in the broad digital landscape, Malaysia should be intentional and focused on three critical areas – I.C.T, namely Infrastructure, Cybersecurity and Talent. Firstly, Infrastructure means ensuring widespread and inclusive access to digital infrastructure and technology for the society as well to attract more foreign investments into the country. Recent digital investments have been largely fuelled by major companies like Microsoft, Google, GDS and more setting up their cloud infrastructure and data centres in Malaysia.

Secondly, in Cybersecurity, the Ministry is currently overseeing various measures to ensure data protection and privacy for both Rakyat and businesses. This includes introducing comprehensive data protection regulations to safeguard personal information and ensure transparency in data usage, for example through the recent enactment of Malaysia Cybersecurity Act 2024 (Act 854), which establishes a robust cybersecurity policy framework.

Lastly, we need to nurture future generations to ensure a steady supply of Talent to meet the demand of the digital industries. A whole-of-nation approach is required where federal ministries, state agencies, private sector players, as well as academicians must come together to collaborate with the ultimate aim of cultivating more digital talents that meet the needs of digital investors and ecosystem players.

The future of Malaysia's digital economy is undeniably bright. Fuelled by our collective vision, strategic initiatives, and the indomitable spirit of our people, we are poised to achieve unprecedented heights. As we navigate the complexities and challenges of the digital era, Horizon stands as a beacon of progress, illuminating the path forward.

Finally, I encourage you to envision the limitless possibilities. I extend my heartfelt gratitude to all who have contributed to the thought leadership articles and everyone else involved in bringing this publication to life.

Chairman's MESSAGE

YB TUAN SYED IBRAHIM SYED NOH

CHAIRMAN OF MALAYSIA DIGITAL ECONOMY CORPORATION (MDEC)

Salam Perpaduan and Salam Malaysia MADANI to esteemed Horizon readers,

As the Chairman of the Malaysia Digital Economy Corporation (MDEC), I am honoured to present this message, reflecting on our crucial role in shaping Malaysia's digital economy. MDEC continues to drive Malaysia's economic transformation journey through strategic digital interventions. Our mission to accelerate the growth of Malaysia's digital economy, fostering innovation and enhancing the nation's competitiveness on the global stage, must be balanced with bringing impact to the society in this country. Through strategic initiatives and collaborations, we are committed to creating a vibrant digital ecosystem that empowers businesses, entrepreneurs and the workforce.

MDEC brings many elements into play, igniting a fire of innovation that keeps the digital ecosystem thriving. As the lead agency driving the nation's digital economy, we aim to empower Malaysians with the tools, skills, and opportunities needed to thrive in the digital age. We are laying the foundation for a dynamic and inclusive digital ecosystem through a comprehensive national strategic initiative called Malaysia Digital (MD). Malaysia's workforce must be ready with the digital skills to thrive in a rapidly evolving digital landscape to capture future opportunities and adapt to all challenges.

As we look to the future, I am filled with optimism. The path ahead is paved with opportunities and challenges requiring our collective ingenuity and resilience. I am confident that with continuous support from our partners, stakeholders and the broader community, we will achieve our vision in making Malaysia a leading digital nation. We will continue to explore new frontiers, embrace emerging technologies, and create opportunities for all Malaysians to participate in the digital economy.

I invite you to delve into the pages of Horizon with curiosity and enthusiasm. Let it be a source of knowledge, inspiration and a catalyst for new ideas that will propel us towards a brighter, more connected future.

I would like to express my gratitude to the Malaysian government, our partners, and the various contributors to Horizon for their unwavering support and commitment. Let us continue to work together to realize Malaysia's digital ambitions.

Thank you.

CEO's MESSAGE

Ts. MAHADHIR AZIZ

CHIEF EXECUTIVE OFFICER OF MALAYSIA DIGITAL ECONOMY CORPORATION (MDEC)

It is with great pride that I present the second edition of Horizon. Congratulations to the team and the contributors for their dedication and hard work in making Horizon MDEC's flagship publication for the digital economy a remarkable success. Kudos!

Horizon embodies our nation's remarkable journey towards becoming a global leader in the digital economy. It captures the thought leadership and analysis positioning Malaysia towards a vibrant digital economy. Covering a broad spectrum of topics—from Artificial Intelligence (AI) and blockchain to e-commerce and fintech—Horizon delivers compelling content on digitalisation, exemplifying insights from the brightest minds in the digital space including successful entrepreneurs, industry leaders and researchers.

The digital revolution is reshaping our world at an unprecedented pace, including but not limited to economic growth, technological advancements, talent mobility, tech urbanisation, clean technology, and many more areas. At the heart of it stands MDEC, privileged to be at the forefront of these global transformations. Through the national strategic initiative, Malaysia Digital (MD), we are not merely participants but architects of Malaysia's digital destiny by influencing and driving Malaysia's digital economy.

In recent times, there have been many achievements that MDEC is proud of. In 2023, MDEC facilitated RM 46.22 billion in digital investments, surpassing its target of RM 30 billion by 54%. As a result of these investments, 22,260 high-value jobs were created. MD companies collectively achieved a revenue of RM 9.67 billion, exceeding MDEC's target of RM 7.5 billion by 29%. Additionally, MDEC facilitated RM 3.63 billion worth of digital exports in 2023, marking a 221% growth from 2021. These exports reached 17 countries, led by Indonesia, the Philippines and Vietnam.

This year, some of MDEC's exciting initiatives include the introduction of MD tax incentives and the implementation of national e-Invoicing, both aimed at providing significant support to digital businesses. The MD tax incentives offer a wider range of incentives for MD Status companies and existing MD companies, including non-intellectual property (IP) tax allowance and investment tax allowance, while the national e-Invoicing initiative, jointly led by MDEC and Lembaga Hasil Dalam Negeri (LHDN), aims to empower businesses of all sizes to embrace digitalisation and streamline their financial processes.

We invite you to join us in embracing the future with confidence and determination as we collectively shape a more prosperous digital economy. With Horizon, you are not just staying informed; you are actively participating in the evolution of our digital economy.

Thank you for reading Horizon.

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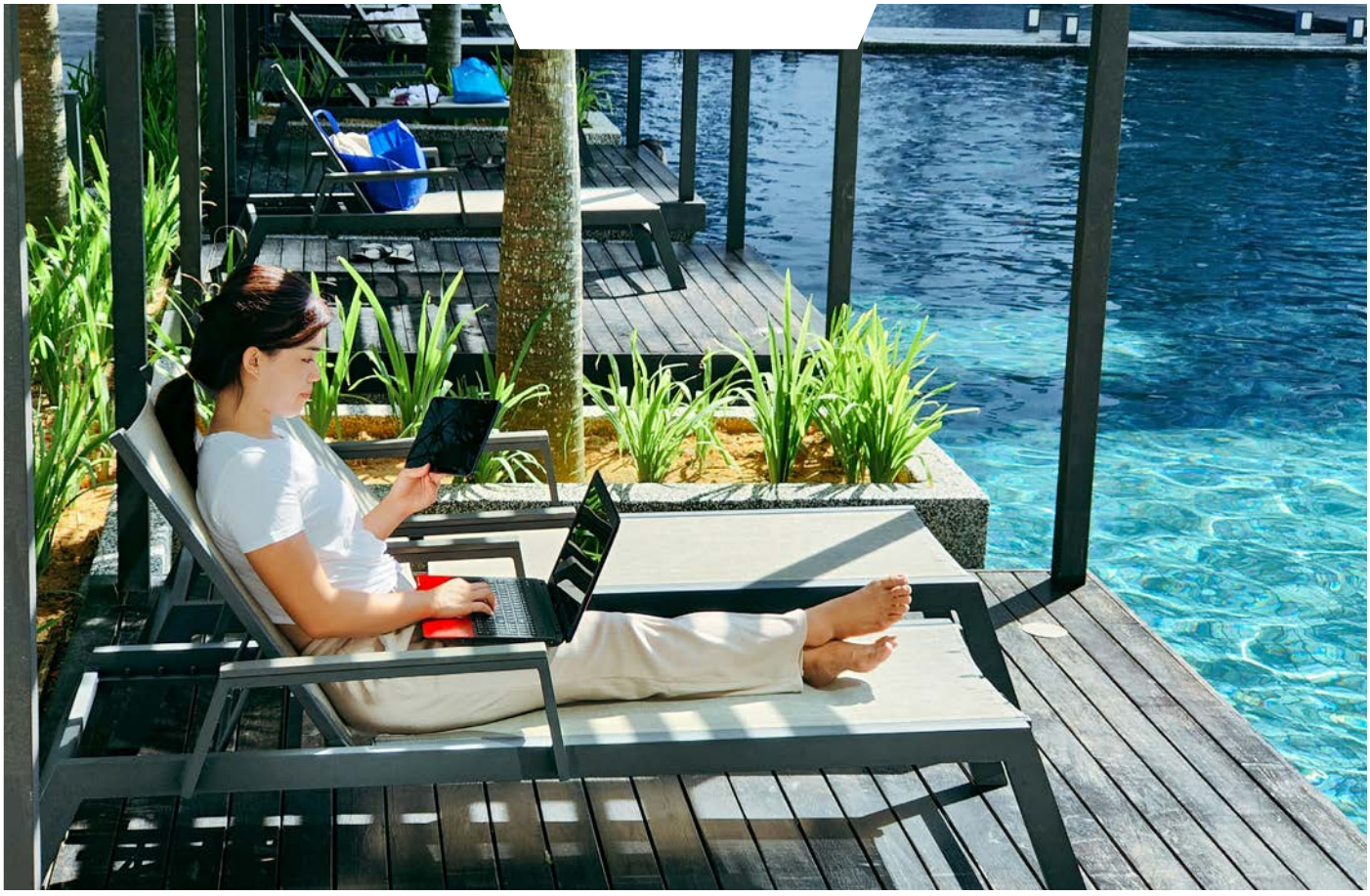
BUSINESS

DIGITAL NOMAD

Malaysia's Rise as a Top Destination for Digital Nomads: **A Look at Recognition and Policy Impact**

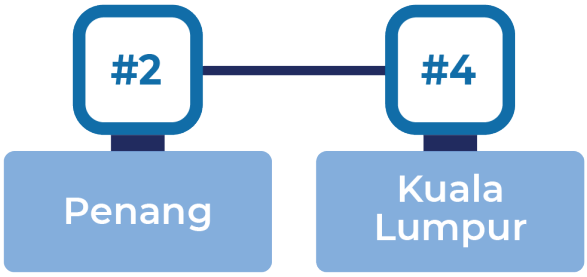
By Arifah Sharifuddin
Digital Tourism, MDEC



Malaysia has firmly established itself as a frontrunner in digital nomadism within Southeast Asia, earning recognition for its progressive policies and vibrant ecosystem that fosters remote work.

In recent years, Malaysia's strategic efforts have positioned it as a hub for digital nomads, attracting professionals from around the globe who seek a dynamic and supportive environment for their remote work endeavours. The DE Rantau Programme, spearheaded by the Malaysia Digital Economy Corportation (MDEC), has revolutionised global talent mobility and the growth of digital tourism. One of DE Rantau's key offerings is the DE Rantau Nomad Pass, which offers a streamlined and efficient immigration facility which enables digital nomads to live and work in Malaysia. This pivotal strategy amplifies Malaysia's commitment in embracing and enabling the future of work.

Ranked **#1** as 'Most Liked Country' by digital nomads in 2023



Penang and Kuala Lumpur are ranked as the 2nd and 4th fastest growing remote working locations in the world.

Source: nomadlist.com

International Recognition

According to nomadlist.com, in December 2023, Malaysia ranked the top country favoured by digital nomads, highlighting its growing appeal as a premier destination for remote professionals. Meanwhile, Penang and Kuala Lumpur ranked second and fourth as the fastest-growing remote working locations.

Malaysia's commitment to digital innovation has been acknowledged in global forums. Often cited as a model for integrating technology into national development strategies, Malaysia has been positioned as a benchmark in attracting and nurturing tech talent, further cementing its status as the preferred destination for those looking to embrace digital nomadism.

This recognition ranking Malaysia as the top country favoured by digital nomads is a testament to Malaysia's strategic initiatives and comprehensive support for digital nomads. In this regard, MDEC has played a pivotal role in driving these achievements, particularly through the DE Rantau programme. Launched in October 2022, DE Rantau has attracted significant interest, with over 3,486 applications and more than 1,688 approvals as of July 2024. The programme has drawn participants from around the globe, creating a diverse community of remote workers and digital freelancers.

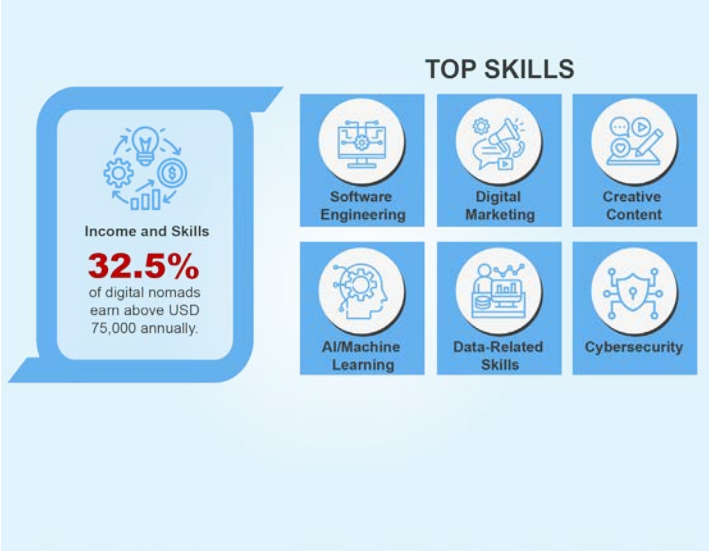
Policy Impact and Contribution to the Economy

In addition, the programme also contributed significantly to the economy. According to MDEC's 2023 DE Rantau Year-End Survey, digital nomads in Malaysia spend an average of USD 1,912 per month, primarily on food and accommodation, followed by travel and tourism-related expenses. The programme's economic contributions were substantial, with an estimated RM 78 million generated in 2023 alone.

Its participant demographics are diverse, with a majority hailing from Russia, Pakistan, the United Kingdom, Australia, Japan and the United States where 59%

are remote workers, while the rest are independent contractors and digital freelancers.

A significant 32.5% of these nomads earn above USD 75,000 annually, with the top skills being software engineering, digital marketing, creative content, AI/machine learning, data-related skills, as well as cybersecurity. Furthermore, 40% of participants are accompanied by their spouses and children, indicating the inclusive nature of Malaysia's digital nomad community. Most are concentrated in urban areas, with 80% residing in Kuala Lumpur and Selangor and 10% each in Penang and Johor. Moreover, their presence has boosted the hospitality industry, with accommodations certified as DE Rantau Hubs, designed for digital nomads seeing higher occupancy rates and increased use of amenities. These hubs have also benefited from reduced maintenance costs and improved monthly cash flows, enhancing operational efficiency.



Moving Forward

Malaysia's success in attracting digital nomads has been bolstered by supportive policies. The release of the Digital Nomad Visa Whitepaper in January 2024 highlighted Malaysia as a model for attracting tech talent, showcasing a clear pathway for tech professionals to progress beyond a digital nomad visa for longer stays and making an impact in their chosen destination.

Moving forward, Malaysia remains dedicated to expanding the DE Rantau programme and making it accessible to a broader range of skilled individuals. With continued support from the private sector and cooperation with the Ministry of Home Affairs and various federal and state agencies, Malaysia is well-positioned to maintain its status as the preferred destination for digital nomads in Southeast Asia.

Through technology, collaboration, and progressive regulations, Malaysia is paving the way for a future where geographical boundaries are less significant and opportunities for remote work are abundant.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GAME

Malaysia's Role in **Southeast Asia's Games Industry Growth**

By Darang S. Candra
Director for Southeast Asia and East Asia Research, Niko Partners

Southeast Asia is a fast-growing region for the games industry. Niko Partners estimates that there are more than 300 million gamers in the six countries we track in SEA: Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam. Across these markets, total PC and mobile game revenue is anticipated to reach USD 6.5 billion by 2025, with an estimated CAGR of 7.1% for 2021-25[1]. The game industry's size encompasses revenue from various sectors including in-game purchases, game development and esports.

Niko Partners conducts an annual survey of 2,400 gamers in Southeast Asia, primarily targeting Gen Z and Millennials aged 18 to 29. Whether for casual fun or competitive action, gaming has become an integral part of Southeast Asian culture. Esports, in particular, have emerged as a significant component of mainstream entertainment in the region.

Esports was included as a medal title for the first time at the Olympic Council of Asia (OCA), sanctioned Southeast Asian Games (SEA Games) in the Philippines in 2019, followed by the 2021 SEA Games in Vietnam and the 2023 SEA Games in Cambodia. Singapore also hosted the first Olympic Esports Week in 2023.

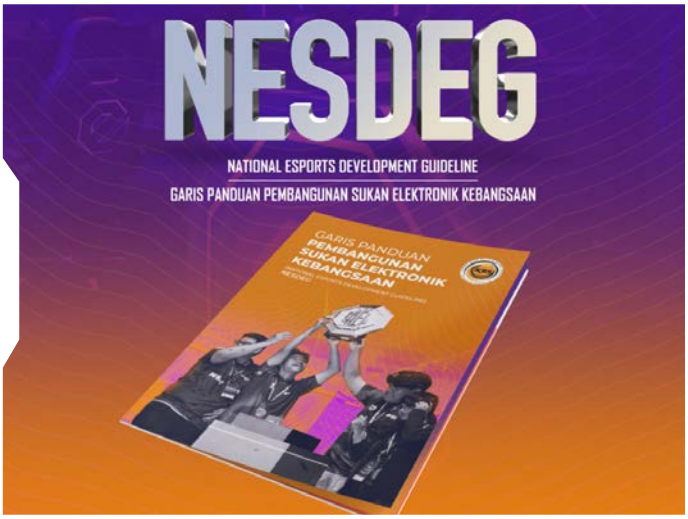
The region boasts prominent esports organisations, such as EVOS Esports, Team Flash, Fnatic and ONIC Esports. Southeast Asian countries have also served as the host location for major global tournaments such as the Free Fire World Series and the Mobile Legends: Bang Bang World Championships, which have taken place in SEA for 5 years consecutively.

[1]*Niko Partners, 2023. SEA-6 Games Market Report. Campbell: Niko Partners.*

Malaysia's policies for games and esports industry development

The growth of esports and gaming in Southeast Asia is inspiring increased attention and investment, and Malaysia is one of the leading markets in the region, taking an active role incentivising this growth. Game industry stakeholders, including the government, telco companies, and other tech organisations, are taking initiatives in providing programmes to nurture games and esports talent.

Malaysian government agencies, particularly the Malaysia Digital Economy Corporation (MDEC), have also provided incentives and support to game creators, encouraging more to start and grow game development companies. Programmes such as the Digital Content Grant, Digital Content Creators Challenge, and the Pemangkin IP360 Metaverse initiative are key examples of initiatives encouraging development.



As for esports, the Malaysian government has shown its support, with the Sports Development Act 1997 amended to include recognition for esports last year. Youth and Sports Minister Hannah Yeoh and the government-led Esports Integrated (ESI) also launched the National Esports Development Guidelines (NESDEG). NESDEG is one of the first government guidelines in the region to provide detailed protections for esports players and guidance for esports tournament organisers.

In October 2023, Malaysia's Ministry of Finance announced a RM 30 million (USD 6.3 million) budget to encourage foreign games and esports companies to invest in Malaysia. While detailed information about the budget allocation is not yet available, this initiative is expected to enhance Malaysia's appeal to foreign companies considering to enter the market.

Why the games and esports industry are important to support

In analysing the support for gaming and esports in Southeast Asia, including Malaysia, it is important to consider the market context. The younger generations, particularly Gen Z and Gen Alpha, are growing up in a digital-first world.

This environment requires a different set of skills compared to previous generations. Essential skills for thriving in this digital-first world include digital communication, collaboration, creativity, critical thinking, and problem-solving. Notably, these skills can be nurtured through video games[2].

Video games and esports encourage competence in these skills in an engaging format. For example, multiplayer video games and esports can enhance communication and collaboration skills through their team-based aspects[3]. Furthermore, creativity, critical thinking, and problem-solving can be fostered through game development activities[4] and by playing certain game genres, such as strategy and role-playing games[5].

Second, the development of video games and esports industries unlocks new job opportunities locally and beyond. Opportunities in the games and esports industry include being a game developer, professional esports player, esports coach, and content creator.

The demand for esports in the region also leads to an increase in prize pools across esports tournaments. Jianwei Yap, a Malaysian *Dota 2* player, has earned USD 2,081,585 from prize pools alone (Esports Earnings, 2024), which is the highest earning among all players in Southeast Asia.

[2]Bailey, C., Pearson, E., Gkatzidou, S. & Green, S., 2006. Using Video Games to Develop Social, Collaborative and Communication Skills. In: E. Pearson & B. Paul, eds. Proceedings of ED-MEDIA 2006--World Conference on Educational Multimedia, Hypermedia & Telecommunications. Orlando, Florida: Association for the Advancement of Computing in Education (AACE), pp. 1154-1161; Hewett, K. J. E., 2022. Embracing Video Games for Strategic Thinking, Collaboration, and Communication Skills Practice. In: I. R. M. Associatio, ed. Research Anthology on Fandoms, Online Social Communities, and Pop Culture. Hershey, Pennsylvania: IGI Global, pp. 296-314.
[3]Musick, G. et al., 2021. Leveling Up Teamwork in Esports: Understanding Team Cognition in a Dynamic Virtual Environment. Proceedings of the ACM on Human-Computer Interaction, 5(No. CSCW1, Article 49), pp. 49:1-49:30.
[4]Thomas, M. K. & Greene, X. G. B. A., 2011. Fostering 21st Century Skill Development by Engaging Students in Authentic Game Design Projects in a High School Computer Programming Class. Journal of Educational Computing Research, 44(4), pp. 391-408.
[5]Franco, P. F., DeLuca & A., D., 2019. Learning Through Action: Creating and Implementing a Strategy Game to Foster Innovative Thinking in Higher Education. Simulation & Gaming, 50(1), p. 23-43.

In Malaysia's case, the country has seen an increased number of game studios that can develop AAA games. Studios such as Lemon Sky Studios, Passion Republic, Streamline Studios, Common Extract and Kaigan Games are taking part in bringing Malaysian game developers precious experience in developing successful games. Notable games that were developed with the involvement of Malaysian studios include *Street Fighter 6, Final Fantasy XV, Cyberpunk 2077, Death Stranding, Spider-Man Remastered, The Last of Us: Part 2, Elden Ring, Street Fighter 6, and Overwatch 2*. The quality of Malaysian studios is also attracting foreign investments, with Lemon Sky Studios acquired by Australia-listed game developer iCandy Interactive for USD 30 million, while Common Extract was acquired by Swedish studio The Gang for an undisclosed amount.

Malaysia has made significant breakthroughs in the esports industry. AirAsia, a Malaysian-based low-cost airline, became the first airline in the world to own an esports team, actively developing the esports scene in the country and the region before the COVID-19 pandemic. In addition, Malaysia's Esports Business Network (EBN) operates EBN Esports City in Kuala Lumpur, the largest esports facility in Southeast Asia, spanning over 6,000 square metres and accommodating more than 1,000 people. Another noteworthy development is the creation of a Mobile Legends-focused Esports Hub at Hatten Land's Element X mall in Melaka, the first of its kind globally.

These initiatives demonstrate Malaysia's potential to enhance its international reputation, nurture local talent, and boost the domestic popularity of esports. Supporting the video games and esports industry can lead to positive outcomes, including developing essential skills and creating job opportunities.

Challenges to the growth

Despite all the developments supporting the growth of video games and esports industries in the region, particularly Malaysia, we acknowledge that challenges remain. First, there is rising job insecurity in the global games industry, as shown by layoffs over the past one to two years. These layoffs are largely due to overstaffing during the pandemic, based on overly optimistic expectations of games industry growth. As growth has returned to a more regular pace, companies have had to reduce staffing. This has also been paired with increasing costs for talent across the industry, with inflation and cost of living adjustments being a partial factor.

Second, older people across the region, including Malaysia[6], are sceptical about video games and esports. Video games and esports are often seen as having negative impacts on children, causing addiction, bad behaviour and poor social skills. Generational attitudes like these will take time to change.

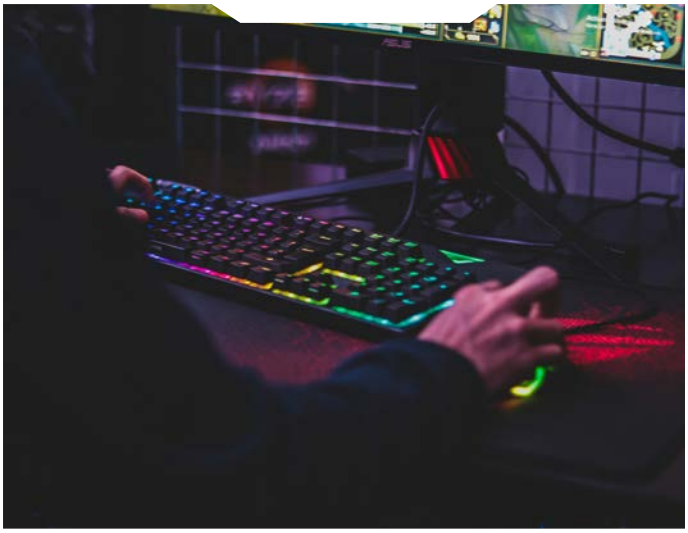
Third, expertise and experience regarding games and esports are still lacking. While a vibrant game development and esports scene has emerged in the last decade, the region is still far behind the games industry giants of China, Japan, and South Korea[7].

In Malaysia, in particular, we have seen investments and businesses opening in the country that are propelling the growth of the games industry, as opposed to the mass layoffs and issues plaguing the games industry on the global scene. For example, US-based game commerce and payment company Xsolla opened a new office in Kuala Lumpur in 2023, making it one of the company's largest offices. UK-based game developer and publisher Double Eleven also opened a studio in Kuala Lumpur in 2022, drawn by the talent that Malaysian developers provide.

[6]*Osman, K. & Bakar, N. A., 2012. Educational Computer Games for Malaysian Classrooms: Issues and Challenges. Asian Social Science, 8(11), pp. 75-84.; Ng, B. B. Y., 2023. To play or not to play: How video games motivate gamers in Malaysia to play. Master dissertation/thesis ed. Kampar, Perak: UTAR.*
[7]*Tiwari, S. P. & Grace, L. D., 2023. Observations and Reflections on the Gaming Landscape in South East Asia. Games: Research and Practice, 1(4), pp. 1-4.*

However, it does not mean that there are no problems within the country's games industry. There are still issues, such as the harassment scandal that hit Persona Theory Games studio[8] and there are opinions from local muftis (Muslim legal experts) that think some games are haram (prohibited for Muslims).

For these reasons, government entities and games industry stakeholders need to collaborate further to ensure future policy formulation, incentives, and protections are put in place to support the growth and safety of the games and esports industry. More actions are also needed to inform the public on the positive sides of games and how to curb potential negative impacts.



Future outlook

Southeast Asia's games and esports industry, including Malaysia, has continued to grow in recent years. Malaysia's games industry has grown on average by 8.9% YoY since 2020[9] and since 2020, Niko Partners has also estimated that more than 50% of Malaysia's population are active gamers.

There are many reasons to be optimistic about these trends. Malaysia has the potential to lead the games industry growth in the region as the country boasts a favourable business environment for game companies.

This includes talented and world-class game developers, a growing popularity among foreign game companies developing regional offices due to Malaysia's supportive business environment, a significant increase in digital economy investments, and growing recognition and support for esports within private and government sectors.

Promoting policies that support the industry's growth will help improve the industry's pool of new talent, provide new job opportunities and develop valuable skills among the younger generation.

As games and esports are steadily becoming mainstream across Southeast Asia, support provided to the industry will accelerate and help direct the changes taking place.

[8] *https://virtualseasia.com/toxic-workplace-behavior-sexual-harassment-persona-theory-games/ [Accessed 20 March 2024].*
[9] *Niko Partners, 2023. SEA-6 Games Market Report. Campbell: Niko Partners.*

Future-proofing the **Sharing Economy through Adaptive Policies**

By Mohd Redzuan Affandi Abdul Rahim, Muhammad Farhan Hizami Said and Nur Fatin Anis Mohd Zuber
Digital Services, MDEC

The rapid growth of the Sharing Economy in Malaysia (see Box Article below) has attracted the attention of many, particularly policymakers and regulators, due to new policy challenges and the complexity surrounding it. This scenario demands that the Government formulate an agile, adaptive, and innovative policy approach to ensure a sustainable and inclusive development of the Sharing Economy in the long run. One of the clear examples of the Sharing Economy adoption by businesses in Malaysia was showcased in the partnership between GOLOG and MYDIN, which has revolutionised the cold-chain logistics services.

Ivan Chin, CEO of GOLOG stated, "*As a local business owner relying on cold chain logistics, the partnership between GOLOG and MYDIN has been a game-changer. The innovative GOLOG B2BPRO system, coupled with the frozen consolidation network and Mini Distribution Centre (Mini DC) across different states, has significantly reduced the logistics costs. The ability to place orders for loose cartons and ensure fast, cost-effective delivery has broadened MYDIN's market reach and improved their storage and fulfilment processes.*"

Box Article: Growth of Sharing Economy in Malaysia

The global Sharing Economy landscape has seen tremendous growth for the past decade with pandemic COVID-19 further accelerated the adoption of this model by both, businesses and individuals. The latest forecast by Statista predicted that the total value of the global sharing economy will increase to USD 794 billion by 2031, up from USD 150 billion in 2023, which translated to a compound annual growth rate (CAGR) of approximately 32 percent.

Meanwhile, in the money-sharing segment, which includes peer-to-peer lending and equity crowdfunding, the market size is estimated to reach RM 5.35 billion in 2023. This aligns with earlier projections that the sharing economy in Malaysia will grow significantly, contributing approximately 1.5% to the country's GDP by 2025.To date, more than 160 validated Sharing Economy platforms are operating in Malaysia, providing various services across multiple industries /

sub-sectors. Other than the logistics and delivery services, there are also platforms for alternative healthcare services, financing, crowd-marketing, creative & design services, education and training etc. This clearly indicates the ever-evolving business model and innovation even within the Sharing Economy landscape in Malaysia. A testament to this dynamic environment is the partnership between Tourplus and Journify which has transformed customer's experience in the tourism sector.

"Thanks to the invaluable support from MDEC, our partnership with Journify has reached new heights, allowing us to provide an unparalleled travel experience for our customers. MDEC's guidance and resources have been instrumental in integrating our services with Journify, enabling travellers to effortlessly book their airport transfers directly through the platform. The seamless integration not only benefits MH travellers but also passengers of other airlines at KLIA Terminal 1 and 2. This collaboration, made possible by MDEC, has significantly enhanced the convenience and satisfaction of our users, reinforcing our commitment to delivering top-notch travel solutions." (Tourplus)

In terms of individual and community participation in the Sharing Economy, MDEC has implemented an initiative called the eRezeki programme which was designed based on the Crowdsourcing / Sharing Economy models with the main objective to provide additional income opportunities for Malaysians. The programme facilitates matching of individual participants with jobs or tasks offered by various Sharing / Gig Economy platforms via comprehensive profiling, training, and on-boarding process.

The eRezeki programme has successfully onboarded and provides additional income opportunities to a total of 699,517 participants with total cumulative income of RM 1.36 billion as of 31st December 2020 (11th Malaysia Plan).

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2. MDEC Internal Analysis - Reports from MDEC's Validated Sharing Economy Platforms (as of Q4 2023)
3. https://www.sc.com.my/analytics/digital by Securities Commission (June 2023)
4. Malaysia's National Framework and Strategic Roadmap on Sharing Economy by MDEC, Bank Negara Malaysia, EPU, PEMANDU and Monitor Deloitte (2017)

Complexity of Issues in the Sharing Economy

The basic Sharing Economy model involves a triangular relationship between 3 main actors i.e. service/asset providers, users/consumers and platform operators (Figure 1).

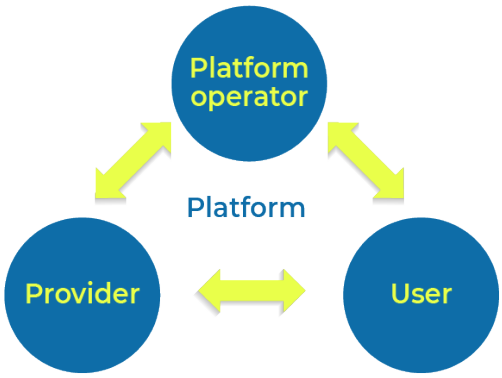


Figure 1: Representation of Sharing Economy (ISO 42500, 2022)

Interaction between these actors is made possible and intermediated via a digital platform from the point of on-boarding until the completion of transactions, including the rating and review phase.

Understanding this unique triangular relationship and the generic transaction phase of digital platforms allowed us to understand that any intervention made on this model at any phase or on any actor will have direct impacts and consequences on all 3 actors. In other words, regulators and the Government should conduct a holistic assessment of potential risks and implications of any policy intervention to this ecosystem and avoid looking at any issues from a fragmented perspective. One classic example to illustrate this complexity is the issue of the definition and classification of gig workers.

This issue has significant implications for service providers who are also referred to as part-timers, freelancers, independent contractors, free agents and most popularly known as gig workers, particularly regarding their employment status, rights, access to benefits or fair compensation. Based on the existing, classic classification, the best fit category for 'gig workers' would be as part of informal employment. However, this means that they are potentially exposed to certain vulnerabilities such as undefined working conditions, no social insurance and protections and a lack of welfare and other benefits. Based on the existing definition

and classification, attempts to classify 'gig workers' as formal employees would also increase the cost of doing business for the platform operators. Based on the classic, traditional definition, a party needs to be made responsible or presumed as 'employer'; in this situation, digital platform operators are held responsible for such a role.

Furthermore, this would not necessarily improve gig workers' working conditions nor provide guarantees that their jobs are preserved. As observed in Spain and the Netherlands, some sharing economy platforms have already ceased country operations entirely after formal employment classification was imposed on gig workers, rendering their business models unsustainable, leaving the gig workers 'unemployed' or losing income opportunities. On the other hand, users will be losing services of these platforms that are playing major roles in their daily life, especially in urban communities. In some cases, users will experience spikes in price of services as inefficiencies in the market increase, due to lower availability of service providers and platform operators.

Another major issue in the sharing economy is the lack of clear rules and regulations. This ambiguity has caused many sharing economy platforms to operate in regulatory grey areas, creating uncertainties for both providers and users.

Attempting to fit new regulatory challenges into the traditional framework will complicate enforcement and monitoring. Each activity in the sharing economy involves multiple stakeholders and regulators, each with its existing laws and regulations. Furthermore, platform operators rapidly evolve their business models, leaving regulations struggling to keep up. Addressing this ambiguity and fast-changing landscape requires new thinking and a fresh approach to developing a future-proof comprehensive regulatory framework, balancing innovation and consumer protection while ensuring a level playing field for all participants in the ecosystem.

Global Response to the Sharing Economy

In recent years, governments worldwide have progressively responded to challenges in the sharing economy ecosystem. These vary across countries and sometimes happen at the state or municipal level. For example, Australia, the Netherlands, the USA (particularly California), and Switzerland have adopted a more conservative approach. In these regions, policy decisions often rely on existing laws and guidelines, with many cases being resolved through court rulings, particularly regarding the classification of gig workers.

Other countries, such as India, Malaysia, New Zealand, Philippines and Belgium, have largely maintained the status quo, with governments offering targeted measures / piecemeal policy interventions for specific groups of gig workers. For instance, in July 2018, Malaysia introduced e-hailing regulations by amending existing laws. In addition, in 2017, Malaysia also introduced the Self-Employment Social Security Scheme via PERKESO to provide better protection for self-employed and gig workers.

Meanwhile, countries like Denmark and Germany have taken a more innovative approach to navigating the complexities of the sharing economy by experimenting with new policy instruments, such as sandboxing and agile regulatory frameworks. Germany, in particular, has employed regulatory sandboxing through the use of experimentation clauses. These clauses allow temporary exemptions from certain regulations to explore alternative approaches. The goal is to learn how regulations might need to adapt in the future. These exemptions can include

derogations from specific requirements or waivers from the need to seek authorisation or permits.

Global Challenges, Local Solutions

Based on case studies as well as reflecting on the global response to the sharing economy, it is timely for Malaysia to pay more serious attention to a whole new mindset and innovative policy approach which addresses both economic and social concerns while accommodating the dynamic nature and innovation within the Sharing Economy.

It is worth noting that Malaysia has already laid down a good foundation for this. In terms of governance, the Malaysia Digital Economy Corporation (MDEC) has been entrusted to spearhead the National Sharing Economy Committee (NSEC) as a central coordinator for the development of the Sharing Economy in Malaysia.

The Sharing Economy Task Force under the NSEC has recently recommended the establishment of a **National Sharing Economy Regulatory and Innovation Sandbox** programme, which aims to create a conducive environment for the sharing economy to flourish, allowing for experimentation, innovation and collaboration among stakeholders, particularly regulators. It also ensures the monitoring of regulatory compliance, social and consumer protection.

This programme goes hand in hand with the existing sandbox programmes such as the National Technology Sandbox (NTIS) by MOSTI and the National Regulatory Sandbox (NRS) by FUTURISE. This effort will also be supported by relevant guidelines such as the Good Regulatory Practices (GRP), Regulatory Impact Assessment (RIA) and agile regulatory framework which the the Government has developed via the Malaysia Productivity Corporation (MPC).

Building up from the existing initiatives, programmes and structure, the Government now should be able to undertake bold steps and to change the way we navigate the future of the Sharing Economy. Experimenting and sandboxing is the way forward in addressing these complex policy and regulatory challenges. It provides the opportunity for the Government to learn, understand and gather necessary information/data prior to development or changes in any policy/guidelines etc., making space for innovation among platform operators in the Sharing Economy ecosystem in Malaysia.

Conclusion

While this option presents a promising policy direction for Malaysia, it requires policymakers and legislators to gain a deeper understanding of the Sharing Economy, including the commercial policies, algorithms and business models of various platforms.

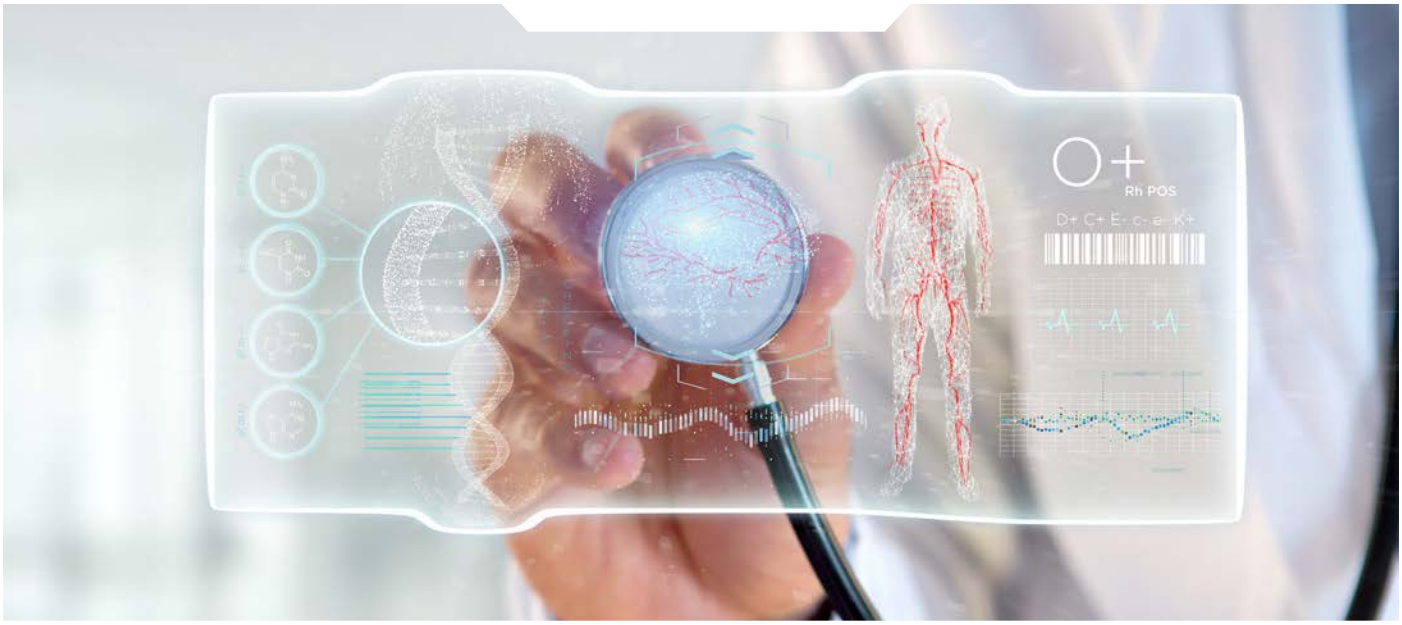
By proactively engaging with relevant stakeholders and adopting a forward-thinking mindset, Malaysia can fully harness the potential of the Sharing Economy, mitigate risks and maximise benefits for all.


Real time Monitoring of Cellular Processes
Heating Activated
Injecting CO2
Injecting Air
Injecting Nitrogen
SET TEMPERATURE
37.0
SET CO2
5.0
SET OXYGEN
5.0
High
Mute
Low
HUMIDITY %
78
SET PRESSURE (PSI)
2.0
VENT

DIGITAL HEALTH

Prescribing Digital Integration **to the Health Industry**

By Rachel Gong, PhD
Khazanah Research Institute



The digital health industry offers many opportunities for innovation and growth. Digital transformation of the health and healthcare sectors can improve productivity and revenue as well as promote better individual and public health outcomes. Digital health records are a key enabler of this transformation. Given Malaysia's dual-track healthcare delivery systems, public and private health records systems need to be better integrated. I propose three measures to facilitate an integration process: (1) build a supporting ecosystem to increase patient enrollment into digital health records systems, (2) set and enforce shared standards to ensure interoperability across the healthcare landscape, (3) establish health data regulations and other data governance mechanisms to build public trust in digital health records.

Digital health offers many opportunities for innovation and growth

Digital health is a growing industry that has benefited from advances in technology and data analytics, allowing what began as internet applications in the medical healthcare space to expand to a wider consumer health market[1].

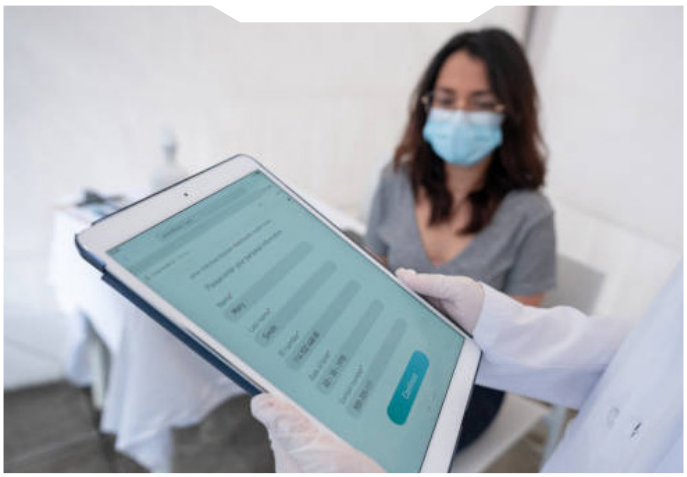
Investment and innovation in health and healthcare have increased globally, with technological advances being introduced regularly, from biosensor tattoos to precision medicine.

A sceptic might argue that research on efficacy and regulations has not kept up with recent advancements. However, market demand for HealthTech has remained strong, especially since the COVID-19 pandemic.

Market analysis of the digital health industry in Southeast Asia shows that market revenue grew from USD 1.16 billion in 2017 to USD 5.36 billion in 2023[2]. Another analysis highlighted that Indonesia experienced the most significant growth in the region[3] , likely due to having the largest population. Malaysia, on the other hand, ranked in the middle, aligning with a 2021 PwC report that showed low rates of venture funding for HealthTech in Malaysia[4].

Given the promise of revenue from medical tourism[5] as well as the needs of a growing ageing population[6], it is important for Malaysia's health and healthcare sectors to reap the benefits of digital transformation and not be left behind[7].

[1] https://doi.org/10.1038/s41746-019-0111-3; https://doi.org/10.1007/s40012-023-00380-3
[2] https://www.statista.com/outlook/hmo/digital-health/southeast-asia
[3] https://www.linkedin.com/pulse/understanding-growth-digital-health-asean-countries-wei-khoon-shoo
[4] https://www.pwc.com/my/en/publications/2021/healthcare-in-a-digital-economy.html
[5] https://www.mida.gov.my/mida-news/malaysia-remains-emerging-hotspot-in-medical-tourism/
[6] https://www.krinstitute.org/Publications-@-Building_Resilience-_Towards_Inclusive_Social_Protection_in_Malaysia.aspx
[7] https://www.hospitalmanagementasia.com/tech-innovation/what-it-takes-to-propel-malaysias-digital-healthcare-transformation-to-the-next-level/



A strong digital healthcare system depends on digital health records

The foundation of a strong digital healthcare delivery system, as highlighted by all three of Malaysia's post-pandemic health ministers, is digital health records, whether in the form of electronic health records (EHR), electronic medical records (EMR), patient health records (PHR), or lifetime health records (LHR)[8] . In February 2024, Health Minister Dr Dzulkefly Ahmad reiterated the need for a central patient record system enabling access to healthcare records in any healthcare facility throughout Malaysia[9], which best meets the definition of EHR.

This has been the target since Malaysia's 1997 Telemedicine Blueprint, where the goal was for healthcare workers and patients to access an integrated set of medical records that follows patients throughout their lifetime, regardless of which healthcare facility they seek care at[10].

According to KRI's research, early initiatives to develop and deploy digital health records in public healthcare facilities as part of overall hospital digitalisation programmes came in fits and starts due to multiple factors, including lack of funding, proprietary and unwieldy technology systems and poor supporting infrastructure[10].

However, the COVID-19 pandemic marked a turning point, demonstrating how quickly Malaysia could adopt a mobile health application with appropriate government support. In 2021, MySejahtera achieved the highest installation rate (85%) and open rate (92%) among COVID-19 health applications worldwide.

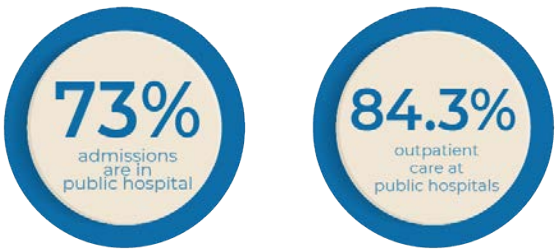
It began as a contact tracing app, but its functionality expanded to vaccine registration and records, as well as used to make health appointments and for infectious disease surveillance[11].

The use of a lightweight, cloud-based system accessed via a mobile app or a web browser can also be seen in the ongoing rollout of a hospital information exchange (HIE) platform in Negeri Sembilan[8]. The HIE platform will be used with three user portals catering to healthcare providers, patients and facility administrators, with different data permissions for different users. It can be accessed using a web browser, reducing the hardware requirements needed at smaller healthcare facilities, although a reliable internet connection is still required.

At the time of writing, there is no clear pathway for integrating this system, which will rolled out to all public healthcare facilities, with digital systems used in private healthcare facilities.

Integrate public and private healthcare records to ensure seamless healthcare delivery

Malaysia has a dual-track healthcare delivery system, with the public sector providing the bulk of healthcare delivery in terms of hospital admissions and outpatient care. In 2022, public hospital admissions accounted for 73.0% of total hospital admissions, while 84.3% of hospital outpatient care occurred at public hospitals.[14] The burden borne by the public sector can be overwhelming in times of crisis, such as a pandemic or a natural disaster.



[8] https://www.krinstitute.org/Discussion_Papers-@-Putting_Patients_First-:_Principles_for_Future-Facing_Electronic_Health_Records_in_Malaysia.aspx
[9] https://www.thestar.com.my/news/nation/2024/02/16/digital-transformation-needed-for-malaysian-healthcare-says-dr-dzul
[10] https://www.krinstitute.org/Discussion_Papers-@-Case_Studies_of_Hospital_Digitalisation-:_Lessons_for_Electronic_Health_Records_in_Malaysia.aspx
[11] https://www.moh.gov.my/moh/resources/Penerbitan/

The COVID-19 vaccination programme demonstrated how the public and private sectors can work together to provide seamless healthcare delivery. Private sector provision of care may expand given the current challenges facing the public healthcare system, including a shortage of doctors[15] and facilities needing upgrades.[16] Thus health records must be able to follow patients and move across facilities as required to ensure continuity of care.

This is not simply a matter of establishing more public-private partnerships. Limited existing regulations on data protection and transfers, non-standardised data systems and a lack of public trust can hamper data system integration[8].

Three actionable measures to facilitate integrated digital health records

Build a supporting ecosystem to increase patient enrollment into digital health records

Digital health records are just one component of a comprehensive digital health ecosystem that includes, for example, lab reports and hospital management. On the supply side, upgrading hardware and network infrastructure, especially for smaller, less urban facilities, is necessary to ensure smooth service delivery. On the demand side, improving digital and health literacy is important to raise public awareness of the benefits of health data analytics and the use of health information for self-management of disease.

1

Set and enforce shared standards to ensure interoperability across the healthcare landscape

Health informatics standards are widely known and used in the health industry. However, standards for health database architecture and health data formatting, while recommended, are not yet required[10] across the healthcare landscape in Malaysia. Enforcing standards such as a minimum data set will be important in ensuring that patient data can be shared efficiently across healthcare providers and facilities.

2

Establish health data regulations and other data governance mechanisms to build public trust in digital health records

Data security and privacy concerns need to be addressed to build public trust in digital health records systems. Patients should be confident that their data will only be shared responsibly and safely. Current data regulations do not consider health data, which are sensitive data that require additional protections.[10] Where needed, guardrails should be put in place around how health data should be used, focusing not on improving profit margins but on improving health outcomes for as many people as possible.

3

Dr Dzulkefly recently reiterated the Ministry of Health's commitment to national healthcare digitalisation and digital health records.[17] To achieve the government's goal of addressing fragmented health information systems as stated in the 12th Malaysia Plan and Health White Paper, the ministry could hold further engagements with healthcare practitioners, regulators and patient-rights advocates in the private sector, academia and civil society to exchange ideas and find avenues for collaboration and partnership.

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[16] https://www.thestar.com.my/news/nation/2024/04/15/wards-urgently-need-repair
[17] https://www.thestar.com.my/news/nation/2024/05/14/free-or-subsidised-flu-jabs-in-the-offing


BUGA
THON

Navigating the Future: **Artificial Intelligence Propelling the Digital Economy Forward**

By Victor Lo Lip Fong and Mohammed Ariffin Zainal Abidin
Digital Tech, MDEC

Introduction

In an era defined by rapid technological advancements, Artificial Intelligence (AI) stands at the forefront of transformative innovation. Nations worldwide are racing to harness AI's potential and Malaysia is emerging as a formidable player, strategically positioning itself to become an AI powerhouse in the ASEAN region. This article delves into the latest AI technology trends, Malaysia's AI ecosystem, the pivotal role of leadership in AI adoption, and the nation's readiness to embrace AI. It also highlights significant investments by global tech giants that propel Malaysia towards a sustainable digital economy.

AI Technology Trends: Shaping the Future

AI is revolutionising industries across the globe, transforming the way we live, work, and interact. The rapid advancements in AI technology have ushered in a new era of possibilities, with trends such as machine learning, natural language processing, computer vision, and robotics leading the charge. As these technologies evolve, they enable more sophisticated applications in healthcare, finance, manufacturing, and beyond, creating opportunities for unprecedented efficiency and innovation.

Global AI Market Trends

The market for AI is expected to show significant growth in the coming decade. According to the latest projections, the AI market size is set to grow from USD 244 billion in 2025 to an astounding USD 827 billion by 2030, with a compound annual growth rate (CAGR) of 24% from 2020 to 2030. Generative AI is expected to grow exponentially, with its market value anticipated to reach USD 356 billion by 2030. This growth highlights the increasing integration of AI technologies across industries and their potential to transform business operations and productivity globally.

Building the Nation's AI Ecosystem

Developing a robust AI ecosystem is crucial for any nation aspiring to lead in this transformative field. In Malaysia, efforts to build a comprehensive AI ecosystem are gaining momentum. This fosters collaboration between government agencies, educational institutions and the private sector. By creating a supportive environment for AI research and development, providing funding for startups and encouraging public-private partnerships, Malaysia is laying the foundation for a thriving AI ecosystem.

AI Adoption from a Leadership Perspective

Leadership plays a pivotal role in the successful adoption of AI. Forward-thinking leaders recognise the potential of AI to drive business innovation and competitive advantage. They invest in AI technologies, integrate AI strategies into their business models, and cultivate a culture of innovation within their organisations. Effective AI leadership also involves upskilling the workforce, ensuring that employees are equipped with the necessary skills to leverage AI tools and technologies.

AI Readiness in Malaysia

Its strategic initiatives and investments show Malaysia's readiness for AI adoption. The Malaysia Digital Economy Corporation (MDEC) has been at the forefront of promoting AI and aligning its initiatives with the national AI agenda. MDEC is driving AI awareness, talent development, and industry collaboration through various programmes. Additionally, the New Industrial Master Plan (NIMP) 2030 highlights AI as a critical component of the country's digital transformation.

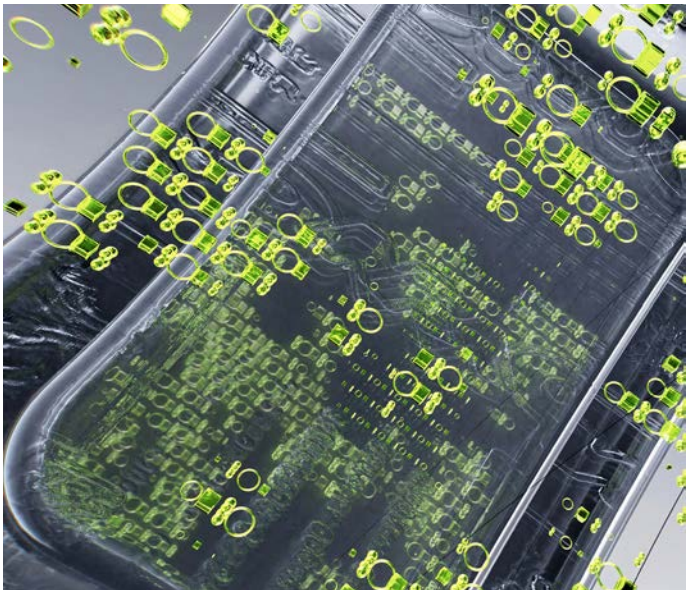
Malaysia's Strengths Based on the AI Readiness Index

Global Rank in Government AI Readiness Index 2023

According to the Government AI Readiness Index 2023, Malaysia ranks 23rd globally, showcasing its strong performance in several key areas. Malaysia's strengths lie in its AI skills and education, scoring high in ICT skills, graduates in STEM or computer science, quality of engineering and technology in higher education. This robust educational foundation ensures a steady pipeline of AI talent, which is vital for sustaining and advancing the nation's AI ecosystem. Furthermore, Malaysia is noted for its efforts in developing comprehensive AI strategies that align with global best practices and ethical standards.

Significant Investments in Malaysia's AI Future

Substantial investments from major tech giants further solidify Malaysia's position as a burgeoning AI hub. Microsoft has committed USD 2.2 billion to support Malaysia's cloud and AI transformation, focusing on building digital infrastructure, creating AI skilling opportunities for 200,000 people, establishing a national AI Centre of Excellence and enhancing cybersecurity capabilities. Google is also set to invest USD 2 billion in developing cloud infrastructure and AI initiatives in Malaysia. Additionally, Amazon Web Services (AWS) recently announced a USD 6 billion investment to establish cloud infrastructure, reinforcing Malaysia's digital economy and AI capabilities.



Driving Malaysia Towards an AI Hub in ASEAN

To achieve the goal of becoming an AI Hub in the ASEAN region, Malaysia must focus on several key areas:

1. Investment in Talent Development: Ensuring a steady pipeline of AI talent through education and training programmes
2. Enhancing Research and Innovation: Encouraging cutting-edge AI research and fostering innovation through grants and incentives. NIMP 2030 also aims to spur innovation by supporting solution providers and accelerating government digitalisation
3. Strengthening Infrastructure: Building robust digital infrastructure to support AI applications and data processing
4. Promoting AI Adoption Across Industries: Facilitating the integration of AI in various sectors to drive efficiency and competitiveness
5. International Collaboration: Engaging in partnerships with global AI leaders to exchange knowledge and best practices

Transforming Business Competitiveness and Sustainable Digital Economy

AI can transform Malaysian businesses' competitiveness by enabling smarter decision-making, enhancing customer experiences and optimising operations. Companies that embrace AI can achieve greater agility, innovation, and productivity, positioning themselves as leaders in their respective industries. Furthermore, AI can contribute to a sustainable digital economy by driving efficiencies, reducing waste and promoting green technologies.

Conclusion

Malaysia's journey towards becoming an AI powerhouse in the ASEAN region is well underway. Malaysia can drive business innovation and transform its digital economy by focusing on talent development, fostering innovation, strengthening infrastructure, and promoting industry-wide AI adoption. With strong leadership, strategic investments and significant contributions from global tech giants, Malaysia is poised to become a leader in AI, enhancing its competitiveness on the global stage and ensuring a sustainable, digitally driven future.

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Agritech Innovations in ASEAN: The Case of Malaysia

Giulia Ajmone Marsan, ERIA
Charles-Étienne Sirois, Concordia University

Digital transformation, Agritech innovation, and the Sustainable Development Goals (SDGs)

The rapid digitalisation of Asia, especially Southeast Asia, is a well-known phenomenon, further accelerated in the aftermath of the COVID-19 pandemic. Some countries in Asia are among the fastest-growing digital economies in the world[1].

Younger Asian consumers, particularly millennials and gen Z generations, are an essential driver of digitalisation and innovation, especially in emerging Asian markets. How they interact, consume and do business affects most sectors of Asian economies, including agriculture[2].

There are many ways in which digital transformation is affecting sectors such as agriculture, aquaculture and food production. Agritech, short for agricultural technology, refers to the use of technology and innovation to improve the efficiency and productivity of agricultural practices, boosting productivity and efficiency, reducing waste and resulting in better use of land and environmental resources.

Indeed, agritech can have implications for a great majority of sustainable development goals (SDGs). For example, better monitoring of crops can help reduce poverty and hunger and in turn improve the quality of health. More digitally efficient agricultural systems can be a channel for better working conditions for farmers and contribute to the development of smart cities and communities. A more sophisticated agricultural and food system might mean less waste and more recycling which can positively impact responsible consumption, production and climate change in general. Digital developments in the agricultural and food space also bring innovations, entrepreneurship and economic development to rural areas, which are often behind in terms of digital innovation and entrepreneurship in South-East Asia[3].

Agritech solutions are developed and deployed in multiple ways, depending on different contexts and local conditions[4]. For example, farming communities can improve the crops' efficiency by simply accessing real-time weather information and forecasts through mobile phones and the Internet.

[1]Aadarsh Baijal, Florian Hoppe, Willy Chang, Stephanie Davis, & Fock Wai Hoong. 2022. e-Conomy SEA 2022. In: Bain & Company. Cited 19 December 2023. https://www.bain.com/insights/e-conomy-sea-2022/
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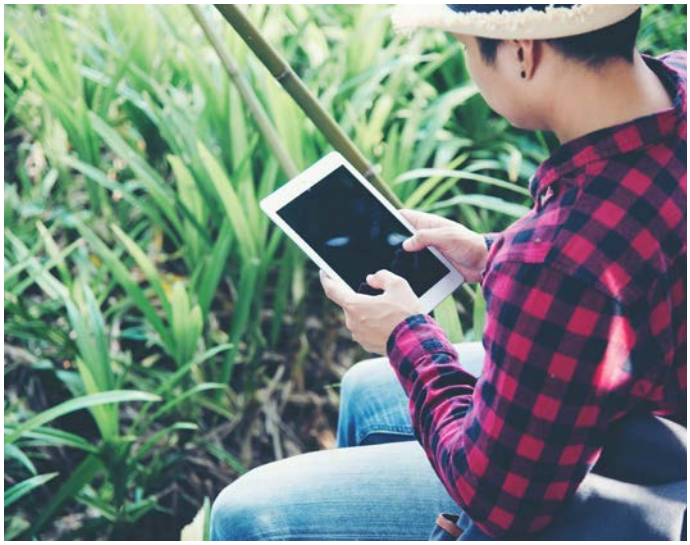

In other cases, sensors and interconnected devices are a way to monitor the conditions of crops or animals to identify the best time for harvest or early detection of problems such as animal or plant diseases or insufficient or excessive water and humidity levels for early treatment and more efficient use of environmental resources. Robots and drones allow farmers to obtain detailed information of areas of agricultural production that are more difficult to reach, which allows for better data analytics, for instance, to maximise monitoring and forecasting benefits. This more sophisticated data analytics can help optimise the usage of chemicals and fertilisers to reduce pollution and improve health and food safety.

In more advanced agritech ecosystems, biotechnology techniques are also being used from gene editing to genetics and developing new cultures for innovative foods. For instance, innovators and startups in Singapore are currently developing interesting foodtech solutions.

Finally, it is important to emphasise how digital innovations in the agriculture space are highly related to other sectors of the economy; certain types of food waste can be transformed into eco-friendly textile fibres ready to be used by the fashion industry; innovative foods can be showcased as tourism experiences; finally, biotech and agritech innovations can be at the basis of the emergence of new pharmaceutical, cosmetic or healthcare products and services.

ASEAN's agritech innovation ecosystem

With over 70 million small family farms in South-East Asia[5], agriculture represents a significant portion of the economies of several ASEAN member states. Countries like Indonesia, Vietnam, Thailand and the Philippines are major agricultural nations with their workforce heavily concentrated in this sector: Indonesia (28.3%); Vietnam (29.1%); Thailand (31.9%); and the Philippines (24.2%) (ASEAN Statistical Yearbook, 2023).

The fraction of the population working in agriculture has declined from 60% of South-East Asia's population in 1991 to just 30% in 2020[6]. This can be partly attributed to rise in urbanisation, diversification of economic activities and the transition towards higher-value-added activities across ASEAN economies. Thus, more needs to be done to support the dwindling number of farmers and find novel ways to increase their yield sustainably as ASEAN's population continues to grow and food security is increasingly high on the agenda of ASEAN policymakers.

Agritech will require massive investments. Herein lies one of the biggest challenges of the ecosystem – access to and availability of financing. According to estimates, the short-term total financing needs for smallholder farmers amounts to USD 68 billion within South and South-East Asia with a 68% funding gap exists. This funding gap is significantly larger in the long-term financing needs of USD 60 billion, with a 98% funding gap[7].

Startups at the intersection of fintech and agritech are leading the charge to help bridge the funding gap; interesting examples are already emerging. Perhaps most notably, Philippines-based finance super app GCash, together with Mayani, an agri-fisheries marketplace platform, will jointly underwrite and facilitate loans for organised smallholders, as well as help them build their credit track record (FinDev Gateway, 2023).

However, to holistically address such challenges and ensure the rapid transition to a smarter agricultural sector, ASEAN will require the collaboration and participation of actors across its local and regional ecosystems. The ASEAN Digital Economy Framework Agreement (DEFA) is a step in the right direction.

[5] *Driving AgriTech Adoption: Insights from Southeast Asia's Farmers*
[6] *Stads, G. J., Nin-Pratt, A., Omot, N., & Thi Pham, N. (2020). Agricultural research in Southeast Asia: A cross-country analysis of resource allocation, performance, and impact on productivity. IFPRI and Asia-Pacific Association of Agricultural Research Institutions. https://doi.org/10.2499/p15738coll2.134063*
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ASEAN government strategies to support agritech innovation

DEFA, although a digital integration framework at its core, represents much more. It is an opportunity to modernise agriculture in ASEAN. By emphasising data harmonisation, intellectual property rights and facilitating cross-border data flows, DEFA will enable ASEAN countries to collaborate, adopt new digital technologies, standardise these technologies, and ensure fair distribution of benefits. Increased harmonisation will also foster greater technology transfer, cross-border technology integration and joint research and development[8].

While regional bodies like ASEAN play a crucial role in integrating the region and benefiting agritech, the governments of these nations are also key players in developing smart farming solutions. Some promising examples include:

In West Java, the Digital Village programme and the Millennial Farmers programme will provide villages with digital infrastructure, digital literacy training for farmers and others to join the online marketplace, and how to use IoT to boost farm productivity[9].

BCG-Naga Belt Road, a project initiated under the Bio-Circular-Green Economy (BCG) agenda by BIOTEC-NSTDA, aims to utilise agritech to improve the income of glutinous rice farmers in the Mekong basin. Although BIOTEC is not a government agency, it is the product of a public entity[10].

To build their agri-food industry's capability and capacity to produce 30% of their nutritional needs by 2030 sustainably, their 2021 budget included a USD 42.7 million Agri-Food Cluster Transformation Fund under the purview of the Singapore Food Agency[11].

Established an agriculture clustering system in 2020, through which the government seeks to help organise smallholder farmers and fishermen and address their key concerns[12].

The National Agrofood Policy 2.0 (2021-2030) and 12th Malaysia Plan (2021-2025) are focused on the transformation and modernisation of Malaysian agriculture.

The Food Innovation Hub in Vietnam-(FIH-V), a platform launched this year by the Ministry of Agriculture and Rural Development, will be used to accelerate the transformation of Vietnam's agricultural sector into a leader in sustainable and low-emission production[13].

Key players in developing smart farming solutions

Business sector agritech ecosystem players

In addition to government agencies, a number of private sector key players have emerged to promote startup and innovation ecosystem development in ASEAN, with an agritech focus. These include agricultural accelerators in ASEAN such as AgFunder's GROW Accelerator, Trendline's 3i, United Nations Development Programme (UNDP)'s Cultivate and IFC's AgTech Vietnam[14]. Other key players include large domestic or international corporations active in the digital space and with dedicated programmes to promote tech-based entrepreneurship and digital skill development.

Looking forward -Agritech innovations in ASEAN

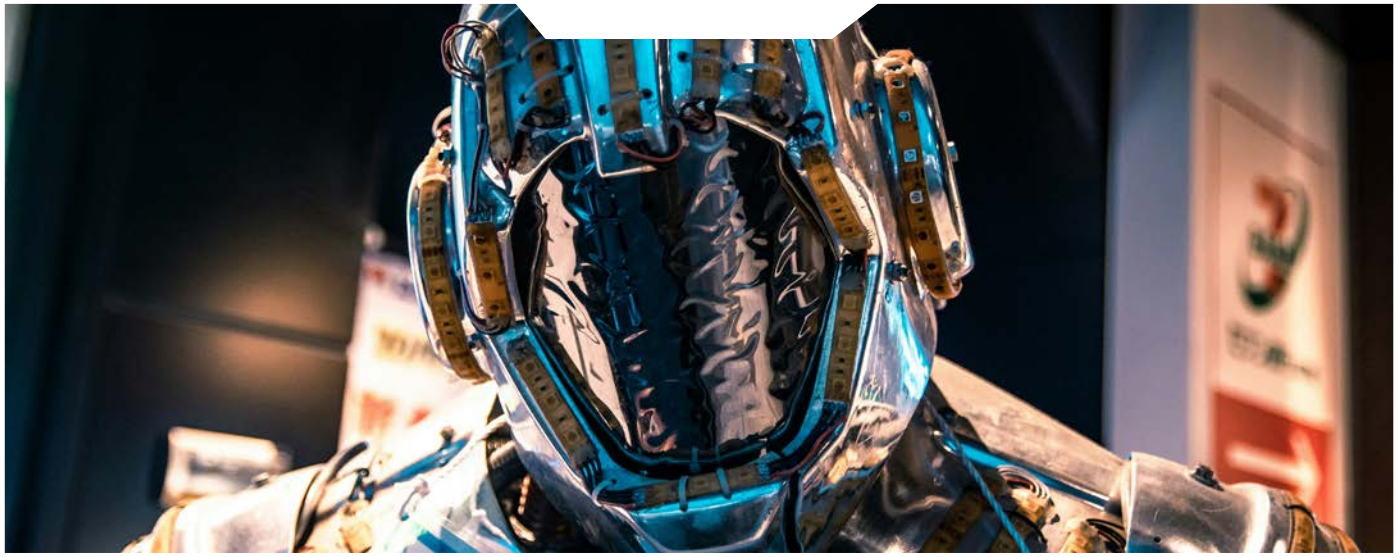
ASEAN member states will increasingly have to find new, smarter to produce the food they need for their growing population. As demographics and living standards change – so will the means of agricultural production. Agritech, in all its forms, may bring many benefits to the nations that effectively develop and implement them. To reap these benefits, ASEAN will have to coordinate and enable local efforts led by both public and private entities. The region will also have to find the financing to sustain these essential solutions. Ultimately, these developments will contribute to a more sustainable economic development and the SDG agenda more generally and offer the opportunity to bring digital innovations into other areas related to agritech: from tourism to fashion, cosmetics, pharma and biotech.

[7]This contribution is partly based on an on-going research study that ERIA is conducting with FAO. The authors wish to thank and acknowledge co-authors and/or coordinators of the above mentioned study: Amelia Litania (formerly ERIA), Lina Maulidina Sabrina (ERIA), Ravindra Ngo (The Asian Network), Aziz Elbheri (FAO).

[8]Driving AgriTech Adoption: Insights from Southeast Asia's Farmers
[9]Thailand's Evolving Ecosystem Support for Technology Startups
[10]BCG-Naga Belt Road: Strengthening glutinous rice farmers with modern agriculture technology
[11]Investing in ASEAN 2023 report
[12]Why the Philippines Is Promoting Agriculture Clustering to Boost Farmers' Income
[13]Launching Viet Nam's Food Innovation Hub: A Leap Towards Sustainable Agricultural Transformation
[14]Digital Agriculture in ASEAN: Strategies for Donor Impact

The Digital Enterprise: "Rewiring" to Capture Full Value from Digital

By Vidhya Ganesan, Sunalini Sinha and Wayne Tong,
McKinsey & Company



While many companies have embarked on some form of digitalisation journey, few have gone through the complete 'rewiring' of their organisation's capabilities and ways-of-working to sustain long-term impact from their digital transformation. Based on our learnings from 200+ digital transformations, there are six key ingredients for a successful digital transformation from strategy to execution.

What is a Digital Enterprise, and Why Does It Matter?

The definition of a Digital Enterprise changes as quickly as the latest developments in Digital. In the 2000s, having a full ERP system with easy access to data would put you at the forefront of Digital; today's Digital Enterprise would require a combination of cutting-edge technology architecture, in-house digital talent and so much more.

A future-proof way of describing a Digital Enterprise would be a company that is able to seamlessly leverage on data/digital to drive decision-making and improve operations, though this could very quickly change!

A full-fledged Digital Enterprise can consist of (but is not limited to) the following characteristics:

Digitally-enabled ways-of-working (e.g. agility, collaborative culture, hybrid/remote working)

Hardware/software connectivity and integration (e.g. IoT, lean yet flexible tech architecture, cutting-edge applications)

Digitised workflows (e.g. Robotic Process Automation, paperless approvals, fit-for-purpose ERP)

Capabilities to develop digital solutions to solve business-specific problems (e.g. data scientists, software engineers, analytics translators)

The Challenge

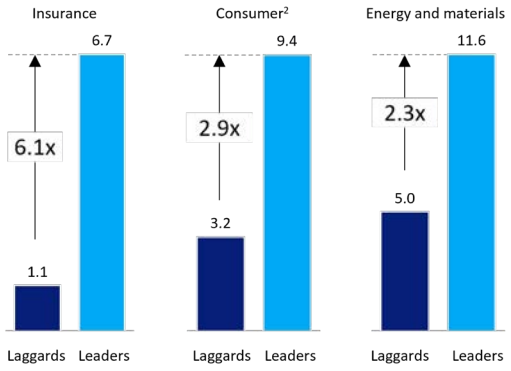
The digital transformation journey is challenging for any organisation. Our research has shown that approximately 90% of companies are engaged in some form of digital transformation, but 70% of these transformations fail to achieve its target impact.

Value at Stake

Being at the forefront of digitalisation can bring tangible bottom-line impact. According to McKinsey research, digital leaders generate 2–6% more growth in shareholder returns across various industries.

McKinsey research shows that there is an increasing gap in digital maturity between leaders and laggards. Companies that are not digitalising quickly enough risk falling further behind.

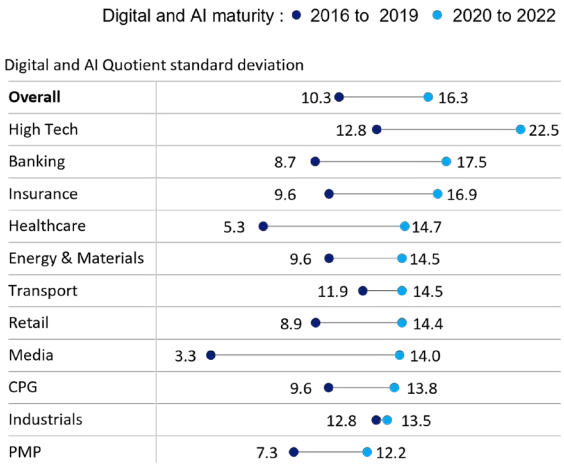
CAGR for Total Shareholder Returns by sector[1], 2018 -2022



1. S&P 500 index by sector, 2018-22
2. Includes consumer packaged good, and retail

Source: S&P Capital IQ; McKinsey analysis, Rewired (2023)

Digital and AI Quotient[1] standard deviation by sector, 2016–19 vs 2020-2022



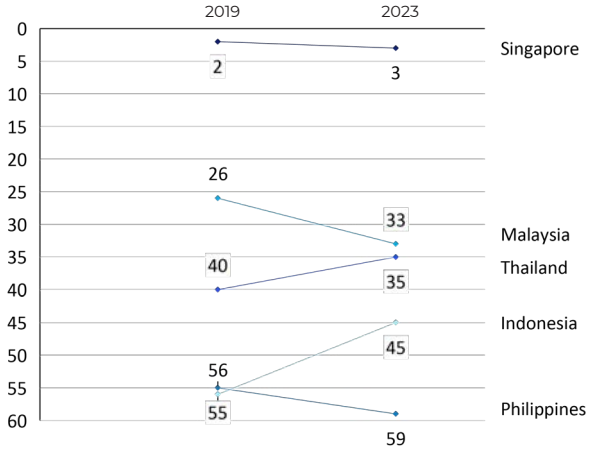
1. Conducted with over 550 organisations, a measure of digital maturity that correlates with financial performance

Source: Rewired (2023)

Based on IMD Digital Competitiveness report 2024, Malaysia was rated 33rd in the world – second highest in ASEAN (behind Singapore). Despite its relatively high rank, Malaysia's position has dropped from 26th in 2019. In comparison, other ASEAN countries have taken big strides to improve digital competitiveness. Thailand went up five spots from 40th in 2019 to 35th in 2023 while Indonesia went up from 56th in 2019 to 45th in 2023.

In addition to factors like increased competition, climate change, political environment, increasingly discerning customer demands, Malaysian companies also face some uniquely local issues such as increasing costs from a depreciating ringgit and talent loss.

World Digital Competitiveness ranking by country, 2019-2023



Source: IMD

Building and Sustaining a Digital Enterprise

Having analysed more than 200 large-scale digital and AI transformations, we have identified six key areas for enterprises to focus on:

Strategic Direction

For a start, a committed top leadership team aligned on digital transformation goals—with a common narrative and timebound targets—is critical to ensure that an organisation is working towards a common 'end-state' and avoid silos.

For example, a leading Malaysian bank has set targets on digital sales penetration (>80%) and Net Promoter Score (75th percentile) to be achieved in five years, with quarterly updates to shareholders on its progress.

Talent

Beyond technology deployment, it is critical to ensure the workforce has a strong base of digital literacy to improve the utilisation of digital resources and spark innovation. "Lunch and learns" and mandated classroom learning could be deployed to spread digital literacy.

To illustrate, a global semiconductor company with a leading Malaysian facility–recognised by the World Economic Forum as a "Lighthouse" advanced manufacturing site - partnered with local institutions to roll out online and instructor-led trainings an academy to upskill its employees in adoption of "Industry 4.0" technologies.

Operating Model

With agility being a key competitive edge, a successful operating model setup requires cross-functional teams across different businesses to work quickly and autonomously, with digital as an enabling factor.

Example: A Malaysian telco company scaled cross-functional Tribes and Squads to drive digital sales, greatly enhancing the customer experience (more convenient, faster delivery).

Technology

With increased demand for custom solutions, there is a growing trend of non-tech employees getting involved in digital projects. Low-code platforms can help bridge the capability gap.

Example: A Malaysian property developer leveraged low-code platforms to develop new applications that helped to manage their customer's end-to-end property sales and purchase journey.

Data

Today, there are millions—sometimes billions—of data points generated each day for a moderately-sized company. Further enriching the data at-hand through pre-processing and ease of accessibility through a cloud platform can help an organisations do significantly more.

Example: A few Malaysian companies have deployed data storage and processing solutions on cloud. This can help to improve the speed and quality of data-driven decision-making

Adoption & Scaling

How often do we hear about a company pursuing the next big thing, which then fizzles out and remains as archived news years later? While we often see companies put significant efforts to build promising pilots, successful digital transformations require change management and close monitoring to sustain and scale value capture.

A Malaysian property developer introduced a construction management software, which required ~800 contractors to comply to realise full value capture. Realising that contractor buy-in was critical, a dedicated change management programme was deployed to drive adoption.

Our Key Takeaway

While rewiring an organisation into a digital enterprise may appear to be a daunting task with no immediate returns, the risk of doing nothing may be even more significant in the long term. Acting now will plant a seed of change to take root.

Vidhya Ganesan is the managing partner of McKinsey & Company's Malaysia office. Sunalini Sinha is an associate partner and Wayne Tong is an engagement manager; both are also based in McKinsey & Company's Malaysia office.

Revolutionising Future **Business with E-Invoicing**

By Soraya Binti Mohd Saffian,
Digital Transformation Division, MDEC

Imagine your business as a well-oiled machine. Each cog and wheel represents a different process, and invoices are the grease that keeps it all running smoothly. But what if that grease was thick, sticky, and slow to apply? E-invoicing is like switching to a high-performance lubricant. It reduces friction, speeds up operations, and ensures every part of your business is working at maximum efficiency.

An E-Invoice is a digital version of a traditional paper invoice containing transaction details required for billing and tax purposes. E-invoicing is the process of exchanging these e-Invoices between systems without manual data entry.

Understanding the Global e-Invoicing Market

As Europe and the Asia-Pacific business ecosystem continue to embrace digital transformation, e-invoicing is poised to become a standard practice in today's business world, driving further innovation and collaboration across governments and industries. The e-invoicing market is experiencing remarkable growth, with its size projected to surge from USD 12.47 billion in 2023 to an impressive USD 62.68 billion by 2031, registering a compound annual growth rate (CAGR) of 22.4% during this period. This growth is powered by the increasing adoption of digital solutions by governments and businesses alike, increased efforts in mitigating fraud and errors in financial transactions and the growing emphasis on environmental sustainability by minimising paper usage. Malaysia, for instance, is rapidly advancing towards making e-invoicing mandatory, reflecting a global trend driven by the need for greater efficiency, transparency, and cost savings. As more countries join the e-invoicing revolution, it is expected to become a global standard, transforming how businesses operate and interact.

Business Awareness and Benefits of e-Invoicing for Business Digitalisation

As awareness of interoperable E-Invoicing grows, the Malaysian business community has been responding positively to E-Invoicing for business digitalisation.

Small and medium enterprises (SMEs) comprise a large percentage of Malaysia's growing economy and they increasingly acknowledge the advantages of digital invoicing solutions. E-Invoicing can particularly benefit SMEs by reducing their administrative burden, improving their cash flow management and boosting their competitiveness in the digital economy.

Larger corporations, particularly those with extensive supply chains, are also leading the way in adopting e-invoicing. As these companies deal with a large volume of transactions and processes high number of invoices per month, digitalising the exchange of invoices brings considerable benefits to their operations in terms of business efficiency, as e-invoicing not only helps reduce errors and lower transaction costs but also accelerates payment cycles, thereby improving cash flow management. This transition to e-invoicing brings a wave of optimism, promising a more efficient and streamlined business operation.

Aligning with global best practices to streamline cross-border transactions while ensuring compliance with international standards is also encouraging multinational companies operating in Malaysia to adopt E-Invoicing.

E-invoicing for business digitalisation is also seen as a key contributor to companies' environmental, social and governance (ESG), where environmental elements such as paper usage and physical storage can be reduced drastically, resulting in energy savings and a reduction of carbon footprint

Making it Work with An Interoperable Framework

To implement e-invoicing for nationwide business digitalisation, it is essential to establish an interoperable framework that enables seamless communication and document exchange across various platforms and systems.

An interoperable framework serves as a foundational infrastructure that allows different software systems, used by various businesses, to understand and process information in a standardised format. By creating a common language for e-Invoice messages, businesses can easily exchange invoices, purchase orders, and other business documents, regardless of the software or system they use.

This framework ensures that all parties in the supply chain, from small businesses to large corporations, can integrate their systems with minimal friction. It also supports the automation of financial processes, reducing errors and improving efficiency. In addition, an interoperable framework can facilitate compliance with regulatory requirements by ensuring that all e-Invoices meet the necessary standards and can be easily audited.

The framework is typically built on widely accepted standards, which act as guidelines for how data should be structured and exchanged. These standards are crucial for ensuring that different systems can work together without requiring extensive customisation or manual intervention.

By focusing on creating and adopting a robust interoperable framework, businesses can prepare for a smooth transition to e-invoicing, laying the groundwork for future innovations and improvements in digital business processes. This approach not only simplifies the exchange of documents but also fosters a more connected and efficient business ecosystem.

The Case for Peppol

Peppol is a set of technical requirements that standardise the data format sent from one system to another, ensuring interoperability. It provides a common language for different systems to communicate, making it easier for businesses to exchange E-Invoices. Accounting software, ERP systems and service providers that adopted the Peppol specification in their solutions will enable them to connect to the Peppol network and exchange e-Invoices with other systems.

In the Peppol network, service providers operate in two roles: Peppol Service Providers, also known as Access

Point (AP) providers and Peppol-Ready Solution Providers (PRSP). APs are responsible for creating and maintaining the gateways that connect businesses and software to the E-Invoicing network. An AP is a party assigned and given permission to connect to the Peppol network, which allows e-Invoice in Peppol format to be transmitted to another AP. Peppol-Ready Solution Providers (PRSP) are accounting software, ERP systems or solutions allowing users to send and receive e-Invoices in Peppol format.

In 2021, the Peppol framework was identified as the most suitable framework to be implemented in Malaysia and the Malaysia Digital Economy Corporation (MDEC) was appointed as the Peppol Authority for Malaysia to ensure the successful implementation of the Peppol framework in Malaysia. This include accrediting Malaysia's service providers to conform to Peppol standards, thereby making interoperability possible and establishing local requirements and technical standards to be in line with the Inland Revenue Board of Malaysia (LHDNM)'s tax compliance and oversees the country's implementation of the Peppol framework. On the industry front, MDEC will also ensure businesses understand the benefits of Peppol, as well as conduct outreach efforts to accelerate its adoption across the country.

Complimentary Players in E-Invoicing: MDEC and LHDNM

The Government of Malaysia's proactive stance in promoting digitalisation, coupled with growing technological adoption among businesses, underscores the transformative potential of e-invoicing in Malaysia's economic landscape.

Malaysia is unique in implementing e-invoicing both for business digitalisation and tax reporting. This dual approach ensures seamless business operations and compliance with tax regulations.

For tax reporting and compliance, Malaysia's tax authority, LHDNM, mandates businesses to submit their e-Invoices to LHDNM for validation before sending them to buyers. In 2023, LHDNM announced that e-invoicing would become mandatory for businesses with a turnover greater than RM 100 million, starting on 1 August 2024. The second phase, for businesses with an annual turnover above RM 25 million, will begin on 1 January 2025 and by 1 July 2025, all businesses will be required to comply. At the same time, the Government of Malaysia has also mandated MDEC to implement business digitalisation e-invoicing using the Peppol framework.

These two components, implemented by MDEC and LHDNM, complete the country's E-Invoicing ecosystem. When businesses adopt interoperable E-Invoicing using the Peppol framework, they will also fulfil LHDNM's tax reporting and compliance requirements, making it easier for businesses to submit their E-Invoices to LHDNM for tax compliance.

E-Invoicing is the Future of Business

In conclusion, e-Invoicing is not just a technological upgrade—it is a transformative leap that will redefine the way businesses operate in Malaysia. As we move towards a fully digitalised economy, the implementation of an interoperable e-Invoicing framework represents a critical step in ensuring that businesses, regardless of size, can participate in this new era of efficiency and innovation.

"e-Invoicing is not just a technological upgrade—it is a transformative leap that will redefine the way businesses operate in Malaysia."

The success of this initiative hinges on the continued collaboration between the government, businesses, and technology providers. Together, we have the opportunity to build a resilient and adaptable digital ecosystem that benefits everyone. MDEC is actively engaging with the service provider community to enrich the e-Invoicing landscape, ensuring that the infrastructure is not only robust but also future-proof.

We urge all stakeholders to take an active role in this journey. The transition from paper to digital is inevitable, and those who embrace e-Invoicing today will be the leaders of tomorrow, enjoying unparalleled advantages in speed, accuracy and environmental sustainability. The future of business is here, and it is digital. Let us work together to realise its full potential.

Reality Reinvented: **How AR & VR are Shaping Brand Experiences**

By Radlin Bin Ramsah
Digital Content, MDEC

Virtual Reality (VR) and Augmented Reality (AR) are poised to revolutionise brand experiences, transforming the way consumers interact with products and services. Imagine customising your dream car in a virtual showroom, feeling the texture of the seats, and hearing the engine roar. Or envision exploring the Great Barrier Reef from the comfort of your home, surrounded by stunning marine life.

These immersive experiences are not mere fantasies, but a glimpse into the future of brand-consumer interactions. The global extended reality (XR) market, encompassing both VR and AR, is projected to experience exponential growth in the coming years. With an estimated value of USD 131.54 billion in 2023, the market is expected to soar to USD 183.96 billion in 2024 and reach a staggering USD 1,706.96 billion by 2032, representing a compound annual growth rate (CAGR) of 32.1% during the forecast period (2024-2032)[1].

> "Gen-Z often feels disconnected from traditional branding and seeks more engaging and meaningful digital experiences."
>
> *Fariz Hanapiah, EDT*

The digital content industry recognises the immense potential of VR and AR to reshape brand experiences. By creating deeper, more meaningful connections with consumers, these technologies are moving beyond traditional marketing strategies. The focus now lies on expanding the XR ecosystem to unlock new possibilities for brand engagement and consumer experiences.

The era of static billboards and one-size-fits-all marketing campaigns is fading. Today's consumers, especially Generation Z, crave authentic and engaging experiences. As Fariz Hanapiah from EDT observes, "Gen-Z often feels disconnected from traditional branding and seeks more engaging and meaningful digital experiences." Brands face

[1] *https://www.fortunebusinessinsights.com/extended-reality-market-106637*

the challenge of captivating their audience and building authentic relationships. Extended Reality (XR), which includes AR and VR, offers a compelling and innovative solution to enhance brand experiences.

XR offers transformative opportunities for brands where AR can create practical and interactive product experiences by overlaying digital elements onto the physical world. Imagine a furniture store allowing customers to virtually place a sofa in their living room to see if it matches their decor or a clothing retailer offering virtual try-ons from home. These immersive experiences enhance brand engagement, personalisation and convenience.

VR takes immersion further by placing users in a fully virtual environment. Ts. Carl Loo, founder of 3Particle, emphasises, "XR technology allow brands to create immersive and interactive experiences that truly captivate consumers." By merging the physical and digital realms, XR enables brands to tell compelling stories, foster emotional connections and provide unique, memorable interactions.

> XR technology allow brands to create immersive and interactive experiences that truly captivate consumers.
>
> *Ts. Carl Foo,*
> *Founder 3Particle*

For instance, a travel agency can use VR to let potential customers explore historical landmarks, navigate bustling city streets or experience thrilling adventure activities, effectively transporting them to their dream destinations. This not only creates a deeper emotional bond with the brand but also ignites a desire to visit these places in person.

XR's potential is not limited to brand storytelling and product experiences. Havene Liew, founder and CEO of TheXRA highlights, “XR offers brands a unique way to create immersive and interactive experiences that captivate consumers”. Additionally, XR can assist a brand in promoting its ESG initiatives by developing educational and impactful experiences that emphasise social responsibility and sustainability.

Imagine a clothing brand that is ethically sourced and utilises virtual reality to provide customers with a virtual tour of its sustainable manufacturing facilities. This tour would demonstrate the brand's dedication to environmental responsibility and equitable labour practices. This transparency fosters brand loyalty and trust while also having a positive social impact.

The Malaysian Advantage: A Vibrant XR Ecosystem

Malaysia boasts a dynamic XR ecosystem, driven by talented developers and creative agencies pushing the boundaries of these technologies. MDEC actively supports this ecosystem through various initiatives:

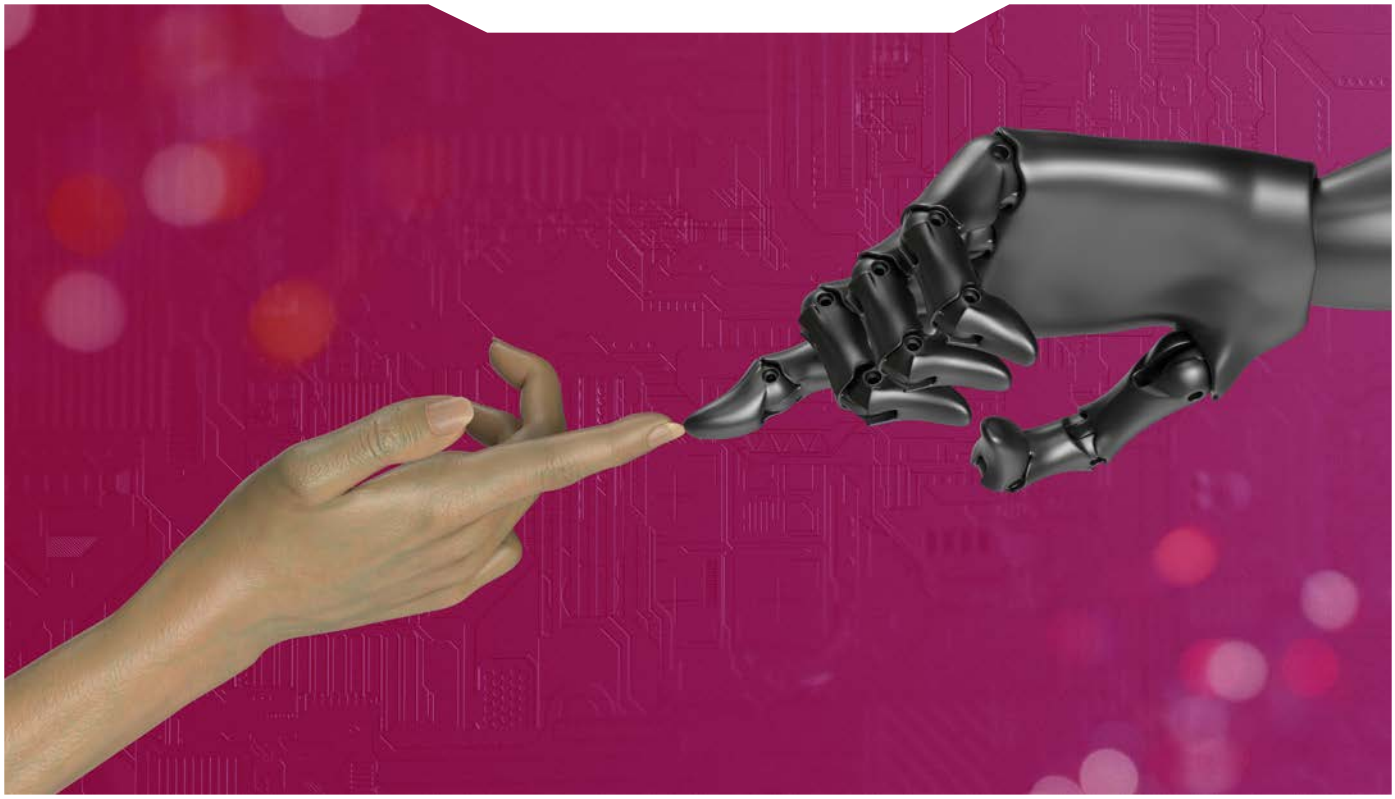
MDEC's Support Initiatives for XR Technologies

Innovation and immersive storytelling are the future of brand experiences. By embracing AR and VR, Malaysian brands can gain a competitive edge, forge stronger consumer relationships, and shape the future of brand engagement in an ever-evolving digital landscape.

Malaysia's XR landscape is rife with opportunity, and now is the moment for marketers to embrace this disruptive technology. Global brands such as IKEA and Pepsi have already demonstrated the effectiveness of AR and VR in creating immersive experiences, driving engagement, and elevating brand visibility. Malaysian brands may reach new levels of engagement and reimagine brand experiences by following suit and leveraging MDEC's initiatives. The future is XR; it's time to enter this immersive universe and create a new brand reality.

Is Regulation Instrumental in Impacting Ethical AI Development?

By Tengku Azrul Bin Tengku Azhar, Chan Chuey Hwye and Naabihah Farha Binti Kamarul Zaharin, Digital Industry Acceleration Division, MDEC



Artificial Intelligence (AI) is often hailed as the most transformative technology of our era. From healthcare to finance, entertainment, and education, AI has the power to innovate and improve. It can diagnose diseases with unprecedented accuracy, optimise financial portfolios, personalise learning experiences, and even entertain us with lifelike virtual characters. But with this power comes great responsibility.

While AI promises to revolutionise industries, empower our daily lives, and unravel some of the world's most pressing problems, the same algorithms that bring about positive change can also perpetuate bias, invade privacy, and disrupt social norms. So we stand on the brink of this technological revolution, asking ourselves: At what cost? Can we harness the power of AI without compromising our ethical standards? How do we ensure that AI acts as a force for good in society?

As AI systems become more autonomous, countries worldwide are developing guidelines and principles to govern AI's development and use in response to these challenges. UNESCO has taken a leading role, emphasising four core values for ethical AI: respect for

4 CORE VALUES FOR ETHICAL AI

1. Respect for human rights
2. Promoting peaceful and just societies
3. Ensuring diversity and inclusiveness
4. Promoting environmental well-being

human rights, promoting peaceful and just societies, ensuring diversity and inclusiveness, and promoting environmental well-being.

Is simulating human intelligence against the law of nature ethical? AI allows machines to learn from experience, adjust to new inputs, and perform human-like tasks using deep learning and natural language processing technologies. The benefits of AI are clear, but the challenge lies in balancing the need for technological advancement with ethical implementation.

Governments worldwide are developing regulatory tools to navigate this AI journey, encouraging innovation while considering human rights issues and promoting interoperability. On the other hand, the question remains whether existing AI-related regulations are comprehensive enough to support ethical AI deployment or if the technology should be self-regulated.

AI and the Economy: The Double-Edged Sword

The landscape of AI, particularly Generative AI, is advancing rapidly, bringing remarkable economic growth opportunities. The impact of AI extends beyond mere economics; it fuels cross-border trade and facilitates data flows that enrich nations' economies. It enhances efficiency and sparks innovation, driving forward global trade and contributing to a thriving economy. AI technologies have the power to reskill our workforce, streamline production processes, and inspire new business models that can transform industries. These are just some of the remarkable benefits we stand to gain.

So, can we genuinely harmonise ethical implementation with economic advantages, or are we inevitably drawn to prioritising economic impact? We must strive for a balance between ethical considerations and economic outcomes. We must decide how comprehensive these measures are. Effective regulations should incorporate ethical guidelines that align AI development with societal values and human rights, ensuring transparency and accountability.

A robust framework should encourage global collaboration to create harmonised standards, preventing fragmented regulations that could hinder AI innovation. Comprehensive measures must include detailed risk assessments and mitigation strategies to identify potential harms and implement controls to minimise these risks. Additionally, ensuring that guidelines are not only well-developed but also effectively implemented and enforced through regular audits and compliance checks is crucial. Establishing clear performance metrics to evaluate the effectiveness of AI systems in real-world applications ensures they meet the intended ethical and operational standards.

Regulatory Frameworks and Toolkits: Ensuring Responsible AI

Countries worldwide have developed various regulatory frameworks to harness AI's benefits. These include laws, policies, guidelines, ethical principles, validation toolkits, and international standards.

For example, the Bletchley Declaration, a joint effort among 29 countries, underscores the importance of responsible AI development, prioritising human well-being and ethical usage across various sectors. The EU's AI Act proposes a comprehensive regulatory framework focusing on risk-based AI systems. The government has established the AI Roadmap 2021-2025 in Malaysia and is developing National Guidelines on AI Governance and Ethics (AIGE). Such efforts reflect a growing consensus that ethical AI is not just a technical issue but a fundamental aspect of societal progress.

Various validation tools can assess AI systems' performance, reliability, and compliance with ethical standards. These tools help developers anticipate, manage, and mitigate ethical issues, ensuring the highest regulatory compliance.

Malaysia's Role in Ethical AI Development and Embracing Ethical AI

With the AI Roadmap 2021-2025, Malaysia is not far behind in setting up relevant ethical and responsible AI principles. The National Guidelines on AI Governance and Ethics (AIGE) aim to guide AI developers, policymakers, and end users by focusing on seven core AI principles. Policymakers can conduct thorough risk assessments to identify potential harms and benefits, ensuring that regulations support the digital economy without compromising human rights.

To foster the development of AI systems that uphold ethical principles, we must ensure that progress does not come at the cost of our values. However, it is essential to reflect on the type of regulatory tools we should embrace. We must find a harmonious balance between promoting ethical AI use and prioritising governance, or perhaps employ both realities.

We can draw upon various assessment methods established globally, including the High-Level Expert Group on Artificial Intelligence (EU), which embraces innovation and utilises the Assessment List for Trustworthy AI (ALTAI) to ensure that AI systems are developed with integrity and responsibility at their core.

Other methods, like the OECD's AI Ethics Self-Assessment Questionnaire, empower organisations to reflect on their AI initiatives and strive for excellence and accountability in their operations. Additionally, the IEEE CertifAIEd™ programme offers a robust certification for assessing the ethics of Autonomous Intelligent Systems (AIS). This certification not only highlights the ethical considerations of the systems but also instills confidence in users, reinforcing the promise of a responsible and trustworthy AI landscape.

Policymakers can differentiate between high-risk and low-risk AI applications by discerning potential harms and benefits. The outcomes of these assessments will pave the way for thoughtful criteria that the government should consider when developing regulations that support the digital economy while upholding our fundamental beliefs and human rights. The importance of ethics cannot be overstated but must be woven into the fabric of our regulatory frameworks, guiding us towards an innovative and principled future.

By developing and adopting global ethical best practices, we can foster international collaboration that champions consistent and responsible AI practices that circle values such as fairness, bias mitigation, transparency, accountability, and privacy protection, ensuring that all share the benefits of technology.

Employing global ethical standards and guidelines will resonate with the rich diversity of our society, ensuring that no single interest holds sway over the collective voice. Together, we can create a regulatory landscape that reflects our shared values and aspirations, empowering everyone to thrive in this digital age and cultivating an inclusive environment where innovation and ethics coexist.

Embracing flexible frameworks at their early stages—self-regulatory and voluntary guidelines will adapt to the rapid technological advancements across different industry sectors and the varying levels of public awareness in each jurisdiction.

Communicating ethical standards and human oversight would enable us to create trust and accountability in our processes and decision-making, empowering individuals to engage with technology confidently.

We must empower our citizens on the ethical dimensions of AI through awareness and education to build a society that understands the implications of these technologies and actively participates in shaping a future that reflects our shared values and aspirations.

Conclusion: Malaysia's Path to Ethical AI

Our government's commitment to developing and implementing ethical guidelines for AI signifies a stable and forward-thinking investment environment. This ethical stance helps attract investors looking for markets that prioritise responsible AI usage, value long-term, principled growth, and are eager to be part of our journey.

Investing in Malaysia's AI ecosystem will give stakeholders access to a burgeoning market and shape an ethical AI landscape that sets a global standard. This balanced approach ensures that Malaysia's AI journey is not just about technological advancement but about building a future where innovation and ethics coexist harmoniously, setting a standard for the world to follow. Malaysia's commitment to ethical AI development is not just a policy choice; it's a strategic vision that aligns with the global shift towards responsible and sustainable technology, making it an attractive destination for forward-thinking investors.

Encouraging ethical AI innovation will attract investors and foster trust and confidence in the technology. By developing robust regulatory frameworks and promoting ethical AI development, Malaysia can position itself as a leader in this field. Malaysia can achieve sustainable growth by prioritising ethics alongside innovation and contributing to the global conversation on responsible AI development.

Note: The above article are the authors' personal views, and they are advised to be read along with the existing laws and regulations in each jurisdiction. These are not steps to be taken without due regard to the governance and the fundamental institutional pillars in each jurisdiction.


Inquiry
PIN Change
eCash
RECEIPT

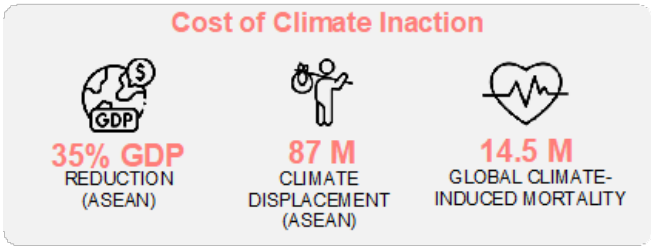
Turning the Tide: Climate and Clean Technologies Leading the Way to a Greener Tomorrow

By Mohamad Zulfadli Mohd Amin
Digital Regulatory & Sustainability, MDEC

The urgency of climate action is higher than ever, with the window of opportunity to secure a liveable and sustainable future rapidly closing. The Intergovernmental Panel on Climate Change (IPCC) has emphasised the need for urgent and ambitious action to reduce greenhouse gas emissions and adapt to human-caused climate change. Climate change poses an existential threat to ecosystems, economies, and communities worldwide. The increasing frequency and intensity of extreme weather events, rising sea levels, and biodiversity loss underscore the pressing need for immediate and sustained action. According to the Southeast Asia Green Economy Report 2024, the region faces significant risks from climate change, including potential GDP losses of up to 11% by 2100 if no action is taken. These challenges necessitate a transformative approach to resources.

The Rise of Climate Tech and Clean Tech: A Path to Sustainable Solutions

In recent years, climate technology (climate tech) and clean technology (clean tech) have emerged as pivotal players in the global effort to combat climate change - driven by an urgent need for sustainable solutions to mitigate the adverse effects of climate change and promote environmental stewardship. These technologies include



decision-making tools that enhance human intelligence, sensing and control technologies that optimise physical processes, and foundational technologies like big data analytics and cloud computing. According to the World Economic Forum, digital technologies can reduce global emissions by up to 20% by 2050 in key sectors such as energy, materials, and mobility[1]. The rise of climate tech and clean tech is reshaping industries and offering promising pathways toward a more sustainable and resilient future. The economic benefits of investing in climate tech and clean tech are substantial. The ASEAN Strategy for Carbon Neutrality projects that pursuing a carbon-neutral future could add between USD 3.0 and 5.3 trillion to ASEAN's GDP by 2050. Green investments are also expected to generate up to 66 million new jobs in the region, further highlighting the potential for economic growth alongside environmental sustainability.

Climate Tech: Innovations for a Greener Future

Climate tech encompasses a broad spectrum of technologies to reduce greenhouse gas emissions, enhance climate resilience and promote sustainability. This sector includes renewable energy technologies, carbon capture and storage, climate-smart agriculture, and advanced materials. Renewable energy technologies, such as solar and wind power, have seen remarkable advancements, making them more efficient and cost-effective. For instance, Southeast Asia has experienced a significant increase in renewable energy investments, with solar and wind energy leading the charge. In 2023, renewable energy investments in the region grew by 9%, reaching USD 6.3 billion.

Another notable area within climate tech is carbon capture and storage (CCS). This technology captures carbon dioxide emissions from industrial processes and stores them underground, preventing their release into the atmosphere. CCS is gaining traction as a crucial tool in transitioning to a low-carbon economy, particularly in hard-to-abate sectors like cement and steel production. The International Energy Agency (IEA) projects that CCS could contribute to a 14% reduction in global CO2 emissions by 2050.

Clean Tech: Sustainable Solutions for Every Sector

Clean tech focuses on creating products and services that minimise environmental impact and promote resource efficiency. This sector spans various industries, including energy, transportation, agriculture, and waste management. Innovations in clean tech are driving the development of electric vehicles (EVs), smart grids, and circular economy practices.

The transportation sector, a major contributor to greenhouse gas emissions, is transforming with the rise of EVs. Governments and businesses in Southeast Asia are increasingly investing in EV infrastructure and incentives to accelerate adoption. Singapore, for example, aims to phase out internal combustion engine vehicles by 2040, and the country has seen a 380% increase in battery EV sales in 2023.

Southeast Asia's commitment to sustainable practices is evident in the broader clean tech sector. The region's circular economy initiatives, such as recycling and waste-to-energy projects, are projected to reduce waste by 50% and create 200,000 jobs by 2030.

ESG Regulations: Driving Growth and Accountability

Environmental, Social, and Governance (ESG) regulations play a crucial role in driving the growth of climate tech and clean tech by promoting sustainable practices and accountability among companies. These regulations set the standards for corporate behaviour in areas such as environmental impact, social responsibility, and governance structures, ensuring that businesses operate in a manner that is both ethical and sustainable. In Southeast Asia, countries are increasingly adopting ESG frameworks to guide corporate actions and investments. For instance, Malaysia's Sustainable and Responsible Investment (SRI) Sukuk framework, launched by the Securities Commission Malaysia, provides guidelines for issuers to raise funds for green and sustainable projects. This framework has been instrumental in channelling investments into renewable energy, energy efficiency, and other green initiatives.

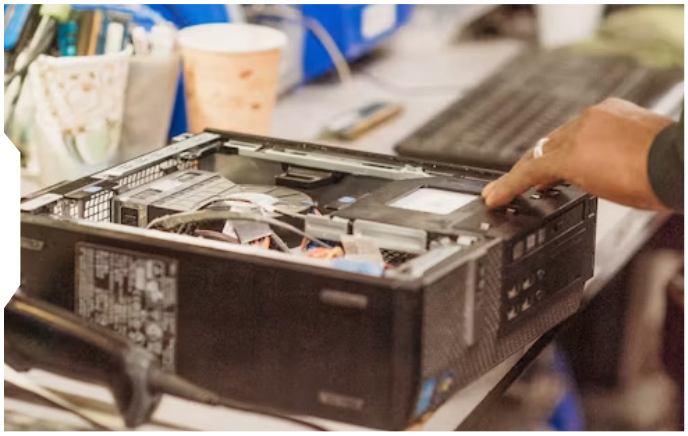
[1] *https://www.weforum.org/agenda/2022/05/how-digital-solutions-can-reduce-global-emissions/*

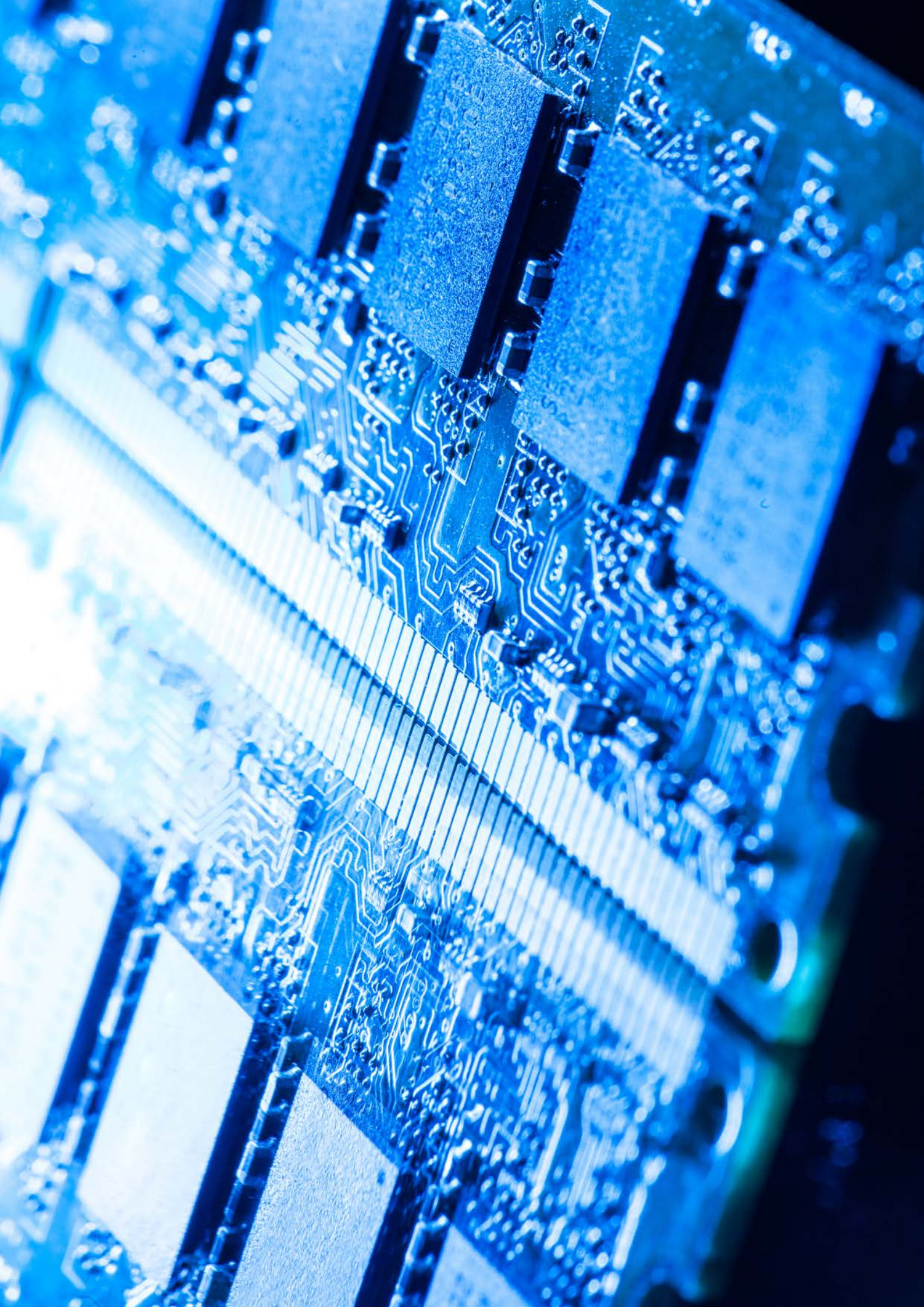
Similarly, the ASEAN Taxonomy for Sustainable Finance aims to harmonise sustainability standards across member states, promoting a unified approach to sustainable investment and corporate accountability. This taxonomy provides a clear classification system for economic activities that contribute to environmental objectives, helping investors identify and support sustainable projects.

A Call to Action

The rise of climate and clean tech represents a beacon of hope in the fight against climate change. These technologies not only offer solutions to mitigate environmental impact but also drive economic growth and job creation. However, realising their full potential requires concerted efforts from governments, businesses, and individuals to support innovation, invest in sustainable infrastructure, and implement policies that promote a green economy.

As we navigate the complexities of climate change, the continued advancement and adoption of climate tech, clean tech, and digital solutions will be essential in building a sustainable future for future generations. The journey toward a greener world is challenging, but it is within our reach with the right technologies and collaborative efforts.





Looking Beyond **Malaysia for Global Growth**

By Ng Jun Wen,
Digital Export, MDEC

Introduction

Malaysia's thriving tech sector faces a significant challenge - the limited size of its domestic market. With a population of just 33 million, startups find it difficult to reach the critical user base and revenue growth necessary for scalability. This market constraint limits investment opportunities, potentially stifling innovation and preventing the rise of regional tech leaders. Without access to a broader user base, companies may struggle to create solutions with global relevance, thereby restricting their potential for scale and long-term impact.

As a result, Malaysian companies are increasingly looking beyond their borders for growth opportunities. In this increasingly interconnected global economy, regional expansion has become a strategic move that can set the stage for global success. This article explores how Malaysia Digital (MD) status companies can take advantage of Digital Exports CONNEX—a robust platform that connects 25 global markets on a single platform.

Gopi Ganesalingam, Head of Digital Exports (DEX) at MDEC, highlighted that the introduction of DEX into the Malaysia's digital landscape has generated significant economic benefits, with companies reporting revenues of RM 8.65 billion and exports totalling RM 3.165 billion in 2023. These numbers provide clear evidence of the effectiveness of DEX CONNEX in fostering connections among a wide range of global partners, stakeholders and tech enterprises. Building on this success, ongoing efforts will focus on maintaining this positive momentum and exploring new opportunities in emerging markets, such as China, Europe, the Middle East, Africa and the Americas.

Significance of Global Expansion

Global expansion is a priority for businesses seeking sustained growth and resilience. By entering new markets, companies can tap into broader opportunities, reduce dependency on any single market and enhance their ability to navigate economic fluctuations and evolving consumer trends. This approach fuels revenue growth and strengthens a company's ability to withstand localised challenges as follows:

Market diversification
Mitigating risk by reducing dependence on a single market is crucial for business stability. Relying on just one market can leave companies vulnerable to significant risks, such as economic downturns, regulatory changes or shifts in consumer behaviour that could disrupt operations. Expanding into regional markets allows companies to diversify their revenue streams, providing a safeguard against market-specific shocks.

Access to new customers
Expanding into new markets offers significant growth potential by reaching diverse population segments and consumer demographics. Each country has unique population, demographics and preferences characteristics, making it essential to tailor products and services. For example, Indonesia's market of over 270 million people presents vast opportunities for adaptable companies. Furthermore, digitalisation provides numerous prospects for Malaysian tech firms, such as Phison, which pioneered innovative technologies like the thumb-drive.

Navigating Logistics
The geographical proximity of ASEAN nations facilitates efficiency and cost savings. Establishing efficient logistics networks within the ASEAN region significantly lowers transportation expenses. This applies to the shipping of goods and the management of supply chains, allowing companies to capitalise on streamlined distribution channels. Notably, most capital cities within the ASEAN are accessible within a three-hour flight. Moreover, the planned Singapore-Kunming Rail Link (SKRL), a pan-Asian high-speed railway network designed to link Cambodia, Laos, Malaysia, Myanmar, China, Singapore, Thailand and Vietnam. This network will significantly reduce travel time and connect ASEAN to China's USD 17.52 trillion economy as of 2023.

Learning Opportunities
Operating in diverse markets offers valuable insights. Each country comes with its own cultural norms, business practices and communication styles. Adjusting to these variations strengthens a company’s capability to succeed in regional markets.

Exploring Key Markets in ASEAN

The ASEAN region is a goldmine waiting to be tapped for digital companies. The Google e-Conomy SEA 2023 report highlights a 20% increase in the number of digital consumers in Southeast Asia during the pandemic alone. This double-digit growth will drive consumer and business adoption of digital tools. In addition, the ASEAN digital economy is also expected to hit a gross merchandise value (GMV) of USD 1 trillion by 2030.

This growth is partly driven by ASEAN’s young and digitally fluent population of over 400 million internet users. Bolstered by these demographics and mobile connectivity, ASEAN’s e-commerce market is projected to hit a staggering USD 130 billion by 2025, with a continuous growth rate of 15%. (e-Conomy, 2023).

Additionally, the same report estimates that ASEAN’s internet economy will reach USD 170 billion in gross merchandise value by the end of 2021 and exceed USD 360 billion by 2025. This broader estimate includes e-commerce and other digital sectors within the internet economy.

Recognising the potential of the digital economy, many ASEAN governments are also actively promoting digitalisation initiatives, creating a business-friendly environment for tech companies while cooperating with other ASEAN governments. Bilateral cooperation on frameworks like the ASEAN Digital Economy Framework Agreement will harmonise digital opportunities for the region, going beyond the existing bilateral or multilateral Digital Economy Agreements.

The ASEAN region offers a distinct combination of a thriving digital economy, a rapidly expanding tech-savvy population and strong government support. By entering this market, digital companies can access significant growth potential and capitalise on a wealth of untapped opportunities across these four key ASEAN markets:

Indonesia

Population: 277 m

GDP per capita: USD 4,798

Digital economy: USD 300 b by 2030; 76% of the population are digital users

Market Overview: Indonesia, with a population of over 270 million, offers a vast consumer base. As ASEAN's largest digital economy, it boasts a dynamic market with significant growth potential.

Vertical Focus: Logistics, E-Commerce, Manufacturing, Smart City, BFSI

Philippines

Population: 108 m

GDP per capita: USD 3,548

Digital economy: USD 85 b by 2030; 91% of the population are digital users

Market Overview: The Philippines is known for its English-speaking population and strong BPO (Business Process Outsourcing) industry.

Vertical Focus: BPO, Outsourcing, eCommerce, Logistics, Healthcare, Hospitality

Vietnam

Population: 99.3 m

GDP per capita: USD 3,800

Digital economy: USD 45 b by 2030; 60% of the population are digital users

Market Overview: Vietnam's rapidly growing economy is is transforming the country into a manufacturing and export powerhouse.

Vertical Focus: BFSI, Education, Healthcare, Manufacturing, E&E

Thailand

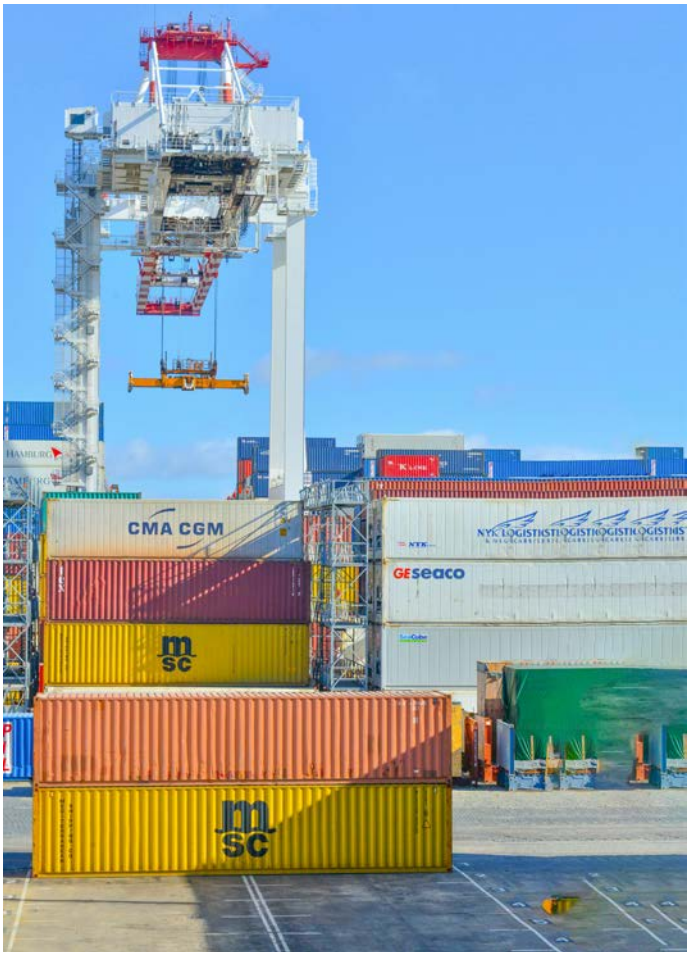
Population: 72 m

GDP per capita: USD 7,100

Digital economy: USD 43 b by 2030; 80% of the population are digital users

Market Overview: Thailand serves as a regional hub due to its strategic location in the Cambodia, Myanmar, Laos & Vietnam (CMLV) region and has well-developed infrastructure.

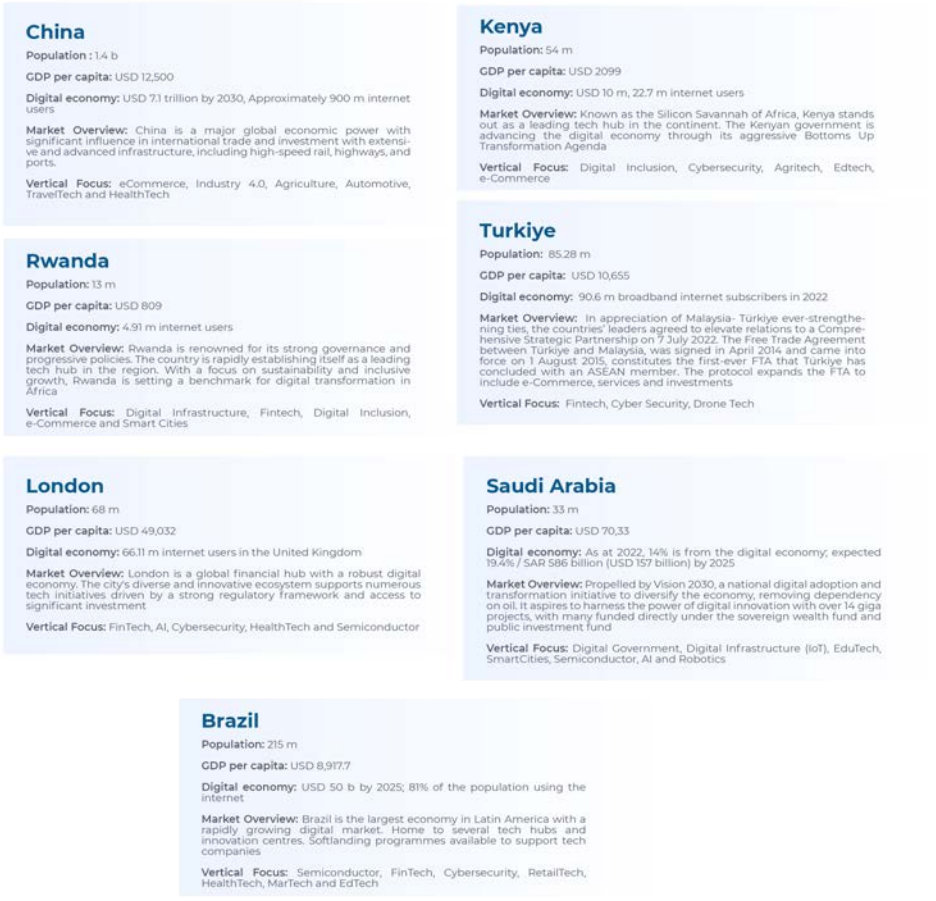
Vertical Focus: eCommerce, IR 4.0, Agriculture, Automotive, Tourism, Medical



Expanding new horizons in China, Africa, the Middle East, Europe and the Americas

Beyond ASEAN, MDEC also supports companies in seizing global opportunities by emphasising specific tech verticals to penetrate new markets effectively. Key verticals include AgriTech, Artificial Intelligence, Semiconductor, Cybersecurity, Smart Cities, FinTech and more. This growth is driven by the increasing global demand for innovation across various sectors as countries worldwide seek advancements to accelerate their digital transformation in an interconnected world.

Recognising the immense potential of these tech verticals, many countries are actively promoting initiatives to attract innovative solutions. Governments are creating business-friendly environments and collaborating with international partners to foster the adoption of advanced technologies. This global trend presents a significant opportunity for Malaysian tech companies to expand their reach and impact across diverse markets. MDEC collaborates with governments, partners and industry associations to facilitate market entry and growth for Malaysian tech companies.



The global landscape is ripe with opportunities for tech companies ready to expand and innovate. MDEC ensures continuous support through virtual and physical business matching and trade missions to bridge opportunities for Malaysian tech companies. These interventions help companies gain insights into market dynamics, identify strategic opportunities and land significant business deals.

Understanding DEX CONNEX

DEX CONNEX, a flagship platform of the GAIN (Gateway, Amplify, Invest & Nurture) programme, connects Malaysian companies with global markets and tech ecosystems, fostering bilateral digital trade. In 2023, it facilitated over RM 3.165 billion in digital exports, engaging more than 1,000 global stakeholders. Success on this platform is driven by companies leveraging its features, which are rooted in MDEC's extensive experience in export facilitation for tech companies. Features and advantages offered by DEX include the following:

Business Matching: DEX CONNEX drives growth by matching Malaysian tech companies with global partners, clients or collaborators based on profiles, industries, and unique selling points.

Market Insights: The platform offers expert-led sessions on country trends, market data, and industry analysis, providing essential insights into regulatory changes, market dynamics and emerging opportunities, helping companies make informed decisions.

Networking Events: Malaysian tech companies can join webinars, conferences, and networking sessions to connect with industry peers and distributors, fostering cross-border relationships and exploring collaboration opportunities, including joint ventures and expansion.

Partner Network: DEX CONEX links Malaysian companies with over 3,000 global and regional partners, including business chambers, industry associations and government bodies, amplifying their reach and providing access to resources and expertise for mutual growth.

Proven Methodology: DEX CONNEX's structured approach has a track record of success, guiding Malaysian tech companies in entering new markets, securing investments, and forming strategic alliances to achieve their export goals.

Trend Setters

Ashisuto

Ashisuto, derived from the Japanese Katakana word for "ASSIST," established its Southeast Asia operations in 2018. The company was awarded MD status by the Malaysia Digital Economy Corporation (MDEC) in 2024 and recognised as a Productivity Champion in the Leader category by the Malaysia Productivity Corporation (MPC) in 2022. The company's vision is to help customers create systems that contribute to build a better world. Ashisuto offers a unique, end-to-end digital transformation portfolio, featuring DocKITA for data visualisation and traceability.

DocKITA transitions businesses from paper-based manual workflow to digital workflows using unique user interfaces. It is a custom workflow management system that digitises original form templates, transforming them into user-friendly interfaces while preserving their original format. This allows data to be managed and captured in real-time, whether on manufacturing floors, in office environments or at construction sites. With the effective use of DocKITA, all data and forms are systematically managed, monitored and traceable in a timely manner. One of DocKITA's key advantages is its zero-end-user adoption time, requiring minimal training for users. Its IoT-enabled feature supports smart manufacturing devices, offering flexibility in hosting either on the cloud or on-premises servers, depending on customer preference.

Ashisuto showcasing DocKita at the recent DEX Connex Thailand 2024, an international business matching platform for MD status companies

DocKITA enables data optimisation and prediction through advanced Artificial Intelligence (AI) technologies, including machine learning and deep learning, to drive business operation cost savings. Examples include predicting future raw material and goods prices, process yield optimisation and enhancing financial efficiency, among other applications.

In addition to workflow management, DocKITA leverages blockchain technology to provide secure digital signatures. By deploying DocKITA, organisations can enhance productivity, resulting in significant cost savings in both time and materials.

CapBay

CapBay, an award-winning platform specialising in Multi-Bank Supply Chain Finance and Peer-to-Peer (P2P) Financing, helps SMEs unlock cash flow with innovative financing solutions. Using alternative credit data and AI-powered scoring, we provide businesses of all sizes with access to financing, while offering banks and investors high-quality deals. Partnered with major corporations and banks, CapBay is part of MDEC's MD FOX programme, nurturing high-growth tech companies.

Since 2017, CapBay has facilitated RM 3 billion in financing, benefiting 1,700 SMEs and creating 25,000 jobs. Over 70% of our transactions align with the UN's Sustainable Development Goals, reflecting our commitment to ESG principles. CapBay's P2P Financing offers returns up to 10% annually, with an industry-low default rate of 0.2%.

Recently, CapBay ranked 30th in the FT High-Growth Companies Asia-Pacific 2024 list and is the highest-ranked Malaysian company. With 18x growth over three years, CapBay also earned a spot in CNBC's Top 200 Global Fintech Companies, standing alongside industry giants like Alipay and PayPal.

Cardtrend

The current management team of Cardtrend (from left): Naim Jamalludin (Director, Innovation and IT Strategy), Lau Jun Wei (Director, Solution Consulting), Shaheer Siddeeq (CTO), Derek Mok (CEO), Kelvin Choo (CCO).

Cardtrend, a leading fintech solutions provider since 2001, specialises in closed-loop and white-label digital transactions, particularly in Southeast Asia's fuel card market. Under the leadership of CEO Derek Mok since 2020, the company has expanded globally and introduced innovative services like closed-loop microfinancing and multi-line-of-credit insurance claims.

Cardtrend's commitment to client success is evident in its involvement in Malaysia's fuel subsidy programme and its successful accreditation with the Bureau of Internal Revenue (BIR) in the Philippines. The company's recent ISO 27001:2022 certification in 2024 highlights its dedication to security, quality, and continuous innovation in fintech.

Proud of its role in managing complex projects and meeting stringent regulatory requirements, Cardtrend remains focused on providing tailored solutions and exceptional support. The company continues to evolve its fintech offerings to stay at the forefront of the industry and to serve as a trusted partner to its clients.

Promising Future: **Embracing Digital Transformation in the Agrofood Sector**

By Navin A/L Sinnathamby, Digital Agriculture, MDEC

"Where food security can be a force for stability, we have to look to food and agriculture as pathways to peace and security."

José Graziano da Silva, Former Director General of the Food and Agriculture Organisation

Introduction

The agrofood sector plays a pivotal role in driving social and economic progress worldwide. It is two to four times more effective in raising incomes among the poorest populations than the other sectors. The sector is also crucial to feeding the world's growing population, which is projected to reach 10 billion by 2050. As the global population continues to grow, the demand for food is expected to increase significantly. By 2050, this need could rise by anywhere from 59% to 98%. Like any other nation, the agrofood sector builds an essential foundation for Malaysia's food system, encompassing three substantial sub-sectors: crops, livestock, and fisheries or aquaculture, with a complex network of interactions between various actors along the entire agrofood value chain.

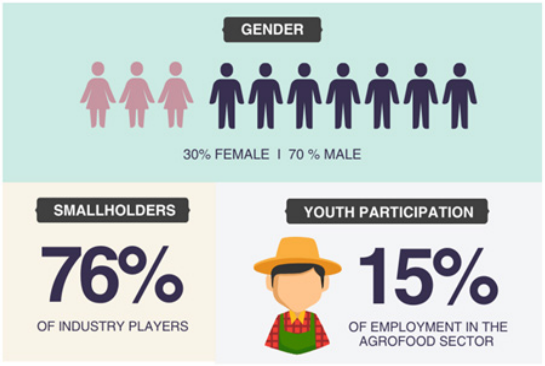
Acknowledging the potential of digital technologies to transform the agrofood landscape, Malaysia has begun a journey of digitalisation and modernisation in this sector. Although still in its early stages, there is significant untapped potential for further expansion and development. This offers a unique opportunity to leverage digital technologies as key drivers of future growth in the agrofood sector, boosting productivity, efficiency and sustainability and ultimately enhancing national food security.

Malaysia's Agrofood Landscape

Rapid industrialisation has caused a significant shift in Malaysia's economy, transitioning from an agriculture-focused model to a manufacturing-oriented one from the 1960s to the late 1980s. A World Bank study revealed that the agricultural GDP, encompassing industrial crops and the agrofood sector, began declining as a share of the economy in 1962, suggesting a potential diminishing reliance on this sector in the Malaysian economy. This downward trend continued until 2019, when the sector's GDP contribution briefly increased from 7% to nearly 10% in 2021 during the COVID-19 pandemic. In 2020, the agrofood sector alone contributed 3.5% of the national GDP, with growth expected to rise to 4.3% by 2030. Additionally, the agrofood industry utilised 870,994 hectares of land, accounting for 16.26% of Peninsular Malaysia's agricultural land in 2021.

Smallholders are the backbone of Malaysia's agrofood sector, making up over 76% of industry players with an average monthly income of RM 1,865 in 2018, notably lower than the national average of RM 3,087. This labour and energy-intensive sector is predominantly male-dominated, with an approximate 7:3 male-to-female ratio. Despite youths making up around 44% of Malaysia's population, only 15% were involved in agriculture in 2015. The younger generation often perceives the sector as labour-intensive, low-paying and lacking in technological advancement, leading them to prefer white-collar jobs. Young talents also face challenges such as limited access to land and difficulty securing loans without collateral, further hindering their involvement in the sector.

Nonetheless, a recent nationwide survey of 3,300 smallholders published in 2024 through Projek SEMAI initiated by Khazanah Nasional Berhad suggests a promising demographic shift. The survey results indicate a growing number of younger smallholders entering the sector, particularly those in middle age. This positive trend indicates a hopeful future for Malaysia's agrofood industry, with digital transformation offering a pathway to empower smallholders and attract young talent and women, amplifying the industry's economic impact and ultimately creating value for the nation.



Key Demographics of the Agrofood Sector

Challenges & Opportunities for Growth in Digital Transformation

Farmers in Malaysia face numerous challenges in food production, including increased input prices, pest and disease attacks, unpredictable weather and limited technology adoption. These issues result in low food production and meagre incomes for farmers. The 4Cs crisis (COVID-19 or other pandemics, conflicts, climate change, and currency fluctuations) has further exacerbated the situation, severely impacting the food supply chain, crop yields and production cycles, thus compromising the country's ability to meet domestic food demands. Over the years, food security in Malaysia has notably declined, with a heavy reliance on imported foods like onions, beef, mutton and dairy products. This dependency has led to high import bills and rising food prices. According to Economist Impact, Malaysia ranks 41st on the Global Food Security Index (GFSI), with a low score of 59.5 in the availability dimension, highlighting these challenges.

Although the agrofood sector lags behind more digitally mature industries like manufacturing and services, adopting digital technologies offers significant benefits. These include improved pest and disease control, increased crop yield quality and quantity, and reduced human error and wastage. Recognising the immense potential of digital transformation in the agrofood industry, Malaysia has emphasised modernisation in the strategies and initiatives outlined in RMKe-12 and other sectoral policies.

Among the key initiatives driving this modernisation and digital transformation include the *Program Inisiatif Usahawan Tani* (INTAN) under *Inisiatif Pendapatan Rakyat* (IPR), which aims to increase the income of farmers and strengthen the food supply chain, provision

of tax incentives for Controlled Environment Agriculture (CEA), various financing supports through Agrobank, including the most recent *Dana Program Pembiayaan Agroteknologi MADANI* (DPPAM) with a total fund allocation of 200 million Ringgit at a 2% interest rate, the Young Agroprenuer Programme dedicated for youth through grants and training programmes, and the development of the smart farming technologies directory, DirekTANI, to facilitate technology adoption by farmers.

Conclusion

The digital transformation of Malaysia's agrofood sector is no longer just an option but a critical necessity. It acts as a catalyst for food security, digital economic growth, and enhanced livelihoods for farming communities. Emphasising collaboration and the collective spirit of "Food Security is a Shared Responsibility," this journey toward a digitally empowered agrofood landscape promises shared progress for all.

A key focus moving forward is the widespread adoption of Digital Agriculture Technology (AgTech) in collaboration with key stakeholders and ecosystem partners, aimed at delivering a significant impact at scale across the agriculture sector. Aligned with the objectives of the National Agrofood Policy 2021-2030 (NAP 2.0) and the National Council of Digital Economy & 4IR (MED4IRN), the goal is to ensure that these technologies are inclusive, sustainable, and scalable.

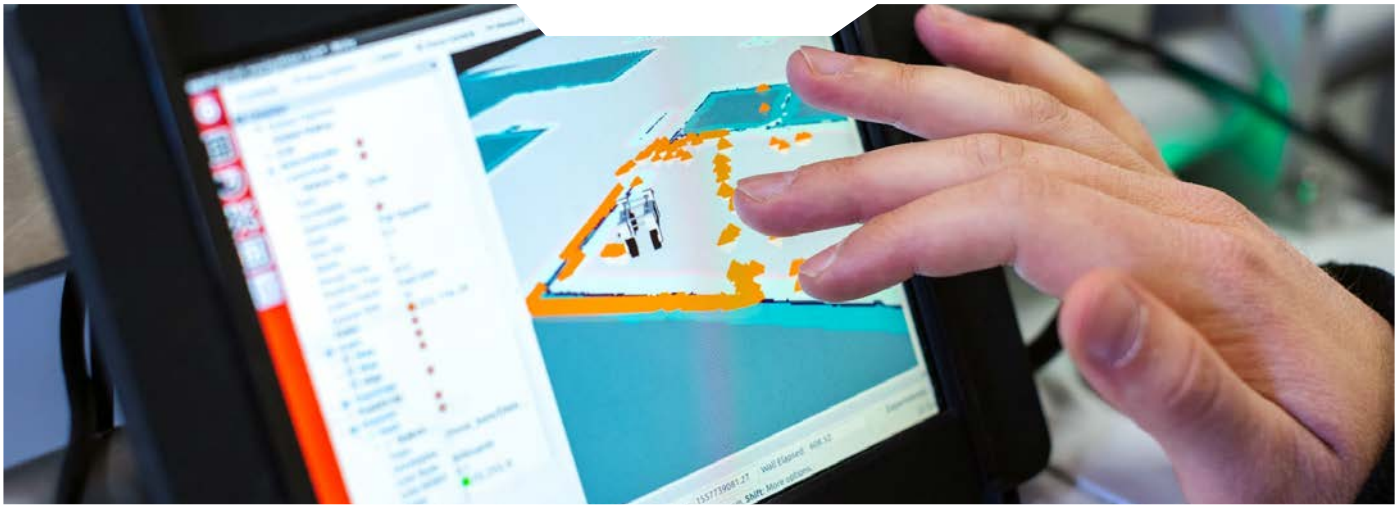
The Malaysia Digital (MD) AgTech initiative has been recognised as one of the key pillars under Inisiatif Keterjaminan Makanan by KPKM. The successes of this MDEC initiative and other similar ones are starting to attract global attention too. For example, Malaysia completed a government-to-government (G2G) collaboration with South Korea's Ministry of Science and ICT and other local stakeholders, deploying three Digital AgTech pilot projects from 2020-2022.

By developing Digital Farmers and enhancing the livelihoods of the farming community, this digital transformation addresses food security challenges and contributes to the growth of the national digital economy. Looking ahead, the continued integration of technology in agriculture will intertwine tradition with innovation, fostering a thriving and sustainable agrofood ecosystem for the nation.


SINGLE TAKE

Pioneering Change to **Propel the Economy**

By Datuk Fadzli Abdul Wahit and Muhammad Hazwan Bin Hussein, MDEC



Embarking on a journey of technological advancement, Malaysia is at the forefront of a new era where artificial intelligence (AI) is reshaping industries and propelling the nation towards a future defined by innovation and efficiency. From the bustling tourism scene to the fertile grounds of agriculture and the creative world of content, Malaysia is experiencing a significant surge in AI integration. Through the Malaysia Digital Economy Corporation (MDEC), the country aims to drive accelerated growth in its digital ecosystem by focusing on nine key sectors supported by several technology enablers, including AI.

Tradition Meets Technology

Tourism

The tourism sector in Malaysia is undergoing a paradigm shift, with AI becoming integral to business-to-business (B2B) operations. AI-driven tools and cloud software automate processes from check-ins to room management. According to a global survey by Accenture, AI-influenced revenue in tourism was 21% in 2021 and is projected to grow to 32% by 2024, highlighting AI's profound economic impact. Nearly 48% of Malaysian industry players consider AI adoption crucial for sustainable growth over the next five years.

There's a burgeoning demand for hyper-personalised services, which AI is poised to fulfill. Travellers often seek troubleshooting and assistance during unforeseen events like delays or cancellations. Hence, online travel agencies and hospitality services are increasingly integrating AI to offer tailored experiences, meeting the sophisticated expectations of modern travellers. Hotel chain owners and marketers leverage AI for travel planning, property management, and customer service enhancements.

Conversational and generative AI are revolutionising customer interactions. Booking platforms utilise AI algorithms to analyse user data, providing bespoke travel suggestions. Self-service systems like Rocket Travel by Agoda streamline booking management, reducing the need for manual cancellations. AI/ML-powered chatbots enhance travel planning, inquiries and bookings, offering personalised interactions that elevate the customer experience.

Harvesting the Future

Agriculture

AI adoption yields remarkable results in the agricultural sector. AI-powered smart fertigation and irrigation systems enable farmers to optimise key farming parameters, enhancing productivity and crop quality. Intelligent grading systems allow farmers to measure and segregate crop quality accurately.

The benefits are substantial: productivity has surged by over 20%, directly translating to increased income for farmers due to higher-quality outputs. Operational costs have plummeted by over 30% thanks to reduced reliance on manual labour and improved accuracy. AI is not just transforming agriculture; it is ensuring sustainable and profitable farming practices.

Redefining Boundaries

Creative content

Concept art development has become more efficient, with AI significantly reducing iteration time and ensuring thematic alignment. AI is pivotal in game publishing, providing analytics that helps developers understand game metrics, sales and market trends.

Non-player characters (NPCs) are becoming more lifelike, with AI enriching their storylines, characterisations and dialogues through natural language processing.

Automated animation and IP development tools streamline processes like in-betweening and lip-syncing, accelerating production timelines. AI assists in facial animation and motion capture, translating rotoscoped images into digital forms with reduced labour-intensive mapping. Procedural animation and content generation further develop assets and animations for backgrounds, props and special effects.

Major game development engines like Unreal are integrating AI for various functions, including navigation and environment queries. AI-powered NPC tools like Inworld and NVIDIA's Avatar Cloud Engine are revolutionising character development, while Midjourney, DALL-E 2 and Stable Diffusion are known for concept art.

Real-time rendering and visualisation are becoming more efficient, enabling high-quality visuals and faster production processes. AI-powered virtual camera systems simulate the behaviour of physical cameras in virtual environments, enhancing realism. AI chatbots offer immersive gaming experiences through advanced analytics.

Digital Meets Service

Technology Companies

Local technology companies in Malaysia have developed AI-based solutions, focusing on overseas markets while providing competitive advantages for clients through SEO, website creation and NLP applications. Sharing economy platforms leverage AI for verifying service providers, profiling assets, and dispatching tasks, with varying adoption levels based on investment capacity and competition intensity.

Traditional MSMEs are in the early stages of AI adoption and use it primarily for e-commerce, digital marketing, customer inquiries via chatbots, content generation, and targeted advertising. Notable AI implementations include NexMind.AI's rapid website creation, Peasy.AI's predictive tools, GoLog's enhanced cold-chain logistics and iMedic's AI-driven health diagnostics.

Impact of AI in Other Sectors

MDEC seeks to harness the power of technology to propel Malaysia towards becoming a more competitive player in the global digital landscape, fostering innovation, job creation, and sustainable economic growth.

Islamic Financing
Initiatives like the MD Tasree Halal Traceability Platform use AI and blockchain to verify halal products, aiming to nurture 1,000 tech companies and support 20,000 MSMEs, boosting exports and job creation.

Finance
AI tools for predictive financing and alternative credit risk assessments reduce costs and improve access to financial services for those without traditional banking accounts.

E-Commerce and Port Management
AI-enhanced e-commerce and port management, with autonomous drones and shopping assistants, optimises trade operations.

Smart Cities
AI is crucial for developing smart cities, improving infrastructure, mobility, and public safety and contributing to job creation and quality of life.

Healthcare
Telemedicine platforms, diagnostics and personalised medicine improve access, reduce costs and enhance patient outcomes in healthcare.

Above and Beyond

The AI revolution in Malaysia is not merely a technological advancement but a comprehensive transformation to redefine the country's digital economy. In the digital transformation era, it's not about AI replacing jobs—it's about AI replacing those not equipped with it.

The industry needs to be AI-ready to stay competitive and innovative. Adopt AI into your business now and lead the way in the digital revolution. For guidance and support, contact MDEC today. Be part of the change. Be an AI-enabler.

Innovation Fast-Track: **Harnessing Startup Collaboration to Solve Business Challenges**

By Bikesh Lakhmichand & Soalen Sittampalam, 1337 Ventures Sdn Bhd

In today's hyper-competitive business environment, innovation is not just a buzzword—it's a necessity for survival. Companies worldwide are on a relentless quest to gain an edge. One powerful strategy gaining momentum is the collaboration between corporates and startups through specialised programmes designed to accelerate innovation. Enter the realm of Proof-of-Concept (POC) Accelerators.

Imagine a large corporation struggling to keep up with rapid technological advancements and market demands. Instead of attempting to develop solutions in-house, they partner with agile, creative startups that bring fresh perspectives and cutting-edge technologies to the table. This symbiotic relationship speeds up the innovation process and opens up new avenues for growth and market expansion.

Recent trends highlight the growing effectiveness of these accelerators. Giants like Airbus, Barclays, and Google have embraced them, recognising their potential to drive significant business transformation. By outsourcing their POC accelerator programmes to experienced providers, these corporations can focus on what they do best while leveraging the expertise of the startups to solve specific business challenges swiftly and efficiently.

Here, we will delve into the mechanics of POC Accelerators, explore their impact on corporate innovation, and offer insights into how businesses can harness this powerful tool to stay ahead of the curve. Whether you are a corporate leader looking to invigorate your company's innovation strategy or a startup eager to collaborate with industry giants, understanding the POC accelerator model could be the key to unlocking your next big breakthrough.

The Case for POC Accelerators

POC Accelerators are corporate-startup collaborations that allow corporates to leverage startups to address specific business challenges. This is more effective compared to trying to do so themselves for several reasons:

1. A startup may operate in a different market space, which the corporation can leverage. For instance, an insurer may benefit from partnering with a digital health startup to tap its base of patients who are primed to seek cover.

2. The startup may have different capabilities and technologies than the corporation and will be more agile and creative in further developing these. For example, a bank may benefit from partnering with an alternative credit scoring business that uses non-traditional sources of information to access the thin-file micro-SME market segment for its loans.

It is not right to think that accelerators require investments into the startups by a corporate. In the case of a POC Accelerator, the startups benefit from the industry exposure and revenue opportunities, which are enough to incentivise them to participate.

Megatrends

There have been significant recent signs of the effectiveness of POC accelerators in corporate innovation, such as:

- The growth in corporate accelerators – according to Corporate Accelerator DB, there are 71 major live corporate accelerator programmes globally (source).
- Leading companies such as Airbus, Barclays, Google, and Telstra have launched multiple accelerator programmes worldwide. This trend underscores the strategic importance of accelerators in fostering innovation within top-tier organisations.
- Outsourcing to experts – many corporations are partnering with established accelerator providers to manage their programmes. This trend shows a preference for leveraging external expertise to maximise the effectiveness of POC accelerators.
- Focus on later-stage startups – POC accelerators often target slightly later-stage startups (seed stage and above) that are market-ready. This focus helps ensure that the startups involved can deliver tangible results within the accelerator timeframe.
- Global recruitment – corporates increasingly look beyond local markets to recruit startups with specific expertise. This global approach helps find the best solutions to their unique business challenges.

How It Works

Eliciting Problem Statements

Corporates identify specific challenges or opportunities and formulate them into statements they can then use to co-create solutions with startups.

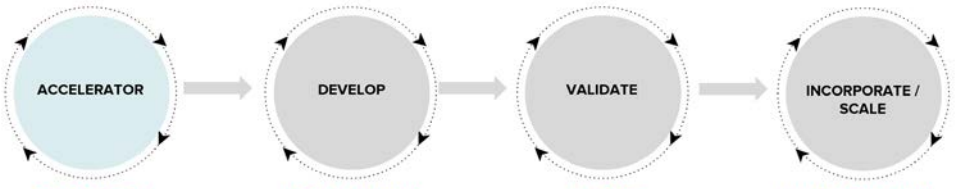
Corporates embarking on the journey of innovation through POC Accelerators often aim for quick wins. Given that this approach is relatively new to many organisations, focusing on swift, tangible results help demonstrate progress and secure buy-in from senior management and board members. These quick wins typically involve collaborations that leverage startups' existing strengths and market reach to address immediate business challenges.

For example, a takaful insurer could tap into a Muslim travel app's extensive user base to promote Hajj insurance products. This type of partnership can be designed and piloted within 8-10 weeks, covering activities such as product integration, marketing strategies, budget allocation, and setting KPIs for the pilot's success. This structured approach ensures that the pilot can be evaluated effectively, if successful, canbe integrated into the corporation's business operations.

As corporates become more comfortable and experienced with the POC Accelerator model, they can then pursue more complex and co-creative initiatives. These projects might involve deeper collaboration, such as developing new products or services with the startups, requiring more extensive planning and longer timeframes. However, the initial quick wins are crucial for building momentum and showcasing the potential of POC Accelerators to drive significant innovation within the organisation.

POC ACCELERATOR OBJECTIVES

A POC Accelerator allows a corporate to catalyse the process of innovation involving startups. The accelerator is contextualized in the overall innovation process as follows.



POC DESIGNED

Identify and define the overall POC Scope with the blessing of senior management. Create a plan of action for the development, such as changes to policies / processes / products, approvals needed. Obtain resources from the corporate if required.

POC DEVELOPED

Develop a working model of the proposed POC per its design. The POC Design was likely based on a Minimum Viable Product concept (i.e., something basic for the purpose of learning rather than profit).

RUN POC

The POC is deployed and runs for a predetermined period of time. It is monitored periodically, with validation sought using KPIs that the POC is benchmarked against.

BUSINESS AS USUAL

The collaboration become part of the regular business processes in corporate.

SOURCE: 1337 VENTURES' POC ACCELERATOR PROCESS

OVERVIEW OF THE PROCESS

I. FAMILIARIZATION (1 week)

Understand the business and its products, to elicit the mandate for the innovation programme, get to know the innovation team and onboard them, and figure out how the organization is structured.

II. RECRUITMENT (6 weeks)

Defining the target profile that fits with the mandate. Developing appropriate positioning, channels, messaging and collaterals. Qualifying and advising startups through an interviewing process.

III. DISCOVERY (4 weeks)

Help the startups further detail collaboration ideas and overcome doubts, through office hours. Pitch briefing to prepare for selection stage.

IV. SELECTION (1 week)

Preparing for the pitch day, conducting it, and collating the results, making the selection and announcing the results.

V. DESIGN (8-10 weeks)

Using the Working Backwards methodology, conduct meetings with the corporate towards their Proposed Announcement and update the Innovation Team from time-to-time. Prepare to showcase work.

VI. SHOWCASE (1 week)

Show the results of the Design stage to senior mgmt seeking their cooperation and resources for POC Development. Completion Report detailing work done and outcomes.

SOURCE: 1337 VENTURES' POC ACCELERATOR PROCESS

Targeted Recruitment

Once problem statements are formulated, they can be converted into recruitment mandates. Questions such as what sectors, geographies and startup stage must be answered. For instance, if the Problem Statements are too specific or technical, such expertise may not be available locally, so the mandate will be regional or global recruitment.

Sector spaces to look into can be determined using generative AI. For example, a Problem Statement that seeks to improve lead generation for a life insurer , the sector spaces could include financial planning tools or financial education (fin-ed) providers. POC Accelerators are usually focused on slightly later-stage startups, such as those in the seed stage and above, as these are considered more market-ready.

Recruitment activity is carried out almost entirely by the provider, with only the last step (i.e., the final round of interviews) requiring the involvement of the corporate innovation team. Recruitment begins with the creation of a landing page explaining the programme, problem statements, eligibility criteria, dates and benefits. Central to the landing page is the application form, which will feed into a CRM tool and be used to determine whom to interview. Promotion channels for inbound marketing include socmed, email marketing, partnerships, media announcements and events such as webinars.

For industries that are technical and focused in nature, outbound marketing may be more effective. This involves the provider taking the sector spaces and searching for startups in each to develop lists. These startups are then contacted to apply to the programme. The provider will typically conduct their first round of qualifying interviews, usually with up to about a hundred startups, followed by a final round of interviews where a corporate innovation member participates, typically narrowing it down to about 25 startups. Some corporates opt to select fewer startups, while others prefer more, which are then further narrowed down on Pitch Day.

Here is a hypothetical example of how a Problem Statement is converted into a target startup:

LEAD GENERATION FOR A LIFE INSURER

Sample Challenges	Spaces to Recruit Startups In	Sample Startups
(1) How Might We design an educational campaign that informs and attracts individuals to consider life insurance?	1. EdTech platforms that offer interactive learning experiences related to life insurance. 2. Content Marketing startups that create compelling narratives around life insurance. 3. Health and Wellness startups on the connection between health, longevity, and life insurance.	**Rise** a Fin-Ed content producer with PROTECT as one of its 5 pillars. They are able to generate engaging content through gamification and rewards with the aim of conversion.
(2) How Might We collaborate with financial advisors to integrate life insurance into their wealth management services?	1. Advisor Technology to develop tools and platforms to enhance financial advisors' capabilities, streamline communication, automate processes, and provide data analytics. 2. Retirement Savings and Planning: Focus on retirement planning tools that integrate life insurance options for clients. 3. Will-Writing and Legacy Planning	**PlanTool** is a financial advisor tool/platform in SG and MY. It has been used with 80,000 clients. They can integrate the insurer's offerings into their wealth management services.

SOURCE: 1337 VENTURES' POC ACCELERATOR PROCESS

Validating & Shaping Collaboration Ideas

Once selected through interviews, startups will clarify the scope of their collaboration and how they plan to operationalise it. They will undergo a mentoring process with the provider to identify gaps in their knowledge. For example, an e-commerce ERP platform seeking to provide inventory financing to its users through a referral partnership with a bank realised during mentoring that it needed to determine whether its data could be used in credit decision-making.

Startups are then given opportunities to meet with track leads from various departments (for a bank, this could include Marketing, Risk, Credit, Legal, etc.) during Office Hours, organised by the provider and the corporate innovation team. For instance, during a meeting with the Credit team, our ERP startup might discover that altering the credit scoring model would be too onerous, requiring central bank approval. This insight would prompt the startup to reshape its collaboration idea. After Office Hours and with some pitch briefing from the provider, startups are ready to present their ideas to the corporation's panel of judges on Pitch Day. Typically, around five startups are selected out of the 25 who pitch based on the corporation's capacity for innovation activities and the quality of the startups.

Designing the Pilot

At the heart of the POC Accelerator lies the design phase, which typically spans 8-10 weeks. Corporates and startups collaborate closely to shape the POC. After the design phase, the project moves into development and the POC is then tested, with its performance tracked against predefined Key Performance Indicators (KPIs).

This is best done with the Working Backwards methodology pioneered by Amazon, where a vision of the pilot is set as a moving target (by writing a brief proposed announcement and updating it every week). For instance, for an e-commerce ERP provider that wanted to do inventory financing in collaboration with a bank, the moving target started with the Ant Financial model, but as the weeks passed, the target ended up closer to the model of Jumia Bank in Africa, which was a simple referrals partnership with no data sharing.

The benefits of the Working Backwards methodology are that all participants, from the corporate innovation team to the track leads to the startup (and not to mention the external provider), can focus their efforts and not delay progress unnecessarily.

The pilots are designed through a series of meetings with the track leads, by the external provider with initial help from the corporate innovation team. Each meeting has a specific format so that it is optimised for informed decision-making and for actions to emerge. The external provider attends all meetings and takes minutes ss all meetings, takes minutes, and presses for the next meeting. It can also review deliverables ahead of submission and provide advice.

Every week the external provider will meet with the corporate innovation team, provide them with updates on progress, and identify asks such as unblocking an obstacle in progress.

Ideally, at the end of the design stage, a collaboration agreement would be signed (or at least the commercial terms agreed upon), which would allow something firm to be presented on Demo Day.

Showcasing the Pilot Design
Key decision-makers, such as senior management, should be present at Demo Day, as the objective is to seek their support and resources for a successful POC Development.

Demo Day is not a competition in which some startups must be eliminated. All startups can go into the development stage if they make business sense and receive the support of senior management.

Demo Day typically ends with a media announcement that cements the corporation as being an innovator in the landscape and generates publicity for the startups.

Collaboration between Corporates & Start-Ups

1337 Ventures takes a high-touch approach and this methodology ensures that every POC is meticulously crafted, ensuring impact rather than just ideas. As the orchestrator, 1337 Ventures guides the entire POC journey. From inception to execution, it facilitates seamless collaboration between corporates and startups to transform ideas into tangible outcomes.

Leveraging an ecosystem is crucial in recruitment and 1337 Ventures exemplifies a thriving innovation hub. Its Alpha Startups pre-accelerator programme has completed over 60 batches, supporting over 3,000 startup founders. In addition, 1337 Ventures maintains a public database, muru-ku.com, which lists over 1,100 startups. These resources provide valuable access for achieving optimal outcomes in the POC accelerator.

If you have not already, why not try out POC accelerators for your next venture?

Numbers Don't Lie:
The Digital Pulse of MSME

By Azham Akhtar, Strategy & Policy, MDEC

The Hidden Powerhouses: MSMEs Driving Global Prosperity

The global economy stands on the shoulders of millions of unsung heroes: Micro, Small, and Medium Enterprises (MSMEs). These entrepreneurial powerhouses – constituting a staggering 99.9% of all businesses worldwide or almost 333 million businesses (Statista, 2021) – are the lifeblood of nations, driving economic growth, innovation and job creation. From bustling metropolises to remote villages, MSMEs are the architects of prosperity and at times, their collective impact could dwarf even the largest corporations.

It is essential to highlight that MSMEs often contribute more than half a nation's GDP. In nearly all OECD countries, MSMEs account for over 61% of GDP on average and for some countries can be as high as 70%.[1] Among sub-Saharan countries, MSMEs make up over 95% of all businesses and contribute about 50% to the total GDP.[2] They are also the employment engines of the world, absorbing billions into their workforce. However, despite their immense significance, these economic powerhouses often operate in the shadows of the much larger businesses, and their potential not fully tapped. It is a paradox: while they are the bedrock of economies, they are also the most vulnerable to economic shocks and digital disruption.

[1] *International Labour Organisation (2019). THE POWER OF SMALL: UNLOCKING THE POTENTIAL OF SMES.*
[2] *Muriithi, D. S. (2017). AFRICAN SMALL AND MEDIUM ENTERPRISES (SMES). Kenya: European Journal of Research and Reflection in Management Sciences.*

The MSME Landscape: A Tale of Two Worlds

A fascinating pattern emerges when examining the formal MSME density across nations (number of MSMEs per 1,000 people). According to a 2019 World Bank MSME Economic Indicator report, on average, there are about 40 MSMEs per 1,000 people – with a median of 31 – in the world.

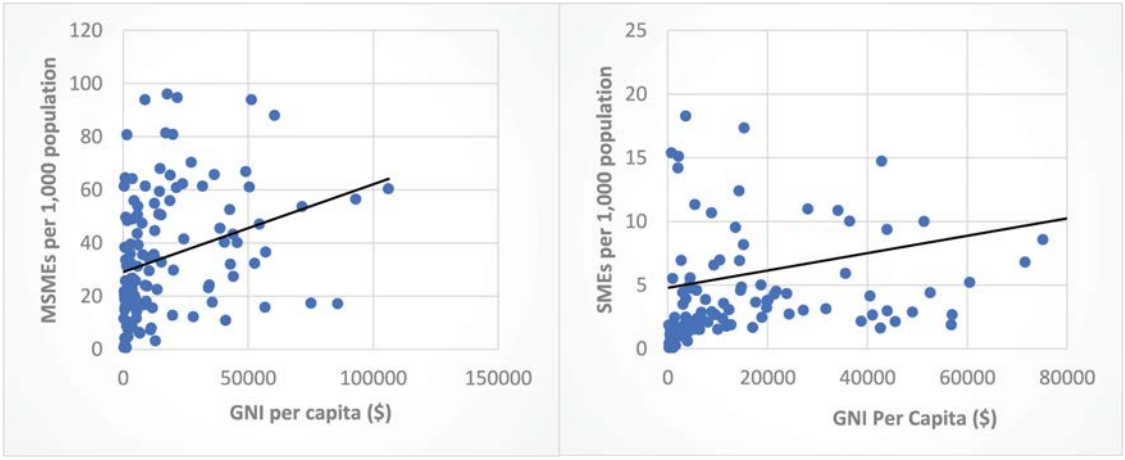


Figure 1: MSME/SME Density vs GNI per capita (extracted from World Bank MSME-EI Report, 2019)

High-income economies tend to boast a higher concentration of these enterprises, a testament to factors such as "a streamlined business environment, adequate competitive landscapes, robust financial systems, supportive government incentives and well-functioning institutional frameworks".[3] In contrast, low-income countries often grapple with a larger proportion of unregistered microenterprises, hidden within the shadows of informal economies (or sometimes referred to as the "shadow economy"). In fact, the same report concluded that the larger the informal sector in an economy, the lower the formal MSME density.

Interestingly, Indonesia presents an intriguing anomaly in the global MSME landscape with its exceptionally high formal MSME density. It could be due to the high entrepreneurial spirit and conducive business environment. Understanding the factors driving Indonesia's high MSME density can offer valuable insights for other nations seeking to foster their MSME growth.

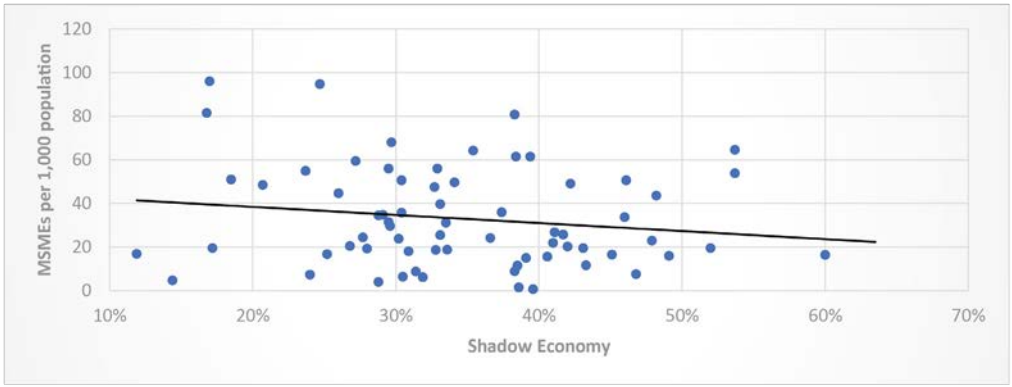


Figure 2: MSME Density vs Shadow Economy (extracted from the World Bank MSME-EI Report, 2019)

The employment landscape is undeniably shaped by MSMEs too. They are the primary job creators in many regions, as well as absorbing a significant portion of the workforce. In most economic regions, MSMEs employ between 53% to 89% of total private sector employments:

[3] *World Bank. (2019). MSME Economic Indicators.*

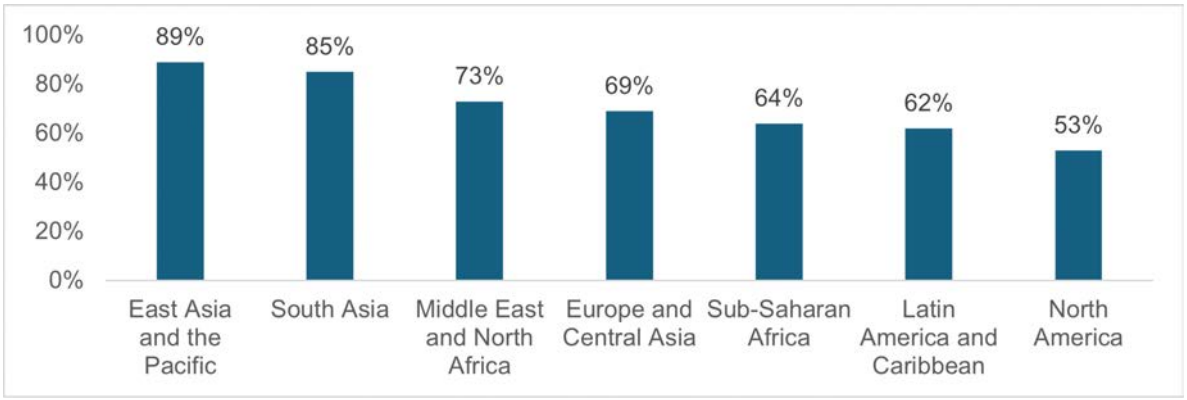


Figure 3: MSME Contribution to Total Private Sector Employment, 2019 (World Bank MSME-EI Report)

From an economy size perspective, a study by the World Bank Group shows that all the economies employ between 63% to 91% of total private sector employment. However, in terms of value-added, the percentage contribution is lower than its percentage contribution to employment. The low-income country is an exception, but the World Bank caveated that it is due to very low sample size.[4]

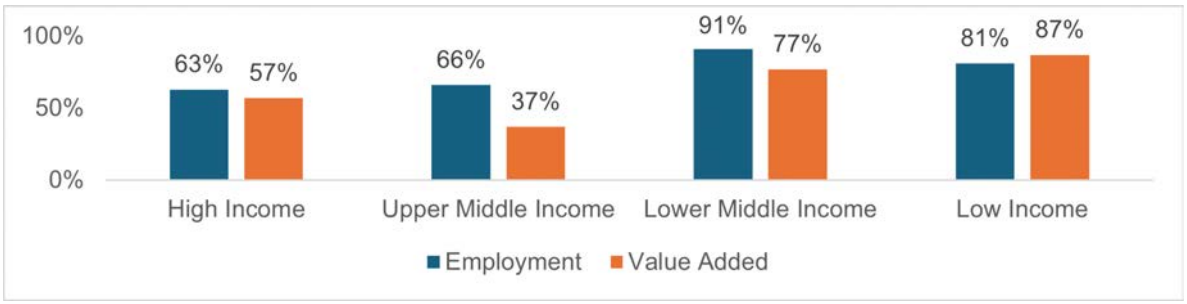


Figure 4: MSME Contribution to Employment & Value Added by Income Group, 2019 (World Bank MSME-EI Report)

Given these findings, it is evident that while MSMEs contribute immensely to the total employment figures, their impact on overall economic value-added is often disproportionately lower. This disparity underscores the need to empower MSMEs to not only create jobs but also generate higher value products and services.

The ASEAN MSME Puzzle: Can It Be Solved?

Delving into Southeast Asia, which presents a vibrant mosaic of cultures, economies, and entrepreneurial spirits, where at its heart lies a network of millions of MSMEs who are the industrious artisans shaping the region's economic destiny. With a staggering 70 million MSMEs – accounting for between 97.2%-99.9% of total establishments in all ASEAN Member States countries – collectively contributing to the backbone of ASEAN's economic structure, their influence is undeniable.

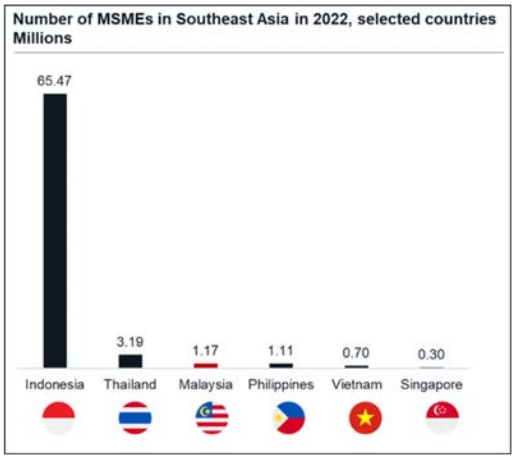
Indonesia emerges as a colossal force within this ecosystem, boasting the highest number of MSMEs of 65.5 million enterprises alone (refer Figures 5 & 6). However, this quantitative dominance is counterbalanced by the lowest value-added per MSME compared to its neighbours. This disparity underscores a critical challenge: while numbers are impressive, the true measure of success lies in the ability to transform these enterprises into engines of innovation and prosperity.

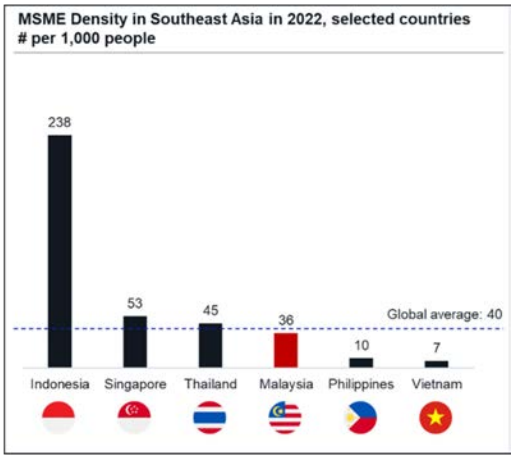
Singapore, on the other hand, offers a contrasting narrative. Despite its smallest size among the Top-6 ASEAN countries, the city-state's MSME density surpasses the global average (along with Thailand and Indonesia). They have also emerged as the most productive in the region, contributing a mighty USD 870,767 per enterprise to the national GDP. This concentration of entrepreneurial energy and immense productivity has fuelled Singapore's economic ascent, positioning it as a regional powerhouse in ASEAN.

[4]*World Bank. (2019). MSME Economic Indicators.*

Despite its MSME density almost mirroring the global average, Malaysia stands at a pivotal juncture. While contributing about 38% to the national GDP, each of Malaysia's MSMEs contributed lower value-added per MSME in the region than Singapore, Vietnam and Philippines. With ASEAN chairmanship looming in 2025 and possibly another rotation in another ten years, will Malaysia be able to improve these statistics in the next decade?

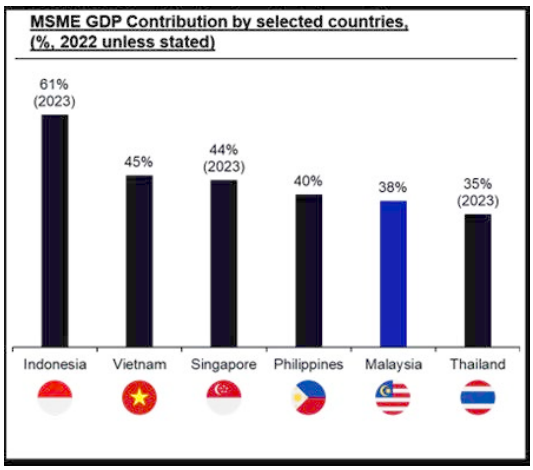
The data paints a complex picture of the ASEAN MSME landscape. It is a region of immense potential, where millions of small businesses are striving to thrive, but it remains a puzzle to be solved. To unlock this potential, policymakers and supporting organisations must foster an environment that nurtures innovation, encourages digital adoption, and bridges the gap between the business sizes (micro, small, and medium enterprises). By doing so, ASEAN can harness the collective power of its MSMEs to build a more resilient, inclusive, and prosperous future.

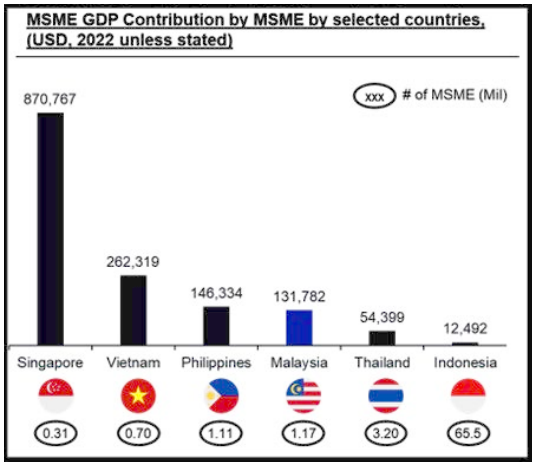




Sources: Statista & IMF

Figure 5: Number of MSMEs and MSME Density in selected ASEAN countries





Sources: DOSM, Statista, Indonesian Chamber of Commerce and Industry, Asian Insiders, UNDP.

Note: Data is latest as of 16 April 2024. Real GDP (USD Mil)

Figure 6: MSME GDP Contribution & GDP Contribution by MSME in selected ASEAN countries

Beyond the Numbers: Digital Divide Threatening Malaysia's MSMEs Outlook

Shifting the focus on Malaysia's MSMEs landscape presents a fascinating, yet perplexing picture. While some official narratives trumpet progress, the reality is a decline in overall MSME numbers since 2017. This raises a critical question: are we celebrating a mirage, or is there a deeper story unfolding?

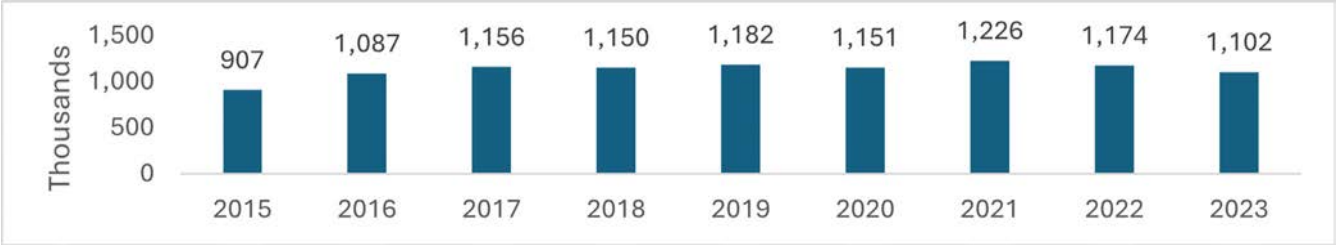


Figure 7: Number of MSMEs in Malaysia, 2015-2023. Source: SME Corp

A glimmer of hope lies in the rise of small enterprises in 2023, the highest that we have seen in the last decade. Whether this increase will translate to more digitalised small enterprises remain to be seen. A more interesting space to watch is on the impacts it will have on digital adoption across key sectors such as the Food & Beverage, Wholesale & Retail, Construction, Manufacturing, and Agriculture. These are not mere statistics; they are stories waiting to be told, stories that will shape the future of Malaysian entrepreneurship.

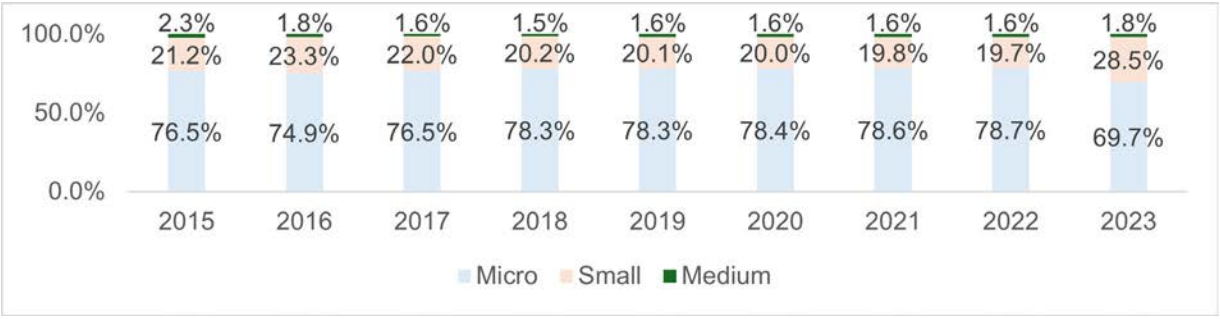


Figure 8: Share of total MSME by business size, 2015-2023. Source: SME Corp

According to a recent survey on SME Sentiment Index by a reputable bank, "in terms of digital transformation, most MSMEs (53%) view it to be of neutral impact to their businesses. This is contrary to the previous survey, where 80% of respondents believed that it had positive impact. Most of them may have already undertaken the basic and necessary digital transformation such as cashless transactions and online marketing for their business continuity purposes, hence any additional development is deemed less significant. Likewise, 58% of MSMEs have no plans to focus on digital transformation. Nonetheless, sectors that are highly related to technology, such as manufacture of printing and reproduction of recorded media and information and communication (ICT), still view digital transformation to have positive impact and wish to focus on improving it, as it directly aligns with their core business. These sectors are usually early adopters and innovators, benefiting from increased operational efficiency and new revenue opportunities".[5]

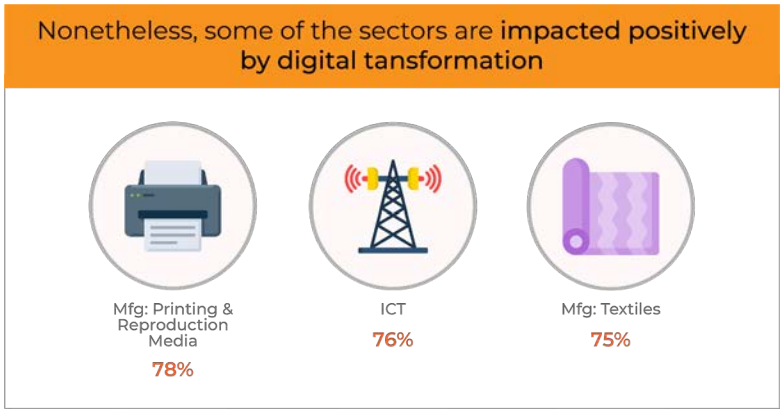


Figure 9: Sectors Impacted Positively by Digital Transformation, extracted from SME Sentiment Index 1H 2024. Source: SME Bank

[5]*SME Bank, S. (12 August, 2024). SME Sentiment Index 1H 2024*

The above statements tell us that the digital landscape is bifurcating MSMEs into pioneers and laggards. A growing number of businesses are finding themselves at a crossroads, grappling with the decision to either embrace technological disruption or risk obsolescence. These businesses, perhaps satisfied with basic online presence, risk being left behind by more forward-thinking competitors.

However, the tech-savvy pioneers in sectors like ICT are thriving on digital innovation, demonstrating its potential to revolutionise operations and unlock new revenue streams. Thus, a clear opportunity exists to bridge this digital chasm and empower all MSMEs to harness the full potential of the digital age. The urgency to adapt is palpable, however, the path forward remains uncertain for many. This digital divide, which is a symptom of deeper economic disparities, poses a critical challenge: can technology be a democratising force, or will it further entrench existing power structures?

From Laggard to Leader: Malaysia's MSME Digital Transformation

Therefore, the implications of being digital laggards are far-reaching, necessitating a rethinking of the digital revolution. Since there is no one-size-fits-all solution, any digitalisation framework must encompass all personas of digital maturity and technology adoption and engulf the entire end-to-end digitalisation concept of Back-Office, Mid-Office, and Front-Office digital applications.

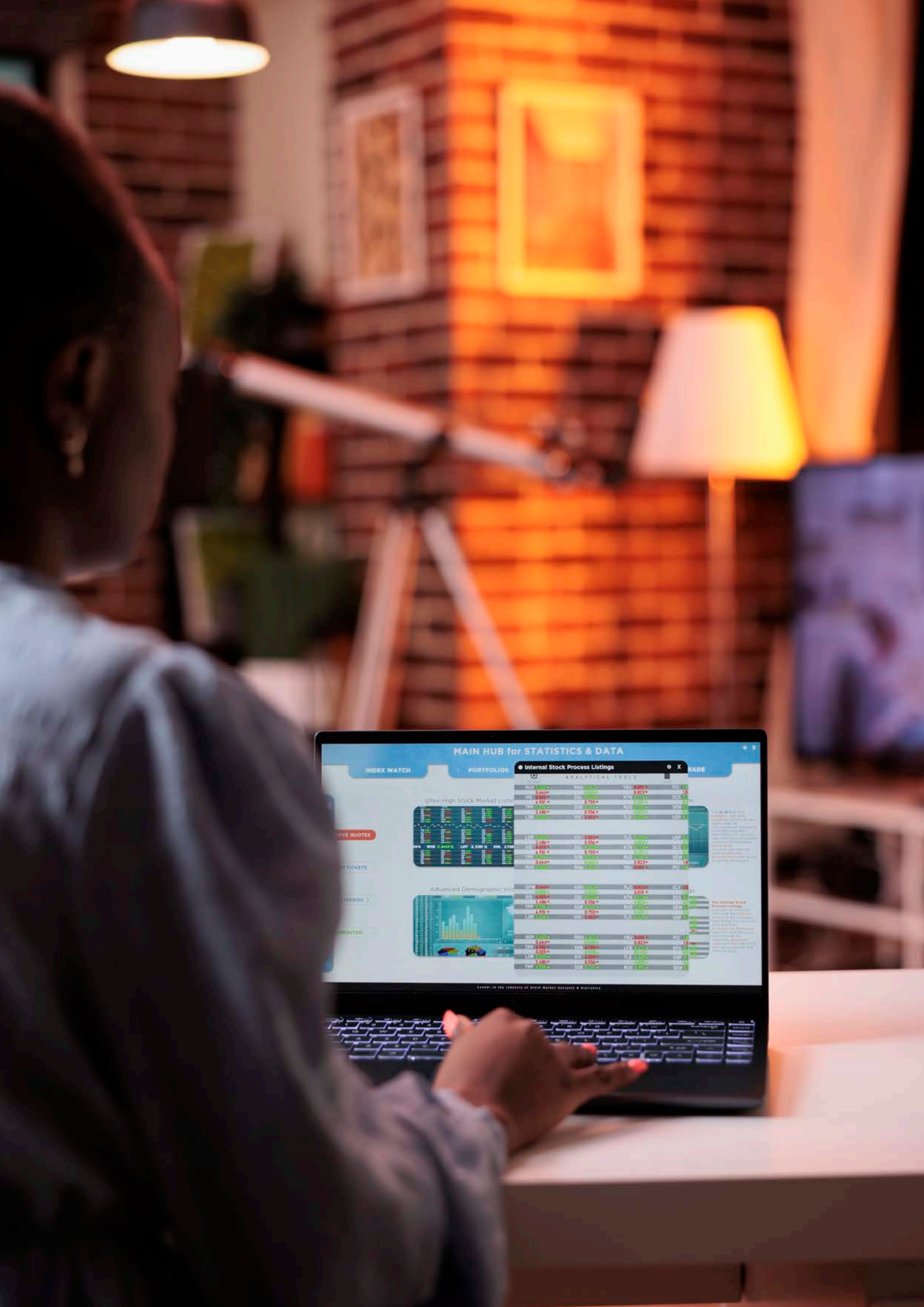
Unlike the traditional thinking that digital transformation equates to the adoption of e-commerce and ePOS (Front-Office centric), digitalising the Back-Office operations (e.g. IT Management, Cybersecurity, Cloud, etc.) and Mid-Office processes (e.g. Supply Chain Management, Accounting, Finance, HR, etc.) is equally crucial. MSMEs must take this opportunity to embed digitalisation across their entire value chain. Only then can the discernible outcomes of digital transformation be realised.

For most MSMEs, the key barriers to digitalisation are financing, talent and knowledge, according to a recent national study on MSME Digitalisation conducted by MDEC. Thus, government initiatives to support MSME digitalisation must be streamlined and centralised to be outcome-based, fostering a "whole-of-nation" approach. A holistic strategy and shared vision & goals, built on key digital pillars such as awareness, adoption, talent, financing, connectivity, and digital platforms, holds immense potential. By addressing industry needs and digital maturity levels, such a strategy can empower countless MSMEs to embrace the digital age.

For the overall framework to reach its full potential, the communication with MSMEs must be clear and concise, following the KISS principle (Keep It Short and Simple). Whether the MSME is comprised of a single roadside kuih seller on one end or a leading technopreneur on the other, the language to disseminate digitalisation information must be accommodative to their varying levels of understanding. From a public sector perspective, the complexity of the topic demands tailored solutions. Ministries, government agencies, industry players, associations, and academicians must all come together under one shared responsibility to further the MSME digitalisation agenda.

Nevertheless, true progress requires a shift in mindset. Political will and a collaborative spirit are essential ingredients. Only when the nation unites behind a shared vision can Malaysian MSMEs truly flourish in the digital era. This is not merely a call for change; it is a call to unlock the immense potential that lies dormant within millions of Malaysian entrepreneurs. By harnessing the power of technology and fostering a digital-first culture, Malaysia can build a future where its MSMEs not only survive but thrive, propelling the nation towards a new era of economic prosperity.

INVESTOR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Riding the Wave: **Key Insights into SEA and Malaysia Tech Funding Ecosystem 2023**

By Fadzli Hisham Bin Mohd Aini, Muhamad Syafiq Bin Berahim @ Abd Wahab and Ahmad Irsyad Bin Kamaruzaman, Funding Facilitation, MDEC

The Southeast Asia (SEA) and Malaysia tech funding landscape in 2023 faced significant challenges due to global economic headwinds. This led to a noticeable slowdown in equity fundraising, reflecting a cautious market environment. However, investors remained focused on strategic opportunities within this landscape, particularly in the seed stage, anticipating a future bull market. E-commerce continued attracting substantial investments, marking it the region's most dominant vertical.

A Year Marked by Caution and Strategic Moves

2023 stood as a testament to resilience and adaptability. It was a year that required investors, startups, and tech companies to navigate through turbulent waters, where the echoes of a global economic downturn reverberated across the region. Amidst the challenges, a silver lining emerged, revealing untapped opportunities for growth, innovation, and strategic investments. Nowhere is this more evident than in Malaysia—a nation on the cusp of becoming a global tech powerhouse by 2030.

As the dust settled from the fundraising frenzy of 2021-2022, Southeast Asia's tech industry found itself facing a stark reality: a 53% decline in capital investments, amounting to USD 7.7 billion in 2023.

The slowdown was not unexpected, given the global economic headwinds that saw equity fundraising tapering off and deal flows reaching a five-year low. However, this contraction was not merely a sign of retreat but a recalibration, a strategic pause as investors recalculated their moves in an uncertain environment.

SEA funding by stages and verticals

In 2023, deals below USD 10 million saw a notable decline in capital invested and the number of transactions. Early-stage deals, including Seed and Series A investments, remained active despite decreased deal volume and total capital raised, falling by 41.3%. High valuations primarily influenced this decline in seed funding and investor focus on emerging sectors with clear profitability models, navigating the cautious market sentiment to tap into potential bull markets.

Conversely, Series B and C deals (USD 10 million to USD 50 million per deal) experienced a slowdown for the first time in 2 years, attributed to scaled-back growth rounds or bridge financing.

Equity funding for growth-stage deals remain nascent in 2023, with a drop in valuations following a significant correction from the peak levels in 2021 and 2022. Despite this correction, there was dry powder available for growth-stage investments, with only six deals recorded throughout the year. Macroeconomic challenges such as the US-China trade tensions, high interest rates and geopolitical uncertainties stemming from the Ukraine conflict have led investors to adopt a cautious approach towards growth-stage companies, emphasising restructuring and shifting focus towards profitability and sustainable business models.

E-commerce is the most actively invested vertical

E-commerce continued to be the most capitalised vertical in the region, securing USD 2.32 billion in investments. However, the declining deal count hinted at a maturing market where dominant players had begun to consolidate their positions. In contrast, fintech emerged as a robust contender, driven by the region's underbanked population and the surge in digital financial services. Despite the cautious market sentiment, sectors like fintech lending, insurtech, and e-payments saw substantial investments, signaling a shift towards more specialised and resilient business models.

SEA Tech Company Exit Snapshot

In 2023, Southeast Asia's exit environment experienced a pivotal recovery, securing 71 exits—the second-highest in the last five years—despite a decline from 93 in 2022. This resurgence, however, was marked by a sharp downturn in IPO activity, with average IPO valuations plummeting to USD 97.2 million, a stark drop from USD 768 million the previous year. Yet, the acquisition market showcased remarkable resilience, with average acquisition prices rising to USD 80.8 million, up from USD 72.5 million in 2022. This underscores the region's enduring strength in liquidity, even as it navigates a challenging and rapidly evolving exit landscape.

Malaysia's Tech Funding Outlook: A Year of Reflection and Repositioning

For Malaysia, 2023 was a year of introspection. The nation witnessed a significant 83% decline in invested capital, marking the lowest equity deal value in the post-pandemic era. With only 53 deals recorded (down from 69 in 2022), the tech funding landscape appeared bleak. However, beneath this apparent downturn lay the seeds of a promising future. The country gave birth to its first unicorn, Carsome, which raised USD200 million in its Series E round—a milestone that hinted at the latent potential within Malaysia's tech ecosystem.

Despite the slowdown, the Malaysian government remained steadfast in its commitment to nurturing the tech ecosystem. Through strategic initiatives like the Fundraising Facilitation Programme, which saw

companies like Softspace and Policy Street raise significant capital, the government underscored its role as a primary anchor in the venture capital landscape.

The Government's Role: A Pillar of Support in Uncertain Times

Malaysia's venture capital ecosystem continued to evolve, driven by three key pillars: government support, strategic deal identification and attracting private sector investment. With a total capital investment of RM 12.29 billion over the past three years, the government's efforts have ensured a steady flow of venture capital. The introduction of initiatives like the VC Golden Pass and the Single Window Platform further demonstrated Malaysia's commitment to becoming a global tech hub by 2030.

Fintech: The Crown Jewel of Malaysia's Tech Sector

Amid the challenges, one sector stood out—fintech. Over the past three years, fintech has consistently ranked among the top five sectors, reflecting its growing importance in the financial services landscape. The rapid adoption of digital payments, digital lending, and digital insurance has transformed Malaysia's financial sector, driven by government support and a tech-savvy population. As digital wallets and QR codes become ubiquitous, the fintech sector is set to grow exponentially, contributing to Malaysia's vision of a fully digital financial ecosystem.

Equity Crowdfunding: A Beacon of Hope for Startups

Equity crowdfunding (ECF) emerged as a vital tool for startups navigating the market downturn. Although total funds raised in 2023 decreased to RM 126.8 million, the trend towards larger campaign sizes reflected a strategic shift towards more tractable portfolios. With the government's support, including income tax exemptions and the MyCIF initiative, ECF continued to attract institutional investors, providing much-needed capital to SMEs and startups.

Looking Ahead: A Resilient Ecosystem Poised for Growth

The Malaysian government is steadfast in its commitment to elevate the tech funding and startup ecosystem, with an ambitious goal of becoming one of the top 20 global startup ecosystems by 2030. Central to this vision is the KL20 action plan, which introduces transformative initiatives designed to attract global venture capitalists (VCs) and unicorns. The VC Golden Pass, for instance, accelerates the registration process for VCs, reducing it from six weeks to two, thereby making Malaysia a more attractive destination for sizeable investments.

Simultaneously, the Golden Pass for Unicorns offers personalised support to tech giants, helping them achieve a USD 1 billion valuation and scale their revenues to over USD 500 million by 2023. The MyStartup Single Window Platform further simplifies the startup journey by consolidating resources and streamlining processes, making it easier for startups to navigate regulatory challenges and access government support.

Complementing these efforts is the Khazanah-led National Fund of Funds, with a RM 1 billion allocation. This fund specifically targets innovative and high-growth Malaysian tech companies, underscoring the nation's commitment to fostering a vibrant, globally competitive startup ecosystem.

As investors, tech companies, and startups continue to navigate this dynamic landscape, the opportunities that lie ahead are boundless. Despite the global economic turbulence, the Southeast Asia countries have demonstrated an ability to adapt, recalibrate, and emerge stronger. For Malaysia, the journey towards becoming a top global startup hub is well underway, fueled by government support, strategic investments, and an unwavering commitment to innovation. The seeds planted today will undoubtedly bear fruit in the years to come, heralding a new era of tech-driven prosperity in Southeast Asia.

Revolutionising Insurance in **Malaysia Through Innovation**

PolicyStreet has emerged as a pioneering force in Malaysia's insurance industry, demonstrating how innovation and strategic partnerships can reshape traditional sectors. Founded with a mission to make insurance purposeful and simple, PolicyStreet began as an insurance aggregation platform, empowering Malaysians to make informed decisions through easy comparisons of various policies. This customer-centric approach quickly established the company as a trusted name in the insurtech space.

Recognising the evolving needs of the market, PolicyStreet expanded its offerings beyond consumer insurance, now providing tailored employee benefits for SMEs and MSMEs and embedded insurance solutions through partnerships with industry leaders. These partnerships, including collaborations with companies like Foodpanda, Shopee, and Direct Lending, have allowed PolicyStreet to embed insurance into everyday touchpoints, making protection more accessible to a broader audience.

A key highlight of PolicyStreet's innovation is the introduction of Vircle Club Protect, a microinsurance product developed in collaboration with the Malaysian neobank Vircle. This initiative addresses the insurance needs of parents with school-aged children, offering personal accident coverage tailored to students. The product includes comprehensive coverage for medical expenses, loss of textbooks, and even tuition fee reimbursement, ensuring financial protection for families in unforeseen circumstances.

PolicyStreet's commitment to the underserved is also evident in its efforts to protect gig workers, a growing segment of the workforce. In partnership with leaders like Shopee and Kiddocare, the company's gig worker insurance programme now covers close to half a million individuals nationwide, providing them with critical protection against on-the-job accidents and other risks. The introduction of Kiddocarer Protect+, offering Malaysia's first professional indemnity coverage for freelance babysitters, further underscores PolicyStreet's dedication to addressing the unique needs of this sector.

At the core of PolicyStreet's success is its robust tech infrastructure and unwavering commitment to regulatory compliance. Recognised as an approved Financial Adviser and Takaful Operator by Bank Negara Malaysia and the Labuan Financial Services Authority, PolicyStreet continues to build credibility and trust within the industry. As the company pushes the boundaries of innovation, it remains committed to its mission to make insurance meaningful, convenient, and accessible for all Malaysians.

Empowering Financial Inclusion: **Soft Space's Journey to Revolutionise Payments**

Founded in 2012, Soft Space has become a driving force in advancing financial inclusion through innovative payment solutions. Addressing the needs of both merchants and consumers, Soft Space is revolutionising the way financial services are delivered, particularly for the underserved, who usually have tight budgets and limited tech know-how.

Small merchants often face challenges in adopting contactless payment systems due to high costs and complex setups. Soft Space's flagship product, Fasstap™, solves this by transforming any NFC-enabled mobile device into a secure payment terminal. This allows small businesses, like food trucks or boutique shops, to accept payments quickly and affordably, enhancing their ability to thrive in a competitive market. A prime example of this success is Soft Space's collaboration with PayNet to create Sarawak's first cashless night market, where merchants experienced increased revenue and operational efficiency, while customers enjoyed better safety (since they weren't carrying cash) and a better shopping experience (queue was shorter because transactions were processed quicker).

On the consumer side, Soft Space is making strides to bring financial services to those left out of the traditional banking system. For many, everyday tasks like transferring money or paying bills are arduous and costly. Soft Space's white-label e-wallet and card-issuing solutions offer a lifeline, providing a secure and straightforward way to manage finances, as exemplified by the YONO app, powered by Soft Space, which enables Sabah citizens to receive government aid seamlessly and spend it at over 2 million DuitNow acceptance points across Malaysia.

Soft Space's commitment to financial inclusion has not gone unnoticed. As a pioneering member of Malaysia Digital Economy Corporation's (MDEC) Founders Centre of Excellence (FOX) programme, the company has attracted significant investment, raising USD 31.5 million in its Series B funding round in 2023, the largest ever for a Malaysian startup. This funding, led by Southern Capital Group, is set to propel Soft Space's continued growth and global expansion, particularly in markets like Japan, Australia, and Singapore, with a strong government-led push toward a cashless society.

Currently serving over 90 financial institutions and partners across 30 global markets and five different continents, Soft Space operates on a fintech-as-a-service (FaaS) model, empowering banks, neobanks, and fintechs with scalable and secure payment solutions. As Soft Space continues to innovate, its vision of financial inclusion through cashless societies becomes increasingly attainable, providing meaningful impact on a global scale.

Transforming Traditional **Finance Through Blockchain**

Exclusive insights from Fusang Malaysia

Step into a realm where traditional finance and blockchain synergy takes centre stage. In this exclusive interview, Henry Chong, Executive Director of Fusang Malaysia, unveils the intricate details of how their regulated digital asset exchange is spearheading a positive transformation in the digital finance landscape. Fusang Exchange, fully licensed and regulated by Labuan Financial Services Authority, recently tokenised and listed the world's first sovereign-backed institutional sukuk based on the underlying sukuk issued by the International Islamic Liquidity Management Corporation

1 How would you explain what Fusang does to those less familiar with the digital finance scene? What is the underlying technology to make this happen?

As a regulated digital asset exchange, Fusang aims to bridge traditional finance with blockchain innovation. Fusang enables the tokenisation of real-world assets, from real estate to private equity, into fractional, tradable digital tokens. We provide issuers with enhanced liquidity and offer investors unprecedented access to new investment classes via our regulated and fully licensed ecosystem of financial intermediaries.

Fusang Exchange leverages blockchain benefits like 24/7 trading, transparency and smart contracts, while embedding compliance through a regulated network model.

2 Fusang is Asia's first digital exchange for security tokens and crypto. What drives you to become Asia's first, and what do you attribute this success to?

As CEO of Fusang, I've always believed in the potential for blockchain technology and digital assets to transform financial markets. Seeing the inefficiencies and barriers to entry in traditional finance, I felt compelled to drive change by pioneering regulated infrastructure that could bridge institutions to the possibilities of tokenisation. Our success is rooted in the vision and expertise of our team, who built Fusang from the ground up to meet the highest regulatory standards while leveraging the latest innovations.

In addition, by embedding compliance into our technology and offering a secure gateway to digital finance, we've attracted trust and momentum. But most of all, the team's tireless commitment to creating a more inclusive and efficient digital capital market is what I attribute our success to thus far – and we're just getting started!

3 Congratulations on listing the world's first institutional tokenised sukuk backed by a sovereign-linked instrument. What has been the most instrumental factor enabling you to achieve this before anyone else?

I credit our success to the team's expertise in digital asset innovation and the support from our Regulators at the Labuan Financial Services Authority. By combining a thorough understanding of Shariah principles with cutting-edge tokenisation technology, we were able to structure a compliant sukuk token that bridges the benefits and possibilities of blockchain with the needs of Islamic investors.

Fusang has also been extremely lucky to work with like-minded entities invested in nurturing a next-generation Islamic bond market. Our joint integrated capabilities spanning regulation, blockchain, and Islamic finance were key to driving this breakthrough for the industry.

We strongly believe that the future of Malaysia's leadership in Islamic finance is in digital Islamic financial innovation. The Malaysia Digital (MD) status awarded by MDEC also played a part in successfully issuing this tokenised sukuk.

4 What are the main benefits of digitalising a *sukuk* beyond being easily traded?

With the power of tokenisation and blockchain, the tokenisation of this Sukuk has proven that the distribution and accessibility of high-quality liquid assets can now span a broader range of investor classes. The promise of inclusion through fractionalisation is evidenced through the issuance of this tokenised sukuk. We are excited and motivated that the next significant tokenisation of an Islamic instrument may be retail accessible.

Our exchange, an institutional-only network of members, also provides additional benefits such as enhanced data integrity and transparency through distributed ledgers and improved liquidity via 24/7 trading and automation through smart contracts for processes like dividend payouts.

Overall, Fusang brings securities markets into the digital age. As I have said, we are here to complement, not disrupt traditional capital market processes. The focus should be on something other than the technology, which serves to enable transparency, speed, and distribution. Instead, importance should always be placed on the underlying asset quality.

5 How do you envision the growth of digital assets in ASEAN, and what areas will drive adoption?

With its youthful population and burgeoning startup ecosystem, ASEAN is ripe for digital disruption. Improved internet access and mobile connectivity open up blockchain possibilities, especially in emerging markets. The potential for financial inclusion among the underbanked through digital banking is immense. As regulators establish frameworks in Singapore, Malaysia, and beyond, we anticipate increased institutional participation.

Fusang aims to facilitate innovation responsibly by collaborating with regulators across ASEAN, providing trusted access to blockchain technology's vast potential. It's a pivotal moment, and ASEAN is emerging as a leader in the future of digital assets due to its nimbleness as a collective group.

6 Recently awarded the MD status, what's your 5-year plan for expanding Fusang's investment in Malaysia? How are you partnering with MDEC for growth?

Fusang Malaysia's key functions of blockchain research, compliance and client servicing will be based in Malaysia. In addition, we intend to roll out back-end blockchain solutions to the Exchange's network members, enabling all its license holders to have quick access to enabling technologies. Our MD status will allow us to fast-track all our plans, and partnering with MDEC adds value and recognition.

7 What is your perspective on the quality of digital talent in Malaysia and Fusang's talent strategy?

Malaysia's tech workforce impresses with top-notch engineering and product talent. Their ability to deliver complex fintech solutions matches global standards. As a Malaysian, I am proud that our talent pool stands out for adaptability, creativity and a collaborative spirit. Fusang's focus on innovative tech like blockchain and smart contracts resonates with professionals eager for cutting-edge solutions. I am pleased that our expansion plans offer growth opportunities for local talent, making Fusang an employer of choice for blockchain professionals. In addition, our agile work culture is designed to empower teams to deliver in an open and inclusive environment.

8 As ESG gains prominence, how does Fusang integrate it into operations?

ESG principles and practices are integral to Fusang's culture, and tokenisation is one of the best tools to advance ESG-related aims. We believe the synergy between fintech, blockchain and ESG principles creates the necessary momentum towards the complete and holistic adoption of the UN Sustainable Development Goals.

9 How do you see Malaysia's potential as a destination for blockchain and Islamic digital economy investors?

With its forward-thinking regulators, flourishing Islamic finance sector, and world-class talent, Malaysia is poised to become a global leader in Shariah-compliant blockchain innovation. Our tokenised sovereign-backed Sukuk is a testament to Malaysia's capability to bridge Islamic wealth, technological innovation, and leadership in Islamic finance. The alignment of (decentralised finance) solutions with Islamic principles positions Malaysia to spearhead an ethical digital economy. I have no doubt the nation possesses all the elements necessary to attract investors seeking blockchain and Islamic finance innovation.

Fusang Malaysia Sdn Bhd, an MD status company, is the blockchain research and development arm of the entire Fusang Group of companies, spanning offices in Malaysia and Hong Kong. The key commercial relationship for Fusang Malaysia is with Fusang Exchange Ltd, a digital stock exchange powered by blockchain technology and smart contracts.


HLBU 4561
Hapag-Lloyd

Malaysia's GBS Evolution: **Staying Ahead in ASEAN**

By Muhammad Nurzamani Bin Wisam,
Digital Investment Office, MDEC

Malaysia is adapting to the ever-evolving global business services landscape using innovative strategies to make it a compelling location for MNCs and investors.

The global business services (GBS) industry has undergone a massive transformation over the past few years. This upheaval can be attributed to the fourth industrial revolution, which has brought about technology disruptions on a global scale.

Global Business Services Today

Moving away from traditional labour-intensive call centres	Focus on technology and innovation-driven service
Delivering innovation, automation and advanced services	Achieving efficiencies across operations such as finance and accounting, HR, and customer experience life cycle

Malaysia has been proactively adapting to the ever-evolving GBS landscape and to remain competitive, the country has implemented solid strategies that will provide an attractive and appealing option to multinationals and investors.

While Malaysia is not alone in the GBS space, it has what it takes to be the pivotal GBS location, especially in ASEAN.

- ASEAN has a population of 671.68 million
- 78% of the population are Internet users
- Recorded FDI of USD 224.2 billion in 2022, a 17% share of the global FDI

As of May 2024, there are 841 active GBS Malaysia Digital (MD) companies, with roughly 49% being foreign-owned companies across various segments such as business process outsourcing, IT outsourcing, knowledge process outsourcing, shared services, nearshoring and offshoring.

Why Malaysia?

	Strategically located in the ASEAN region
	Least affected by extreme natural disasters, with a vibrant democracy
	Mature digital infrastructure and ecosystem
	Investor-friendly policies and initiatives
	Multilingual, multiracial and digitally savvy talents
	Value-driven cost competitiveness

Malaysia's Next Move

Raymond Siva, Head of Digital Investment Office at MDEC, said that MDEC would continue in its pursuit of GBS investments and help elevate the country as a digitally enabled nation with promising economic prospects.

"The government is committed to improving digital infrastructure and providing a pipeline of talent to make Malaysia the preferred destination for high-value GBS such as data and analytics, AI and automation, as well as cybersecurity," Siva said.

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Raymond Siva,
Head of Digital Investment Office at MDEC

Many MNCs have invested and continue to invest in Malaysia and operate in various industries and key sectors. Malaysia is also ranked second in the INSEAD Global Talent Competitiveness Index 2023 among the upper middle-income group of countries, second in ASEAN in the IMD World Digital Competitiveness Ranking 2023 and third in the KEARNEY Global Services Location Index 2023, a position held since the inception of the report in 2004.

In July 2022, MD was officially launched – ushering the nation into a new era of digital innovation and growth.

This strategic initiative is designed to drive economic expansion through impactful projects, sustainable investments, and progressive policies – positioning Malaysia as one of ASEAN's leading hubs for innovative technology advancement.

Under Malaysia Digital, eligible companies may apply for the Malaysia Digital status, which will give them access to tax incentives and non-fiscal incentives such as foreign knowledge worker quotas and passes and facilitation to access local and international markets and ecosystems.

Conducive Environment

Malaysia is proving to be remarkable in the face of global economic turmoil. With its robust digital infrastructure, forward-looking public and private initiatives, as well as 4.57 million skilled talents contributing towards an ever-growing digital economy, Malaysia remains a competitive player on the global business stage.

Siva said these developments have become their ace up the sleeve due to government efforts such as reskilling programmes for existing sectors and training new talented minds– all while adapting swiftly to meet any challenges this pandemic could throw at them.

Malaysia's long history of attracting major GBS players has also developed its local GBS talents. "The availability of these experienced talents and leaders is also one of the attractive hallmarks for many GBS players when choosing a destination to set up their operations," he added.

Location-Specific Incentives

Besides incentives provided under MD, there are also other location-specific incentives that are designed for GBS players, such as GBS Iskandar in the southern state of Johor and GBS@Ipoh in the northern state of Perak.

The Malaysian government also looks to enhance investors' business strategy by introducing the Digital Investment Office in 2021. MDEC helps facilitate a streamlined entrance for companies to take advantage of Malaysia's burgeoning high-impact digital investments sector through the fully digital platform.

"MDEC will continue to lead the nation's digital economy transformation towards the aspiration of Malaysia Digital, making Malaysia the preferred hub for world-class digital businesses and talents.

"As the national digital investment promotion agency, we welcome GBS companies to land and expand in Malaysia and make Malaysia the launchpad into ASEAN," Siva concluded.

Digital Infrastructure: **Essential Foundations in Malaysia's Digital Economy**

By Tan Tze Meng
Digital Infrastructure, MDEC

Data centres are crucial in today's interconnected environment, powering our increasingly data-intensive activities. They're not just passive storage facilities but vital infrastructure enabling businesses, governments and individuals to operate effectively in a digital landscape. Recent events highlight the dependency of businesses on digital services.

The Power of Data

Today, data is an organisation's most valuable digital asset, requiring sophisticated management, storage, governance, and protection to maintain agility, scalability and resilience, and in many cases, the ability to continue business. Just like a bank enables and protects an organisation's financial viability, data centres enable and protect the organisation's operational viability and that includes the banks.

Contrary to popular myths, data centres are not just power-hungry monoliths with minimal job creation. By offloading the burdens of data and infrastructure management to data centres, businesses can focus on critical functions, scale operations, and enhance outcomes, achieving more with less cost and effort. Data centres are the powerhouses enabling businesses to thrive in the digital age. While there are potentially few technical employees working inside a modern, fully automated data centre building, the data centre companies are businesses in their own right, with all the organisational needs of any business, from management, sales and marketing, customer services, engineering and design, research and development, human resources, legal and compliance, finance and accounting, facilities management and maintenance. These thousands of indirect jobs are created because of the direct effect of data centres.

The Solutions of Data Centres

Modern data centres are highly energy-efficient, consuming only 30% or less of the supplied power for cooling. The servers and storage within, which provide digital services, are the primary consumers of energy and with the increasing adoption of AI, the demand for power will increase. Hyperscale cloud data centres, spanning millions of square feet, house thousands of servers, enabling businesses to leverage immense computing power for high-demand applications like big data, AI, and cloud computing. These virtualised centres allow businesses to share server resources efficiently through multi-tenancy while maintaining data isolation.

Growing Ecosystem

As Malaysia grows its digital infrastructure ecosystem, it stands ready to meet the demands of an increasingly digital world, driving economic growth and technological innovation. From 2021 to 2023, Malaysia saw a surge in data centre investments. With RM 114 billion in announced investments, the country is rapidly expanding its digital infrastructure. Johor, in particular, has emerged as a hotspot, attracting RM 48 billion in investments and hosting a significant portion of the country's energy-hungry data centres.[1]

As data centres increase, robust and high-speed connectivity becomes paramount. Malaysia's connectivity infrastructure is improving to handle the increasing data traffic. The East-West Gateway project in Malaysia aims to provide a secure route for internet traffic between the Indian Ocean and the South China Sea and beyond, enhancing the country's connectivity and making it an attractive destination for subsea cables. Existing operational data centres boast 812 Megawatts (MW) of IT capacities, with another 1030MW under construction.

The data centre boom is also attracting major manufacturers. Companies like Taiwan's Wiwynn have established rack server intergration facilities in Johor and AI Server giant Supermicro is in the midst of setting up manufacturing operations in Malaysia, bringing in significant investments and creating thousands of jobs. These developments highlight the broader economic benefits of a thriving data centre ecosystem and the electrical & electronics supply chain.

The data centre services industry is on a meteoric rise, fuelled by relentless digitisation across industries and manufacturing, the shift to remote work, the spread of 5G and beyond, and the surge in IoT and AI adoption. The most popular AI platform, NVIDIA's HGX H100 Tensor Core GPUs, which is critical for high intensity AI workloads, require data centres to be equipped with substantial power and cooling needs.

As we confront the challenges of hyperconnectivity, massive data proliferation and the demand for low latency, future data centres will be highly converged powerhouses that are globally interconnects. Automation will streamline operations, enhance efficiency and reduce human error. Meanwhile, sustainability will take centre stage, with data centres adopting greener technologies and practices to minimise their environmental footprint and drive demand for renewable energy. These advancements ensure that the data centres of tomorrow not only meet the rising demands of the digital age but also have unmatched efficiency, intelligence and environmental responsibility, solidifying their role as the backbone of our hyper-connected world.

Government Support and Supply Chain

The government should encourage the development of a data centre ecosystem that fosters ancillary services and generates further job creation. Apart from Wiwynn and Supermicro, Malaysia has the potential to attract many more companies to the data centre supply chain. In addition, we should encourage more investments from manufacturers of equipment that data centres required in their construction, operations and related support services. For instance, a hyperscale data centre of 100MW will need perhaps 52 units of 2MW gensets. Data centres are already being constructed in Johor with a combined power demand of 1000MW, requiring more than 500 gensets. Demands such as these could catalyse the establishment of an assembly or data centre manufacturing facility.

Within the broader ecosystem, Malaysian manufacturers are reaping the benefits of the data centre boom. Although these manufacturers may not be engaged in high-tech production, they contribute by producing essential equipment such as racks, cable management systems, cooling containment systems, electrical distribution systems, fire containment and mitigation systems.

Government assistance and incentives that help these companies expand their product lines, increase production capacity and improve quality would enable them to capture more business and further enhance the entire data centre landscape.

Human Factor and Employment Dynamics in Data Centres

Most data centres already operate with automation as the standard. Unlike manufacturing, where robots can replace human labour in dangerous, repetitive and monotonous tasks, data centres do not typically have such tasks. The human factor remains crucial, and automation

[1] *Johor emerges as data centre hub powerhouse in Southeast Asia (nst.com.my)*

or AI cannot easily replace these jobs, as human decision-making is still necessary.

Many perceive data centres as not able to create many jobs due to the high level of automation and reliance on contractors. However, the reality is that data centres contribute significantly to job creation within the entire data centre ecosystem. Beyond the direct employment within the data centres themselves, numerous ancillary roles support their operations, including facilities management, security, maintenance, network infrastructure and IT support services. In addition, the construction of data centres generates a wide range of jobs in the engineering, architecture and construction sectors. Moreover, the presence of data centres can spur economic growth in the surrounding communities by attracting other businesses and services, thus creating a multiplier effect in job creation.

Various job titles in a typical data centre business

Account Manager
Architect
Building Manager/Engineer
Business Continuity Manager
Cabling Engineer
Civil/Construction Engineer
Commissioning/Testing Manager
Data Centre Building Manager/Design Manager/
Engineer/Facilities Manager/
Floor Manager/Manager/Operation Manager
EHS Manager (Environmental Health & Safety)
Electrical Engineer/Designer
Finance Manager
Fire/Safety Systems Engineer/Designer
HR Manager (Human Resource)
ICT Technology and Network Engineer/Designer
Lawyer/Legal Advisor

Mechanical Engineer/Designer
Monitoring and Automation Systems Engineer/Designer
NOC Manager
Policy and Compliance Officer
Product Manager
Project Manager
Risk Manager
Security Manager
Security Systems Engineer/Designer
Service Desk Staff
Service Level Manager
Site Selection Manager
Site Manager
Solution Architect
Structural Engineer
Sustainability Manager

Economic Impact of Data Centre Investments

The supply chain and support services are significant in data centre investments' spillover and multiplier effects. Direct suppliers, such as Tenaga Nasional Berhad (TNB) and telecommunications companies, are among the biggest beneficiaries. This benefit extends to solar power producers, as data centre operators have corporate net zero targets and can be guaranteed off-takers for any renewable energy produced.

Furthermore, many submarine cable systems are now considering landing points in Malaysia to connect data centre clusters to other regional hubs. This enhanced international connectivity will bring economic benefits to Malaysia. For instance, RTI International found that submarine cables landing in Malaysia between 2008 and 2015 resulted in a 6.9% increase in GDP per capita by 2015.[2]

One often overlooked aspect is the economic activities enabled by data centres, which should be leveraged to stimulate growth in other sectors. For example, data centre investments are directly related to the digitalisation of conventional industries such as finance, logistics, commerce, manufacturing and novel digital services created by the startup ecosystem.

Artificial Intelligence (AI) is another critical factor. Not every company can afford to buy and operate expensive, power-hungry AI infrastructure. For instance, NVIDIA's AI servers require power and cooling beyond the capacity of any data centre constructed before 2021. The new data centres being built in Malaysia will enable and facilitate access to AI for Malaysian companies.

Malaysia is currently experiencing growth in its supply chain ecosystem, encompassing sectors such as semiconductors, electrical and electronics, ICT and data centres. Data centres are a crucial component of digital infrastructure, with foreign investments primarily funding the construction of Malaysia's foundational digital infrastructure, which is essential for fostering innovation and entrepreneurship. For instance, AI-training-workloads require vast amounts of data and significant computing power, which in turn demand extensive storage and electricity. If such infrastructure is not developed within Malaysia, our AI innovators will be compelled to rely on infrastructure abroad. This necessitates

[2] *https://www.rti.org/impact/economic-impact-subsea-fiber-optic-cables-and-broadband-connectivity-malaysia*

transferring massive amounts of data in and out of the country, resulting in additional costs for international data transfers. Moreover, this process incurs delays and productivity losses due to the time spent waiting for these data transfers.

We are witnessing the beginnings of a virtuous cycle where demand in one area drives investment in another, further enabling the former and creating even greater demand. For example, having the AI infrastructure in Malaysia enables our innovators to be competitive and grow, which will drive further demand for infrastructure.

Establishing AI infrastructure in Malaysia allows our innovators to be competitive and grow, which will, in turn, drive further demand for infrastructure.

Case Study: Singapore

Despite its limited resources, Singapore continues to invest heavily in data centres, allocating significant amounts of electricity to these facilities. The reason is apparent: this investment has been economically beneficial for the country. Digitalisation and innovation necessitate a ubiquitous, robust and high-performance digital infrastructure. It is impractical to run high-powered AI servers, such as NVIDIA's, under a desk; they need the sophisticated environment of a data centre to function optimally.

Singapore's strategic focus on data centres has attracted global tech giants, leading to increased foreign direct investment and the creation of high-value jobs. The presence of state-of-the-art data centres supports Singapore's ambition to be a global digital hub, fostering innovation across various sectors, from finance to healthcare.

In addition, Singapore's commitment to sustainable energy solutions in powering these data centres has set a benchmark for balancing technological advancement with environmental responsibility. The country's regulatory framework and incentives for green data centres have further cemented its reputation as a leader in both digital infrastructure and sustainability.

By investing in data centres, Singapore supports its economic growth and ensures it remains at the forefront of the global digital economy.

As of July 2024, Malaysia has approximately between 250MW to 300MW invested in data centres and we are forecasted to achieve close to levels of Singapore in perhaps 2-3 years.

Investing in data centres can also drive growth in other sectors, such as renewable energy, to meet the high power demands of these facilities. For instance, all data centre providers in Malaysia have set net-zero targets, making them guaranteed off-takers for any renewable energy produced.

The demand for renewable energy by data centres exceeds the available supply. The recent Corporate Virtual Power Purchase Agreement (CVPPA) for 800MW, with an individual project cap of 30MW, was insufficient to meet the industry's demand. However, the upcoming Third-Party Access (TPA) initiative promises to increase participation by allowing solar power producers to sign VPPAs directly with data centre operators. These producers will pay TNB a fee to transmit power over the national grid.

With the data centre industry providing guaranteed off-takers for renewable energy, the solar photovoltaic (PV) sector can confidently secure financing and construct solar farms. This, in turn, contributes to the nation's aspirations for building renewable energy capacity.

Where Do We Go From Here?

The unprecedented growth of the data centre industry is just one part of the many changes happening in Malaysia now. While transformations and rapid changes can be unsettling, they are necessary to elevate Malaysia's digital economy to new heights. We are witnessing Malaysia's shift from being a consumer of digital services to becoming a producer. As a producer, new infrastructure is required, necessitating significant investments in resources such as power and water and fostering the development of a new supply chain ecosystem. Digital infrastructure is crucial in the digital economy space, serving as the foundation that supports and enables Malaysia's digital economy growth. It is essential for attracting foreign investors to the country and at the same time, delivering long-term benefits to the rakyat.

The task before us is immense, hence, it is important for us to work with all stakeholders is to sustain the momentum and complete this transformation.

Positioning Malaysia's Regional Competitiveness through **Enhanced Digital Tax Incentives**

By Wan Amiruddin Bin Wan Omar and Azliyah Binti Wagiman, Strategy & Policy, MDEC

Background

In its strategic bid to position itself as Southeast Asia's digital leader, Malaysia unveiled the Malaysia Digital (MD) tax incentive scheme on 31st May 2024. The initiative, spearheaded by the Malaysia Digital Economy Corporation (MDEC), aims to bolster domestic tech firms and attract global tech giants by offering compelling tax benefits for undertaking activities that leverage advanced technologies.

What is Outcome-Based Incentive

Aligned with international standards and Government commitment to outcome-based incentives as announced in Budget 2024, the MD Tax Incentive adopts a forward-looking, outcome-based strategy. A tiered approach encourages companies to invest in high-growth, high-value sectors, thereby fostering new economic clusters and expanding the domestic network. The incentive also prioritises talent development and environmental, social, and governance (ESG) elements, making these integral for companies accessing enhanced incentives.

The tiered incentive scheme is structured based on realised outcomes, such as the employment of high-value, full-time employees, annual expenditure, collaboration with education institutions and ESG elements. This ensures that businesses focus on investments that generate substantial value-add, aligning economic growth with broader goals of social inclusivity and environmental stewardship.

Package Details

The scheme provides tax incentives for eligible MD companies in two categories: New Investment Incentive and Expansion Incentive. For new investments, the scheme offers a 0% tax rate on qualifying intellectual property (IP) income and a reduced tax rate of either 5% or 10% on qualifying non-IP income for up to ten years. Companies can also opt for an Investment Tax Allowance (ITA) of either 60% or 100% of qualifying capital expenditure, which can be offset against up to 100% of statutory income for up to five years. For expansion, the scheme provides a flat 15% tax rate on qualifying IP and non-IP incomes for up to five years. Additionally, companies can choose an ITA of either 30% or 60% of qualifying capital expenditure, which can be offset against up to 100% of statutory income for up to five years.

The MD tax incentive is offered to companies undertaking activities that leverage MD-promoted tech enablers such as Artificial Intelligence and/or Big Data Analytics, Blockchain, Cloud, Cybersecurity, Drone Technology, Internet of Things, Robotics and/or Automation, Creative Media Technology including Extended Reality (XR) and/or Mixed Reality (MR), Integrated Circuit (IC) Design with Embedded Software, and Advanced Network Connectivity and/or Telecommunication Technology.

	PREVIOUS TAX INCENTIVES	MD TAX INCENTIVES
KPI FLEXIBILITY	Fixed KPIs were set, which were less flexible for companies with varying business needs	KPIs are determined as proposed by companies, offering them greater flexibility tailored to their specific business needs and growth
MSC/MD STATUS	Tax incentives were coupled with MSC status, leading to revocation of status and tax for breaches of the conditions	Tax incentives are decoupled from MD status, eliminating companies from complying with tax incentive conditions after completing their incentives period
EXPANSION INCENTIVE	N/A	Introduces the Expansion Incentive for companies undertaking new activity, with additional tax incentives for 5 years after completing their initial tax incentive
INCENTIVE PERIOD	Offered a 5 + 5-year period for Pioneer Status, requiring companies to submit applications twice: initial approval for the first 5 years and renewal for the subsequent 5-year tax incentive period	Provides a straight 10-year period for Reduced Tax Rate on IP and Non-IP Income, thus streamlining the administrative process.
TAX CLAWBACKS	Companies enjoy tax incentives for a predetermined period, leading to tax clawbacks for breach of tax conditions from the year they first occurred	Companies enjoy tax incentives only for the years of assessment that comply with the conditions, eliminating tax clawbacks due to breaches of tax conditions

Comparison with Previous Tax Incentives Packages

Benefit/Impact

For Country

The MD tax incentive scheme is a significant stride towards achieving the nation's strategic aspirations. By aligning with frameworks such as the Economy MADANI framework, New Industrial Master Plan 2030 (NIMP 2030), National Energy Transition Roadmap (NETR) and Malaysia Digital Economy Blueprint (MDEB), the initiative is set to bolster Malaysia's economic landscape. In addition, the scheme is expected to attract increased investments, foster job creation and drive economic diversification, reducing the nation's reliance on traditional sectors, thereby strengthening the innovation ecosystem and research capabilities. Ultimately, these efforts position Malaysia as a regional digital leader, enhancing its competitiveness on the global stage.

For Business

The MD tax incentive offers substantial benefits, starting with a reduction in operational costs through favourable tax rates on intellectual property (IP) and non-IP income. The tiered incentive scheme encourages investments in high-growth, high-value sectors, leading to the formation of new economic clusters. Additionally, the scheme prioritises sustainable business practices by integrating ESG elements into the enhanced incentives. This not only promotes long-term business sustainability but also fosters innovation and expansion within Malaysia's digital ecosystem. Local companies gain the opportunity to thrive, while global investors find an attractive gateway to engage with Malaysia’s burgeoning digital economy.

For Society

The societal impact of the MD tax incentive is profound. It promises the creation of high-value employment opportunities, particularly in technology-intensive roles, thus contributing to the Malaysia’s human capital development. The scheme also emphasises capacity and capability building through collaborations with educational institutions, enhancing the overall skills of the workforce. Moreover, the inclusion of environmental sustainability and social inclusivity initiatives ensures that the benefits of economic growth are equitably distributed, promoting a more inclusive society.

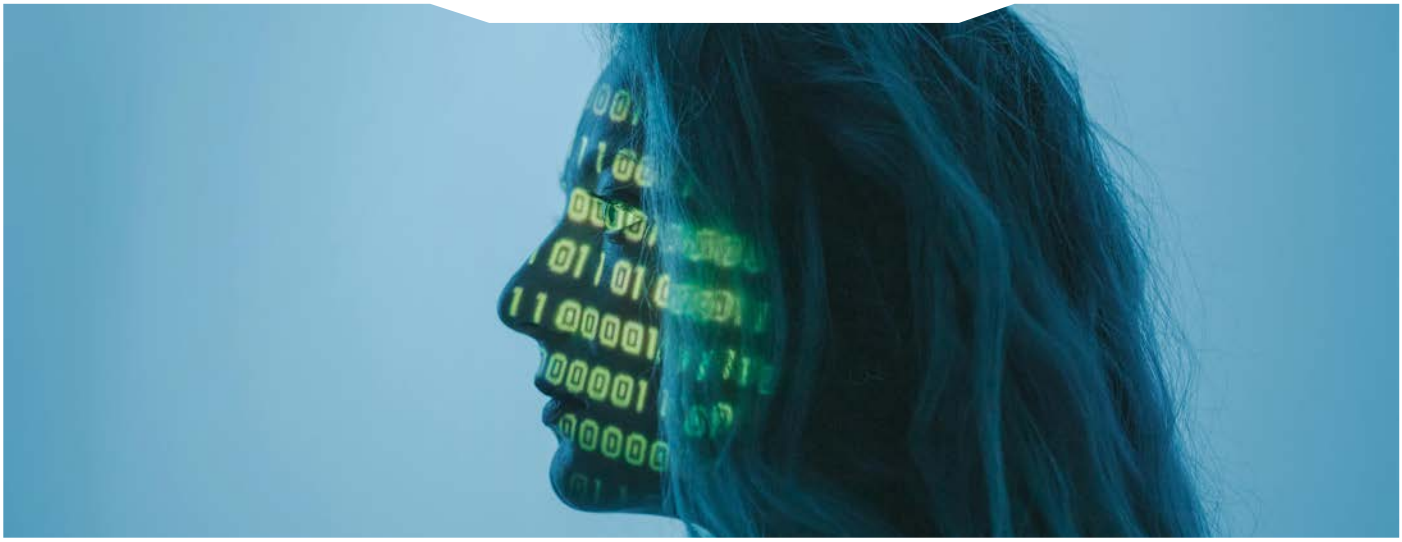
Conclusion

The MD tax incentive scheme represents a forward-thinking approach to economic development, aligning with national aspirations and global standards. By providing significant benefits to the country, businesses, and society, the scheme aims not only to drive economic growth but also to foster a sustainable and inclusive digital ecosystem. This strategic initiative positions Malaysia as a leader in Southeast Asia’s digital transformation, paving the way for a future defined by innovation, resilience and inclusive prosperity.

SOCIETY

Preparing for a Future **Workforce shaped by Generative AI**

By Allan Cheah Wei Ming, Strategy & Policy, MDEC



As Aisha sipped her coffee in the morning, her Generative AI (Gen AI) assistant read out all the relevant news curated for her work. It also flagged potential roadblocks for her commute. Upon arriving at the office, Aisha found her workload significantly lighter, with her Gen AI assistant displaying the optimised schedule for the day on screen. The AI had almost completed her morning report and handled all repetitive tasks, leaving Aisha more time to focus on strategic aspects of her work.

In the afternoon, Aisha attended a department brainstorming session where an AI-powered software analysed the team's ideas and suggested creative solutions, acting like another team member. The example above is not too far-fetched, as it is already happening today.

How would businesses prepare their future workforce, which is being progressively shaped by Gen AI, in real-time?

Growth in Businesses Impacted by Gen AI will Shape the Workforce Required

Ready or not, Gen AI is already creating significant impact across all sectors. This is not surprising, as a McKinsey[1] report projected that Gen AI could add as much as USD 4.4 trillion annually to the global economy. The report also highlighted that banking, high tech, and life sciences are among the industries that could see the biggest impact as a percentage of their revenues from Gen AI. In retail and consumer packaged goods, the potential impact is projected to be between USD 400 to 660 billion a year. Deloitte's 2023 Health Care Consumer Survey[2] found that 75% of leading healthcare companies in the United States are experimenting with or planning to scale Gen AI, and 82% have or plan to implement governance and oversight structures for it. Closer to home, MyDigital Corporation's 2023 report on "The Economic Impact of Generative AI," projected that Gen AI could unlock USD 113.4 billion in productive capacity for the Malaysian economy, equivalent to one-quarter of the national GDP.

The impact and influence of Gen AI has indeed been felt across all sectors of the economy today and will continue to do so for many years to come. Increased productivity is typically closely related to labour production. Hence, businesses which have been impacting the economy through Gen AI in recent years will undoubtedly shape the workforce that they would be hiring in the future.

[1] *https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier*
[2] *https://www2.deloitte.com/us/en/blog/health-care-blog/2023/can-gen-ai-help-make-health-care-affordable-consumers-think-so.html*

Gen AI is Already Impacting the Job Market

With Gen AI becoming increasingly immersed in all economic sectors, how does it influence the current workforce or even shape the future? In 2023, a Market Research Biz report[8] projected that the global Gen AI in jobs market size will grow at a CAGR of 18.9% from USD 0.23 billion in 2022 to USD 1.26 billion in 2032. It is clear that Gen AI will significantly impact the job market. Over time, companies realise that the productivity gains from Gen AI far outweigh any perceived misconceptions or negative aspects.

For example, McKinsey[9] suggested that current Gen AI and other emerging technologies have the potential to automate work activities that takes up between 60%-70% of the employees' time today. Given that Gen AI is built on large language models with an ever-increasing ability to understand natural language, it is poised to accelerate automation in high-level jobs, particularly in the digital industry, more rapidly than in other types of jobs. Gen AI is expected to significantly transform Malaysia's working culture and experience too. It is estimated that 65% of workers in Malaysia will potentially use Gen AI for 5%-20% of their regular work activities.[7] These numbers are just small indicators of the larger impact that Gen AI is already having on transforming the way we work.

Therefore, it is no surprise that Gen AI can greatly improve productivity and innovation in tech-related business functions like application development, solutioning, data analytics, designing, trend projections, software programming and more. However, there is a possibility that Gen AI could be better appreciated when we see how it can transform various related processes and functions of non-tech sectors like Human Resources and Finance.

Impact of Gen AI in Non-Tech Sectors

In the Human Resources (HR) sector, the usage of Gen AI cannot be understated. It can automate many mundane yet necessary tasks, such as screening thousands of resumes and scheduling numerous interviews. A talent survey by Eightfold AI[10] found that most HR leaders already use AI in some form or capacity across various HR functions to improve its overall efficiency and resiliency. The top five HR functions cited as being most impacted by AI would be Employee Records Management (78%), Payroll Processing and Benefits Administration (77%), Recruitment and Hiring (73%), Performance Management (72%), and Onboarding New Employees (69%). The influence of AI in HR becomes even more apparent when considering that a large majority, 92%, intend to increase their usage of AI in at least one HR area.

The International Monetary Fund (IMF)[11] has acknowledged that Gen AI will accelerate AI adoption in the Finance sector, thanks to its ability to process extensive and diverse datasets. For example, under Finance Operations, Gen AI can assist in creating preliminary drafts for tasks that require minimal analysis, such as drafting contracts and supplementing credit reviews. In the Accounting field, Gen AI could offer initial insights for successive iterations of financial statements during month-end closures. In Financial Planning, it could easily perform ad-hoc variance analysis of a company's structured or unstructured data sets and eventually create reports for business partners to explain their unit's financial performance.

In Malaysia, Muhammad Hadzrin Mahdi, Head of Business Development at TERAS, highlighted two other non-tech functions where AI is being deployed, namely in the toll ecosystem (e.g., vehicle classifications, plate recognitions, vehicle criteria profiling, etc.) and in rail systems like the automated process of identifying containers with wagons. "The usage of AI has significantly reduced the cost of manpower and human errors in TERAS' business operations," said Hadzrin.

Another non-tech sector poised for a significant AI impact is insurance, as highlighted by Yen Ming Lee, Co-founder and Group CEO of Policy Street. "AI-powered algorithms promise to enhance underwriting processes, resulting in more precise risk assessments and pricing strategies. Furthermore, AI can streamline claims processing, automate tasks, and reduce processing times. This technological advancement also allows for

[8] *https://marketresearch.biz/report/generative-ai-in-jobs-market/*
[9] *https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier*
[10] *The Future of Work: Intelligent by Design, Eightfold AI's Talent Survey, 2022*
[11] *https://www.imf.org/en/Publications/fintech-notes/Issues/2023/08/18/Generative-Artificial-Intelligence-in-Finance-Risk-Considerations-537570*

highly personalised insurance products and services, ultimately leading to higher customer satisfaction and retention rates."

Soft Space is another company in Malaysia that has testified how AI has profoundly transformed their business, especially in the areas of finance and payment solutions. It's CTO, Nicholas Lim, shared his thoughts, "With AI, we can now handle and analyse vast amounts of payment data, providing crucial insights into consumer and business behaviour. Particularly in generative AI and agentic AI, we've unlocked new benefits for financial and non-financial enterprises in areas like Customer Understanding, Fraud Management Systems and Security and Attestation."

As Gen AI continues to spread its influence across tech as well as non-tech sectors, it is undeniable that the next evolution of our future workforce is one that will be shaped by Gen AI.

Evolution of Skillsets for the Gen AI Workforce

With Gen AI progressively reshaping our work landscape, it is evident that the skillsets needed to remain productive and relevant in the workplace are evolving. What skillsets should businesses prioritise to prepare their employees for a future workforce predominantly shaped by Gen AI?

A recent report by AWS[13] highlighted that 92% of companies in the Asia Pacific (APAC) projected that their businesses will be AI-driven by 2028. This expectation is supported by the belief that AI technology can increase companies' productivity by 51%. Consequently, it is not surprising that 93% of employers and 90% of workers anticipate using generative AI tools in their jobs within the next five years. In addition, it is encouraging to see that employers are willing to pay IT workers with AI skills an average salary that is 44% higher.

Perhaps the current gap that needs to be properly addressed is the availability and accessibility of such AI skills. Case in point, 80% of Asia-Pacific (APAC) employers acknowledged that hiring talents with AI skills and expertise was a priority. However, 75% said they couldn't find the AI talents needed. On the flip side, 71% of the workers are also unaware of what AI skills they need! This paradox clearly underlines the challenges that lay ahead with regard to AI skills and talents. So, what exactly are these AI skills that needs to be prioritised?

In recent years, various trends in AI skills have been analysed and reported across numerous articles. Simply speaking, AI skills that are highly sought after in the future workplaces can be segregated into two core groups, namely Technical AI Skills and Non-Technical AI Skills.

[13] *Accelerating AI Skills: Preparing the Asia Pacific Workforce for Jobs of the Future, AWS, Mar 2024*

For Technical AI Skills, although the breadth of scope is wide and is dynamically evolving, the four (4) main ones are summarised below:

Programming Skills

Essential and foundational skills required for building and executing AI algorithms, developing AI models, frameworks and architectures. Skills include Python, Java, R, C++, etc.

Machine/Deep Learning

Strong knowledge and understanding of data structures, algorithms, and software design principles as well as deep learning frameworks to build and train complex neural networks. Skills include TensorFlow, PyTorch, Model Tuning, etc.

Content Generation

Utilisation of Gen AI to create various content such as social media postings, images, articles, videos and more. Skills include Stable Diffusion, Midjourney, AI Chatbot, Image Processing, etc.

Data Science

Knowledge of statistical analysis, data visualisation, exploratory data analysis and predictive modelling essentially to make sense of data to solve problems and make informed decisions. Skills include Data Analytics, Data Engineering, Natural Language Processing (NLP), etc.

At times, the Non-Technical AI skillsets may tend to be overlooked, but they are just as high in demand in the market today. This could be due to the complexities of AI technology itself, which requires some non-technical expertise to make sense of its technical bits. Some of the key Non-Technical AI skills to look out for include:

Prompt Writing

Skill required to write clear and well-structured inputs to help maximise the utility of chatbots and other large language models.

Critical Thinking

Essential skillset to assist in better developing and designing workflow automation and other AI systems.

Ethical AI

Navigating AI-related challenges such as norms, bias mitigation techniques and transparency to ensure that AI systems are implemented responsibly, ethically and aligned with societal values.

AI Communication

Effective story-telling skills to communicate AI concepts and solutions to both technical and non-technical stakeholders.

AI Leadership

Good knowledge of the AI development lifecycle to effectively oversee cross-functional AI project coordination and implementation.

Companies need to react accordingly to the AI revolution or risk getting left behind. In Malaysia for example, Tan Aik Keong, CEO of Agmo Studio shared the same sentiment and what the company did. “When we saw how AI started to impact our overall business, we quickly established a new R&D department focusing on AI with a current headcount of 10 employees.”

Key Challenges in Preparing an AI Future Workforce

Recognising the required AI skills is just one part of the equation. There remain challenges in nurturing a pool of competent Gen AI workforce.

For example, a survey from EY[15] highlighted that 63% of employees anticipate that Gen AI will improve their way of work. However, although most employers (84%) also share the same sentiments that Gen AI will enhance work more flexibly, it was rather surprising that only 22% of employers plan to provide training to employees on Gen AI skills. This immediately raises the question of whether we are doing enough (or lack thereof) as a country to prepare our future workforce with the required training

[15] *EY 2023 Work Reimagined Survey*

and upskilling programmes. Therefore, a key challenge could be the unpreparedness of companies to equip its employees with Gen AI skills.

In terms of education, the challenge lies in ensuring that the local graduates swiftly adapt to the ever-evolving demands of the industry. There is a genuine worry that the skills imparted in current curricula may become outdated upon graduation. Moreover, there exists a pervasive societal apprehension surrounding AI. People fear job displacement, privacy breaches, and even harm from AI. Addressing these concerns necessitates promoting a more positive perception of AI. Last but not least, establishing effective governance structures for the integration of AI into businesses and society presents yet another significant hurdle that needs to be addressed.

Recommendations to Address These Challenges

Firstly, there needs to be a concerted push to integrate more structured AI-based courses across all higher education institutions. The recent announcement of Malaysia's first Faculty of AI in Universiti Teknologi Malaysia (UTM) is a step in the right direction but we need to do more to meet the increasing demands of AI talents. For example, currently, there are no specific National Occupational Skills Standards (NOSS)[16] that has been specifically developed for AI skills nor job roles. Without this in place, our TVET institutions are not able to offer critical AI courses to remain relevant with the evolving tech ecosystem. This will in turn hamper the eventual supply of TVET graduates skilled in AI.

In addition, non-technical AI skills, and to some extent, certain technical AI skills, can be imparted through micro-credentials or concise online courses for accessibility and efficiency.

Secondly, there needs to be more emphasis on promoting and raising public awareness about AI among the people on the street. The Government's recently launched self-learning online programme, *AI untuk Rakyat*[17] is a great initiative that should be replicated at various levels as well as promoted more widely, especially in rural areas where the outreach becomes more essential. Given that numerous courses are available online, it could prove beneficial for the government to gather and share all relevant resources in one trusted online platform. This central hub would serve as a reliable source for individuals seeking to enhance their skills in AI and related fields.

Third, a quick fix could be simply improving existing initiatives related to upskilling talents in AI skills. For example, the Human Resource Development Corporation (HRDC) is an agency under the purview of the Ministry of Human Resources that imposes a collection of levy on all employers in Malaysia. In return, the employers will receive financial assistance from the levy paid, specifically for training and development of their local employees. Under this premise, HRDC could work employers and relevant agencies to identify more suitable AI courses for companies to utilise their levy contributions accordingly.

For a more sustainable approach, companies should develop structured plans to meet their manpower needs, which may entail collaborating with selected universities to supply the necessary pool of AI talent gradually.

Last but not least, it may be prudent and timely for the Government to review the impact and effectiveness of the existing National AI Roadmap 2021-2025[18], particularly the section on Strategy 4 – Fostering AI Talents. It is important to keep track of all achievements as the roadmap concludes next year. This would help the Government and its relevant agencies to better prepare and plan for new initiatives to develop AI talents in the future.

Looking Ahead

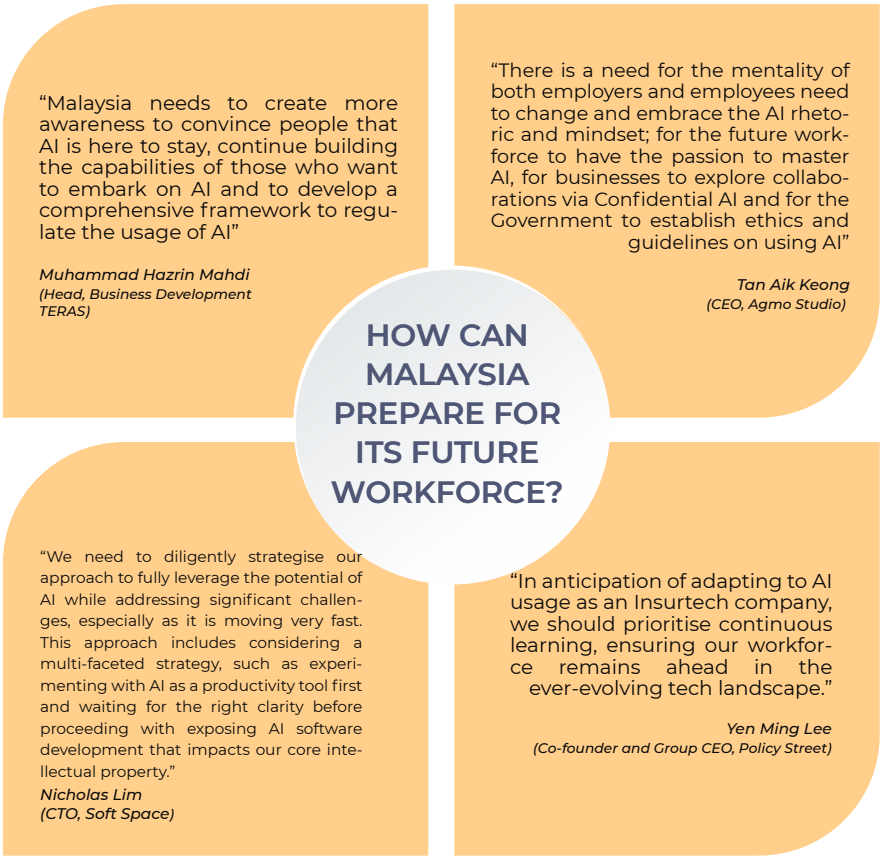
The impact of Gen AI on Malaysia's economy is undeniable, reshaping both the workforce and the future of work culture. This technological upheaval presents a dual opportunity and challenge. On one hand, it promises unprecedented economic growth and innovation. On the other, it demands a swift and strategic response to ensure Malaysia remains competitive on the global stage.

[16] *https://www.dsd.gov.my/ms/perkhidmatan/standard-kemahiran-pekerjaan-kebangsaan-noss*
[17] *https://ai.gov.my/*
[18] *Malaysia National AI Roadmap 2021-2025*

The urgency of developing key national initiatives in AI cannot be overstated. Malaysia must accelerate its efforts to cultivate a robust AI ecosystem, investing in research, development, and talent cultivation. By fostering a culture of innovation and digital literacy, we can empower our workforce to thrive in this new era.

The integration of AI into our workforce is not a distant future; it is happening now. By understanding the potential of AI, investing in human-centric AI development, and fostering a culture of continuous learning, Malaysia can navigate this technological revolution successfully. The future of work is a partnership between humans and machines, one that promises unprecedented innovation and human potential.

Ultimately, Malaysia's success in navigating the AI landscape will depend on its ability to balance technological advancement with human-centric values. A future where humans and AI collaborate harmoniously, driving economic prosperity and social well-being, is within reach. It's time to embrace this future and shape it to our advantage. The choice is ours to make.



Bridging the Digital Divide: **The Impact of TVET on Malaysia's Tech Workforce**

By Syafini Binti Mohd Ridowan
Digital Talent, MDEC

In today's rapidly evolving digital landscape, Malaysia is on the brink of a transformative era. As technology permeates all aspects of life, the demand for a tech-savvy workforce is more urgent than ever. In this context, Technical and Vocational Education and Training (TVET) is crucial in this transition, equipping individuals with practical skills and industry-relevant knowledge to thrive in the digital economy. By offering specialised programmes such as information technology, engineering, and digital media, TVET institutions provide students with hands-on experience and industry-relevant training that prepares them for the modern workplace and enables them to contribute significantly to Malaysia's digital future.

Statistics on TVET in Malaysia

As of 2023, Malaysia has approximately 1,295 TVET institutions, with around 300,000 students enrolled. The government has significantly invested in TVET, allocating RM 6.7 billion under seven key ministries in Budget 2023 to enhance TVET programmes and initiatives[1]. Furthermore, TVET graduates have a high employment rate, with 90% securing jobs, although many earn around RM 2,000 monthly[2]. The government aims to increase the marketability and salary of TVET graduates to between RM 2,500 and RM 3,000 or higher[3]. Additionally, over 100,000 TVET trainees are expected to be trained through collaborations with government-linked companies (GLCs) and private companies[4].

[1]*Penang Institute, MalaysiaNow, MalayMail, MIDA*
[2]*Penang Institute, MalaysiaNow, MalayMail, MIDA*
[3]*MalayMail*
[4]*Sinar Daily*

Advantages of TVET Programmes

One of the key advantages of TVET programmes is their emphasis on experiential learning. Unlike traditional academic pathways, which focus on theoretical concepts, TVET prioritises practical, real-world skills. Students work with cutting-edge technologies, solve problems, and collaborate on industry-relevant projects. This approach enhances their technical abilities, critical thinking, creativity and teamwork.

Furthermore, TVET programs are often designed with industry partners, ensuring the curriculum stays relevant and up-to-date. This alignment helps graduates transition smoothly into the workforce, ready to drive innovation and productivity. Additionally, many TVET institutions offer internships or apprenticeships, providing hands-on experience and valuable networking opportunities.

TVET Stakeholders Structure

In Malaysia, the commitment to advancing the digital economy is reflected through the concerted efforts of various stakeholders, including government ministries and agencies, educational institutions and the private sector.

These stakeholders work together to provide a comprehensive TVET framework that meets the evolving demands of the digital era.

This collaboration ensures that Malaysia's TVET system remains responsive to rapid technological changes, fostering a workforce capable of driving the nation's digital ambitions.

By aligning TVET with the strategic needs of the digital landscape, the goal is to cultivate a talent pool that is not only technically proficient but also highly innovative, versatile and prepared for future challenges and opportunities.

Accreditation Bodies

TVET Accreditation Landscape

In Malaysia, TVET certifications are accredited by two key agencies: the Skills Development Department (DSD) and the Malaysian Qualifications Agency (MQA). These bodies play distinct yet complementary roles in ensuring the quality and relevance of TVET programmes.

The DSD oversees the Malaysian Skills Certification System (SPKM), aligned with the National Occupational Skills Standards (NOSS).

It offers certifications like the Malaysian Skills Certificate (SKM), Malaysian Skills Diploma (DKM) and Advanced Malaysian Skills Diploma (DLKM) up to Malaysian Qualifications Framework (MQF) TVET Levels 1-5. Both public and private centres accredited by DSD can provide these certifications.

Meanwhile, the MQA focuses on a broader educational framework, accrediting various qualifications from certificates to degrees covering MQF TVET Levels 1-6, including accreditations of programmes from public and private institutions that meet its standards.

In summary, DSD focuses on industry-specific skills certifications, while MQA provides a flexible accreditation framework across various educational levels and supports institution-specific curriculum development.

MDEC's Role in TVET Development

The Malaysian Digital Economy Corporation (MDEC) has been appointed the Industry Lead Body (ILB) for the Digital Technology sector. In this role, MDEC conducts job analysis, creates and reviews NOSS, designs curricula for the National Dual Training System (SLDN), encourages industry participation in training programmes, and conducts studies to assess skills demand and emerging technologies in the digital sector.

In recent years, MDEC has made significant contributions to TVET development, including developing NOSS for digital technology-related occupations and collaborating with educational institutions and industry partners to bridge the skills gap in the digital economy.

For instance, MDEC's efforts have led to a 30% increase in industry placements for TVET graduates in digital fields over the past five years[5].

TVET in Digital Technology

The Fourth Industrial Revolution (IR 4.0) and the digital economy are transforming Malaysia's industrial landscape, creating a high demand for graduates with digital technology skills. IR 4.0 refers to the digital transformation of production industries through automation, artificial intelligence, and data analytics. The digital economy includes activities and transactions using digital technologies to boost wealth creation, productivity, and quality of life.

Digital technology encompasses devices, systems, and resources that generate, process, store, and manage data to enhance workflow and customer experience. Digital businesses leverage this technology to create new value in business models, customer experiences, and internal operations, driving a growing demand for highly skilled technical professionals.

[5]Penang Institute, MIDA

Challenges and Solutions

Despite the growing demand for digital skills, Malaysia's TVET sector faces several challenges:

Skills Mismatch

There is often a disconnect between the skills taught in TVET programmes and the skills required by industries, resulting in graduates struggling to find suitable employment[6].

Outdated Curriculum

Rapid technological advancements mean that TVET curricula need constant updating to stay relevant. However, many institutions struggle to keep pace with these changes[7].

Perception Issues

TVET is a less prestigious education pathway than traditional academic routes, deterring enrollment, despite high employability prospects[8].

Industry Insights on TVET

"TVET graduates should focus on developing both technical and soft skills to stay versatile and agile in a rapidly changing job market. The practical skills they bring are crucial for driving innovation and maintaining competitive advantage"

Dr. Mohd Afzanizam Abdul Rashid, Chief Economist at Bank Islam

According to Dr. Mohd Afzanizam Abdul Rashid, Chief Economist at Bank Islam, "TVET graduates should focus on developing both technical and soft skills to stay versatile and agile in a rapidly changing job market. The practical skills they bring are crucial for driving innovation and maintaining competitive advantage."[9]

Similarly, Dr. Yeah Kim Leng, Economics Professor at Sunway University, emphasised that "close collaboration with industry players is key to ensuring that TVET programmes meet specialist needs and produce skilled workers ready for the workforce."[10]

"close collaboration with industry players is key to ensuring that TVET programmes meet specialist needs and produce skilled workers ready for the workforce"

Dr. Yeah Kim Leng, Economics Professor at Sunway University

[6] *Penang Institute*
[7] *Penang Institute*
[8] *Penang Institute, The Star*
[9] *The Star*
[10] *Sinar Daily*

Suggestions for Improvement in TVET

To enhance the effectiveness of TVET, especially in the digital technology area, the following improvements are suggested:

Curriculum Modernisation

Regular updates to the TVET curriculum to incorporate the latest technological advancements and industry trends. This includes integrating emerging technologies such as artificial intelligence, blockchain, and cybersecurity into the curriculum.

Industry Partnerships

Strengthen partnerships with industry players to ensure that TVET programmes are aligned with industry needs. This includes developing industry-led training modules and increasing opportunities for apprenticeships and internships.

Instructor Training

Invest in continuous professional development for TVET instructors to ensure they are equipped with the latest skills and knowledge. This can be achieved through regular training sessions, industry exposure programmes, and advanced certification courses.

Enhanced Soft Skills Training

Incorporate soft skills training into the TVET curriculum to ensure graduates are well-rounded. Skills such as communication, teamwork, problem-solving, and critical thinking are essential for success in the digital economy.

Digital Learning Platforms

Develop and implement digital learning platforms to provide flexible and accessible learning opportunities. Online courses, virtual labs, and interactive learning modules can enhance the learning experience and ensure students are prepared for the digital workplace.

Public Awareness Campaigns

Launch campaigns to change the perception of TVET and highlight its benefits. Promote success stories of TVET graduates and showcase the high employability and earning potential of TVET careers to attract more students to these programmes.

Impact and Future Directions

MDEC's initiatives as an ILB have significantly impacted Malaysia's TVET landscape, bridging the gap between education and employment and equipping graduates with skills for the digital economy. MDEC will continue to drive TVET innovation and collaboration between industry and academia to support Malaysia's digital transformation.

Conclusion

As Malaysia navigates the complexities of the digital age, the role of TVET in building a tech-savvy workforce becomes increasingly critical. TVET programmes, through their practical and industry-aligned training, are essential in equipping individuals with the skills needed to thrive in a digital economy.

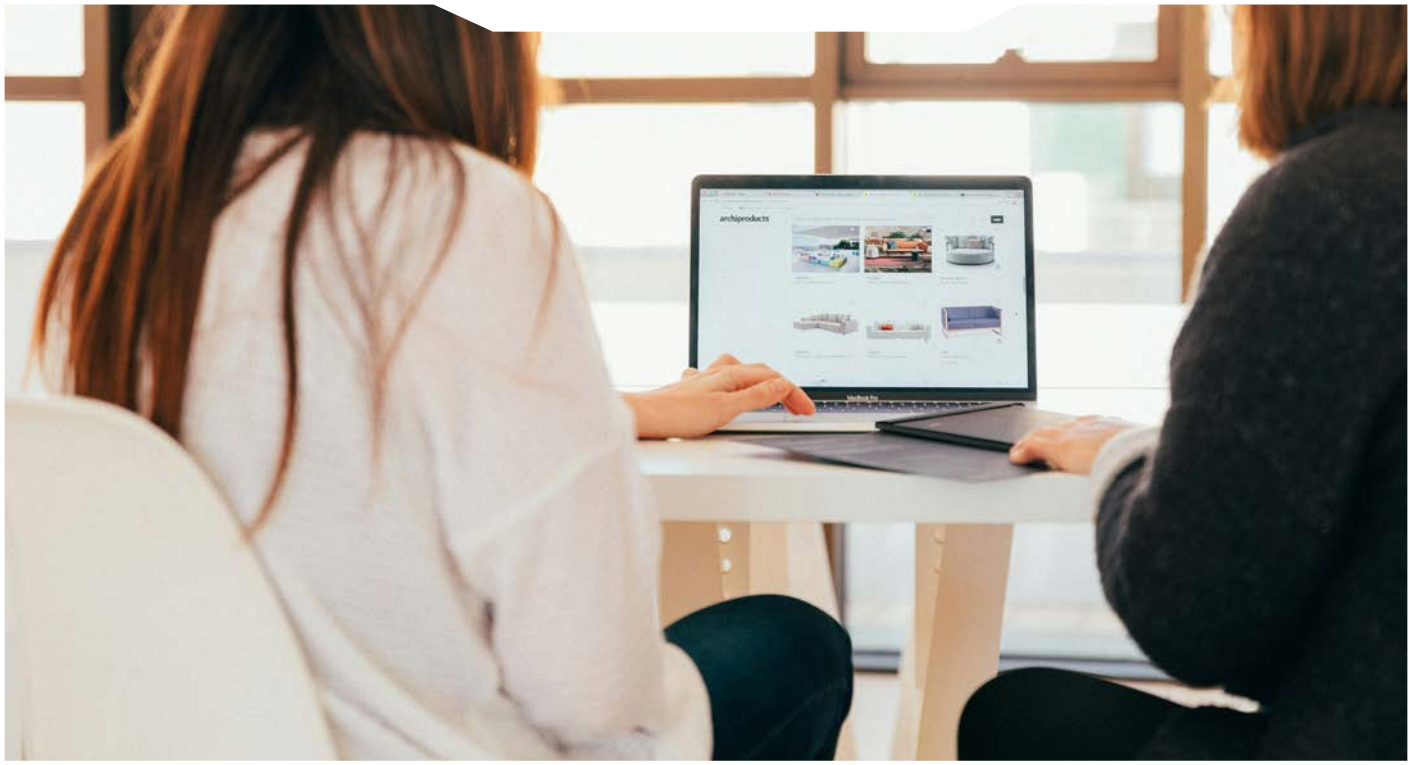
The combined efforts of government bodies, industry partners, and educational institutions are pivotal in addressing the challenges facing TVET and enhancing its perception and effectiveness.

Malaysia can ensure a steady supply of highly skilled and adaptable workers by fostering a collaborative environment and continuously updating the curriculum to meet industry demands.

Ultimately, this will drive the nation's ambition to be a leading digital economy, demonstrating that the future of Malaysia's workforce lies in the strength and innovation of its TVET system.

Blazing the Trail towards **Women's Empowerment in Digital and Technology Ecosystem**

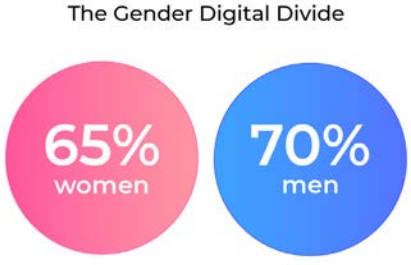
Nurul Aliya Ashiqin, Nur Nabila Shazwa and Nabilatul Husna
Strategy & Policy, MDEC



Is tech truly gender-neutral? When envisioning a future shaped by automation, robotics and seamless connectivity, we often picture these innovations as levelling the playing field for all genders. But does reality match our imagination?

The United Nations has established 17 Sustainable Development Goals (SDGs) to create a better world for all by 2030. Women are prominently included in these goals, with SDG 5 specifically dedicated to achieving gender equality and empowering all women and girls. As we become more engaged digital citizens, women's involvement in digital and technology becomes not just a matter of achieving equity but a necessity for global progress. The World Economic Forum in Global Gender Gap Report 2024 measured that the gender gap is 68.6% closed and will take an estimated 134 years to achieve equality, roughly five generations beyond the 2030 Sustainable Development Goal (SDG) target.

One of the key targets under SDG 5 is to enhance the use of enabling technologies, particularly information and communications technology, to promote the empowerment of women. Globally, only 65% of women use the Internet compared to 70% of men. Imagine the transformative power of achieving parity in digital access and opportunities; the economy would thrive as a result.



Source: International Telecommunication Union (ITU)

Boosting digital skills can expand opportunities for women in tech

Digital and technology industry unlocks many opportunities for women due to its growing demand, flexibility, enabling them to balance their time with family and other responsibilities and monetise their skills beyond traditional 9-to-5 jobs. Despite these opportunities, women remain underrepresented in technology-related fields, comprising less than a third of the world's workforce, as reported by The World Bank.

According to McKinsey & Company in Technology Trends Outlook 2024, Gen AI and electrification and renewable-energy technologies were two tech trends that stood out in 2023, which also reflected in the job postings. Both trends indicate an increasing demand for talent in these sectors. First, it is imperative to consider how digital skills align with the demand in the digital and technology industry.

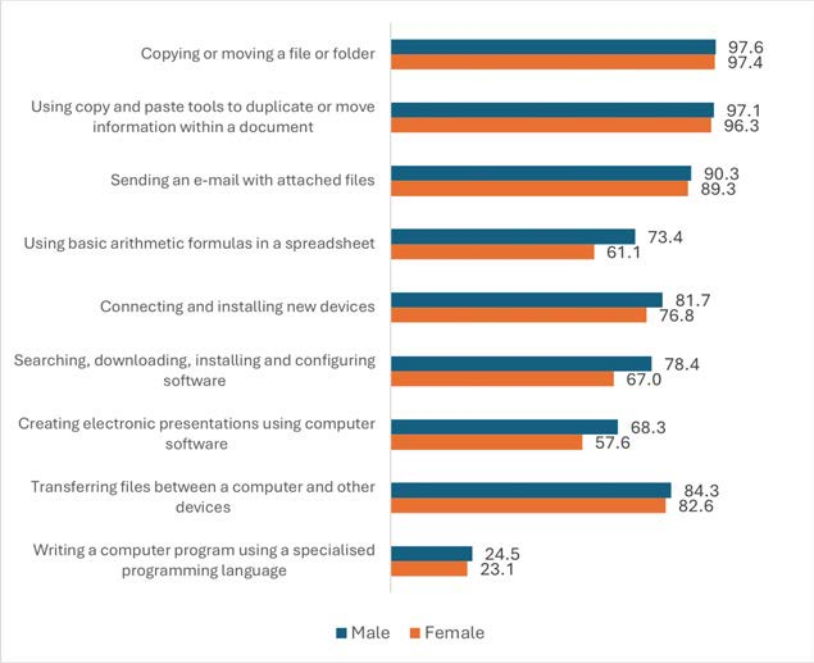


Figure 1 Percentage (%) of individuals using computer by type of ICT skills and sex, Malaysia, 2023

If we take a step back and examine our talent pool in digital skills, we can observe that Malaysian women demonstrate lower proficiency in mastering ICT skills, as indicated in the ICT Use and Access by Individuals and Households Survey Report 2023 by Department of Statistics Malaysia (DOSM). A notable difference is evident in their struggle with basic arithmetic formulas in spreadsheets, lagging 12.3% behind Malaysian men. Preparing our current and future female workforce in these areas can help fill these gaps. This can be achieved through early-stage learning using accessible, easy-to-understand educational resources tailored to them.

Recently, the Coursera Global Skills Report 2024 highlighted that out of 782,000 Malaysian online learners, 46% were women, with 34% of these women learners in STEM field. Considering these perspectives, it is evident that Malaysian women possess a strong appetite for essential knowledge and skills to advance themselves in this industry. They actively seek opportunities to upgrade their capabilities. Therefore, fostering aggressive awareness campaigns to encourage women's participation in online learning is crucial to support their skill development effectively.

Investing in targeted initiatives that upskill women in digital skills, particularly in advanced areas like AI, cloud computing, data analytics, blockchain, and others, offers significant economic benefits for Malaysia. These skills hold immense potential and widespread applications, impacting both everyday life and various industries.

These skills can foster professional growth and make businesses and industries more competitive. According to the AWS Asia Pacific Digital Skills Study, advanced digital workers in Malaysia earn USD 21,773 more than their non-digital counterparts. This increase in earnings is estimated to contribute approximately USD 41.9 billion more to Malaysia's GDP, given that Malaysian workers' incomes constitute 40% of the overall GDP. As these skilled women enter or advance in the workforce, they can significantly contribute to Malaysia's digital and technology industries, crucial for future competitiveness and GDP growth.

Malaysia could harness a larger talent pool capable of driving innovation and economic growth by empowering more women to excel in digital fields. This can be achieved through multifaceted approaches, such as government-industry partnerships that develop initiatives promoting women's access to online courses, mentorship, and networking programmes to support women's professional development.

Like others, women's participation in ICT goes beyond their digital skills; they are leveraging online platforms not only for personal use but also for economic empowerment, thereby, accelerating the growth of gig and digital economy.

Citing DOSM's ICT Use and Access by Individuals and Households Survey Report 2023, it reveals that a greater percentage of women can perform tasks to generate income (16.7%) and order goods and services outside of e-commerce (52.1%) compared to men. This implies that women are earners who generate income through digital platforms. The Malaysian government announced in Budget 2024 that they allocated RM 720 million in the form of small business loan facilities through multiple institutions like TEKUN, Bank Negara Malaysia (BNM), and Bank Simpanan Nasional (BSN) to encourage women and youth to engage in business as micro-entrepreneurs and small traders. Similarly, the Ministry of Women, Family, and Community Development, launched the Women in GIG and Business in Technology (GIG@BIT) initiative to encourage more women in Malaysia to participate in the economy, particularly in digital and technology fields, through educational training workshops. This means having accessible knowledge and inclusive financial products for women is crucial to enable them to capitalise on opportunities and scale up in digital entrepreneurship, moving away from traditional brick-and-mortar retail.

Apart from digital entrepreneurship, online gig work can also transform the way women work, offering flexible schedules that allow women greater autonomy and freedom over their work hours. A study conducted by Statista with 2,098 respondents and with 368 self-employed people and freelancers, women accounted for 41% of the Malaysian gig economy. Women could leverage on digital freelance platforms like Upwork, Flexjobs, Freelancer, and others that facilitate remote work and freelancing opportunities, empowering them to choose projects that are aligned with their interests and values.

The Malaysia Digital Economy Corporation (MDEC) spearheaded an initiative called Global Online Workforce (GLOW) in 2016 where Malaysians can equip themselves with necessary knowledge and skills to excel in the digital freelance platforms. From 2022 to 2023, there were 11,849 trained participants, with females making up 66.3%, outnumbering male participants primarily in workstreams such as data entry, administration, and virtual assistant roles. Such initiatives are important to bridging knowledge and skills gaps, thereby increasing their participation in the digital freelance platforms.

Current state of women workforce and leadership in digital and technology ecosystem

Over 25 years ago, social psychologist Faye Crosby discovered a surprising phenomenon: most women are unaware of personally experiencing gender discrimination and even deny it, despite objective evidence and the recognition that women face such discrimination.

The presence of gender bias in organisational policies and practices implies that women may feel powerless to control their own success. In the Women in the Workplace 2023 report by McKinsey & Company, women face microaggressions at a significantly higher rate compared to men in the workplace. They are twice as likely to be mistaken for someone more junior and to receive comments regarding their emotional state. In addition to that, a poll conducted by WomenTech Network, 64% of respondents have been spoken over during meetings, 19% have felt pigeonholed by stereotypes in various situations, and 11% have been asked to “supply the food” during meetings. Many survey respondents alluded to gendered language and taking meeting minutes as "the usual," among other common microaggressions.

“Organisations can support women by providing continuous learning and development opportunities. It is crucial for advancing women's careers in tech. Programmes such as technical skill enhancement can help women stay updated with the latest technological advancements and tools. Access to industry conferences and workshops not only boosts their knowledge but also expands their professional network, allowing them to learn from and connect with industry leaders and peers. Investing in women's professional development ensures they have the skills and confidence to take on challenging roles and drive innovation within the organisation."

Noor Amy Ismail

Board of Director and Advisory Panel Member at Wahed Ventures, and Advisor for Transformation at Menteri Besar Incorporated, Selangor (MBI)

“Organisations must take bold, transformative actions to support and promote women in digital and tech roles, fundamentally reshaping the industry landscape. To start, they must overhaul hiring practices by implementing strict, bias-free recruitment processes and setting aggressive targets for female representation in tech positions. It's crucial to establish robust mentorship and sponsorship programmes that not only connect women with industry veterans but also ensure they have powerful advocates at the highest levels of the organisation.”

Jasmine Begum

Regional Director, Corporate, External & Legal Affairs, Microsoft ASEAN

Female workforce in digital and technology

Even in the technology field, female representation is disproportionately low, exacerbating discrimination, biases, and other workplace challenges like those found in other industries. According to a report from The World Bank, women only occupy 28% of all positions in computer and mathematical occupations, and even fewer (15.9%) in engineering and architecture roles.

Looking into the Malaysian context, women workforce is relatively lower than male from 2020-2022, indicating a significant disparity in values between both genders, with males outnumbered female in this sector, and delving deeper, women in this sector continue to drop during the last three years, showing a downward trend (Figure 2). Between 2020 and 2022, the participation of Malaysian women in the ICT sector decrease, with percentages of 40% in 2020, 33.9% in 2021, and 33.8% in 2022. There was a significant reduction of about 6.1% between 2020 and 2021 in the participation of Malaysian women in the ICT workforce.

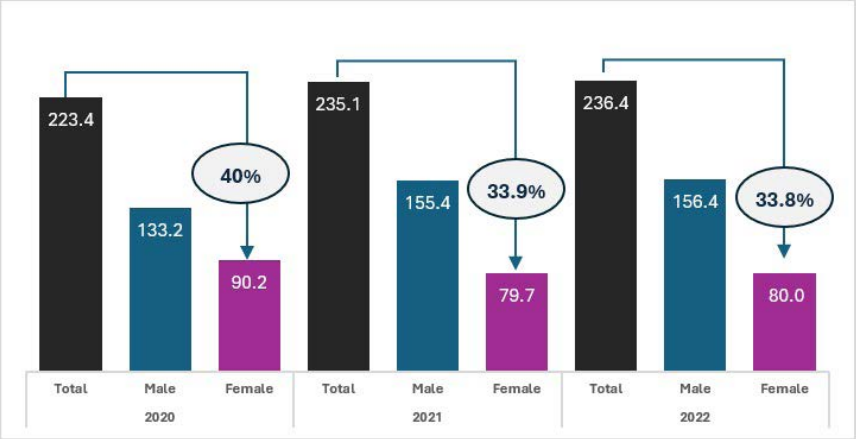


Figure 2 Malaysia Labour participation of women in ICT sector, DOSM, 2020-2022 in ('000)

Women in tech leadership positions

Going further, women are underrepresented in high leadership roles such as Vice President (17.8%), and the representation in C-suite (12.4%) in digital and technology fields as reported by the Global Gender Gap Report 2023. Upon closer examination, Figure 3 shows the percentage of female employees in major tech companies such as Amazon (23.1%), Apple (31.4%), Facebook (35.5%), Google (30.6%) and Microsoft (24.4%).

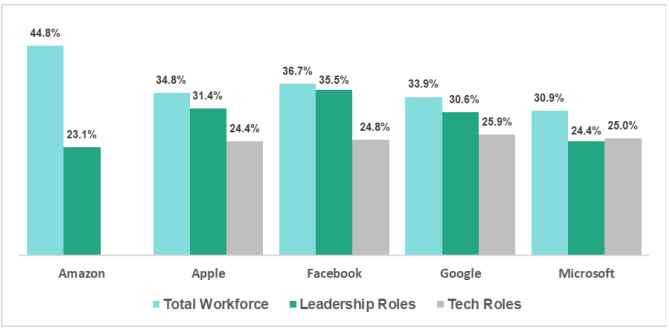


Figure 3 Percentage of female employees in the workforce of major tech companies

Sources: Amazon Workforce Data; Apple Inclusion and Diversity; Facebook Diversity Report 2021; Google Diversity Annual Report 2022; Microsoft Global Diversity & Inclusion Report 2021

In Malaysia, there is a significant disproportionate representation of women in board of director positions within the ICT sector. Women are marginalised, accounting for more than 70% fewer positions compared to their male counterparts. From 2019 to 2021, women held a cumulative total of 5,746 board positions, while 20,526 men held the positions during the same period (Figure 4).

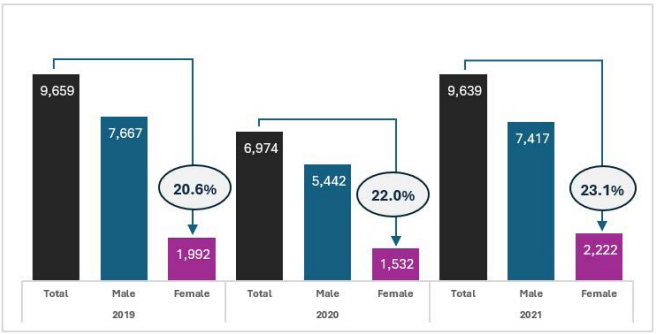


Figure 4 Malaysian Women holding Board of Directors position in ICT sector, 2019-2021 in ('000)

Both scenarios highlight the gender imbalance in the tech industry. While implementing a gender quota can help organisations progress toward gender equality, it is important to set a clear merit-based criteria rather than simply meeting diversity quotas. Many women strive to remove gender from the equation and be acknowledged solely for their skills and talents. Otherwise, there is a risk of positive discrimination, in which an organisation may hire women from an underrepresented group without assessing whether they have the requisite qualifications for the post.

Envisioning a future with greater representation of women in the digital and tech industry

Moving beyond achieving gender equality to ensuring fair representation of women in digital and technology field is one thing, but empowering them in this sphere is far more significant.

Empowering women means supporting them to reach their full potential, whether within their current roles

or by climbing up the corporate ladder. Historically, success in this field has often been associated with men, while the success stories of women like Ada Lovelace, Sophie Wilson, Katherine Johnson and Emerita Professor Tan Sri Dr. Mazlan binti Othman have not received the same level of recognition. It is time to change this narrative. By empowering more women, we can reshape history and create a future where more successful women serve as role models for the next generation, sparking greater interest and participation among young girls in the technology industry.

Secondly, empowering women in the digital and technology sector starts with creating a supportive environment where they can thrive and lead. This includes providing access to technology and removing barriers. And it requires a collective effort and prioritisation from all sectors of society to ensure no woman is left behind in the digital age, aiming for a field that is truly tech neutral.

"Beyond empowerment in both work and private spaces, women should also be involved in the design, development, testing and application of technology in the country. Presently, much - if not all - of tech design in Malaysia is based on data driven or obtained by men. There needs to be a recalibration on this front and more women must be involved in policy development in the digital and tech sector."

Professor Datuk Dr. Siti Hamisah

President of the Malaysia Board of Technologists and A fellow member of the Academy of Sciences, Malaysia

"Knowledge is a very powerful tool. Nobody can challenge you if you know your facts and add value. Hence, the best way to bolster confidence is having the right mindset that we can do anything. This should start as early at home and in school. The true potential actually lies with each and everyone of us to make a difference with our own lives. So, it really starts with YOU to break the barriers."

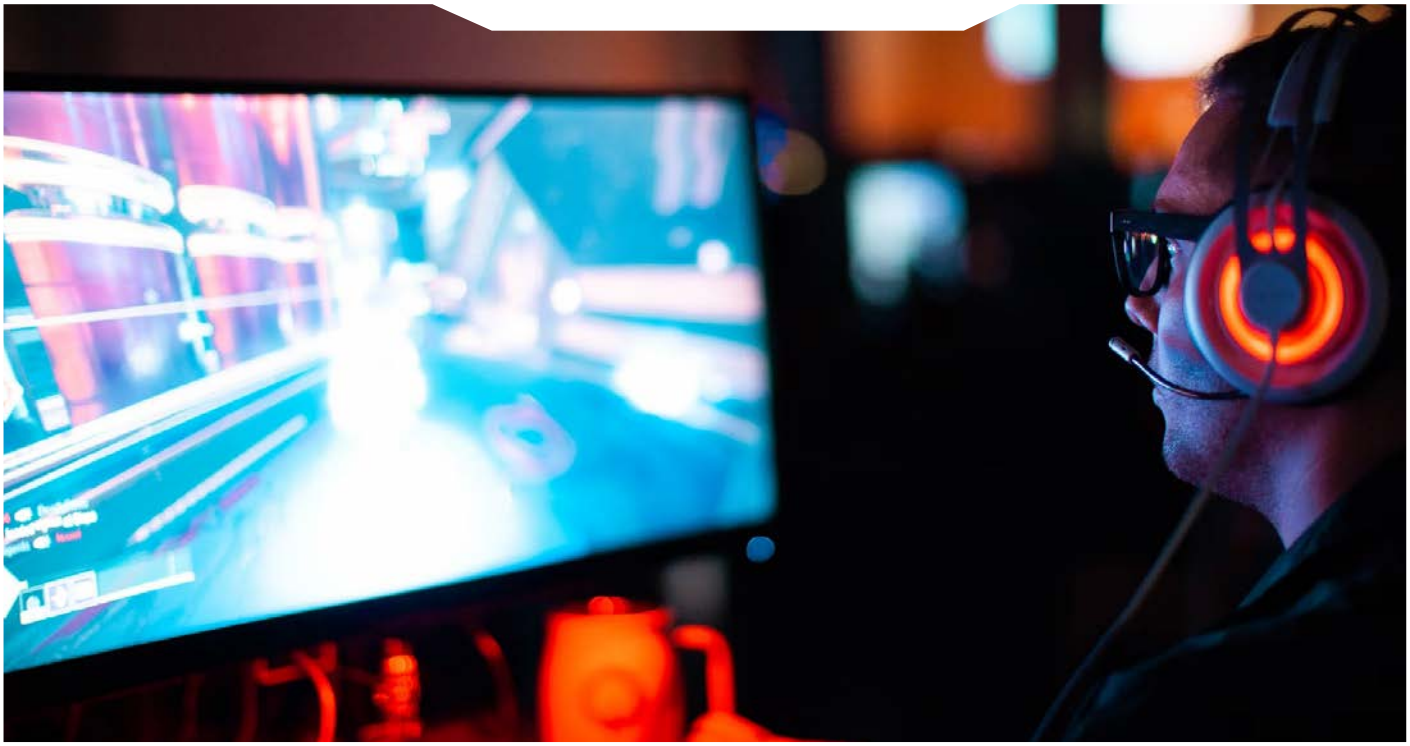
Aireen Omar

President (Investment & Ventures) of Capital A and Former CEO of Airasia Digital

Before turning this page, consider this: the global population is almost evenly split between genders, yet current gender quotas restrict women to just 30%. Given that the population is close to 50-50%, why not set the quota at 50%? Why limit women's representation when they make up half of the world's population?

Forging Sustainable **Tech Communities**

By Yee I-Van, Digital Content, MDEC



Since the beginning of human history, the development and proliferation of civilisations have relied heavily on cooperation between groups of people who set aside their differences to common goals. For any industry to thrive, it must prioritise building and nurturing healthy communities by uniting like-minded individuals under a shared vision.

This is particularly true for people-oriented sectors like the creative industry, which is the focus of this article. It is even more crucial now than ever, due to technological advances seemingly poised to replace human creativity in certain instances.

The growth of Malaysia's game industry has been remarkable, especially in the last ten years. Various initiatives have positioned Malaysia as a leader in game development within Southeast Asia. Despite being a relatively small country, Malaysia has significantly impacted the region's game industry. This case study highlights a local initiative, examining its formation and evolution and exploring how this model can be replicated to foster supportive creative communities across other sectors.

GamesHQ Malaysia is currently Malaysia's largest and longest running active online game development community group on Facebook. It currently consists of more than 5,000 members and was originally formed as an alternative to a more industry-based community group. Despite Facebook's current reputation as an ageing social media platform only frequented by 'boomers' and Millennials, it is still a middle ground where older social media generations co-exist with younger audiences.

The community started in 2009 by academics trying to create a community where information, job opportunities and new products could be shared and celebrated regardless of one's experience in game development. It has gradually evolved into its current role, serving as a platform for news updates, job postings and information on the latest developments in Malaysia's game industry.

Over the years, this platform has provided a neutral space where typically territorial academics could co-exist harmoniously. It enabled game studios to reach a targeted audience for hiring and helped developers realise the industry's scale. Essentially, it created a digital watering hole in the game development savannah. Every new game title launch was actively celebrated and members were encouraged to support each other by amplifying their online presence. 15 years on, the community is still being primarily sustained by a small team of moderators and volunteer event organisers.

As for the relevance of a Facebook community in a glut of social media platforms, the threat of obsolescence does loom over the community's longevity. According to Hubspot, Facebook is still the largest platform, with over 3 billion active monthly users with the capacity to interact and network with communities. Other platforms and services, such as X, Instagram, Pinterest, TikTok, Youtube, Discord, and Reddit, have since carved out their niches in this space by offering similar features yet often more specialised services and offerings.

The community has survived because it continues to meet the industry's needs. It remains the most accessible platform for both seasoned professionals and the newer generation of developers, even if some view it as outdated. Other platforms have either not been as user-friendly for older developers or lacked the community-centric features that Facebook was designed for.

Starting communities for fledgling industries and interest groups can be daunting. Still, we offer a potential methodology based on years of managing and organically growing the GamesHQ community, hoping that other tech-related communities might benefit.

Academia is often the best starting point for community development initiatives. Academics need industry-relevant information, while the many graduates produced annually need resources and networking opportunities to connect with potential employers. These two groups can form a strong foundation, gradually enticing the industry to participate for the purposes of hiring top talent. Once a community successfully integrates academics - a viable source of manpower and actual industry players - other components, such as relevant government agencies, potential clients and the media naturally follow.

Attracting these components is maintained by providing opportunities to market services and products, offering educational content, sharing industry-specific information and events as well as building awareness or advocacy for specific demographics. People need a reason to stay.

It is crucial for any community to offer something specific and tangible to engage its members. For instance, GamesHQ was founded as a non-profit and offers members an event calendar, job postings, and additional resources. It is also important to note that communities do not have to fulfil every function themselves; they can support a network of other communities. In Malaysia's case, other local communities and organisations have since taken on more specialised roles, such as event organisation or advocacy, exemplifying how different

communities can collaborate to create a healthier overall ecosystem.

One of the cornerstones of a sustainable community is maintaining a certain level of neutrality, especially when involving rival academicians and industry professionals. Another crucial element is moderation, which must be managed impartially and transparently, with clear guidelines. This can be organised by a committee or moderation team of like-minded individuals committed to contributing to their industry.

The third essential aspect is defining the commercial nature of the group. This intent must be clearly communicated if revenue is generated through corporate sponsorships. Lastly, a clear succession plan is vital, which involves continually recruiting new volunteers and providing opportunities for new community leaders to ensure its sustainability and durability.

> "The game dev industry flourishes where communities are strong, as mutual support and shared resources fuel collective success."
>
> *Shawn Beck,*
> *co-founder of Weyrdworks*

This leads to the question: has all the effort in building communities been worthwhile? Based on the significant achievements and growth that our modestly sized industry has experienced over the past 10 years, we believe it has. Steam, the world's largest video game digital distribution service, was developed by Valve Corporation, which opened its storefront to third-party titles in 2005. Malaysia's first game was listed on Steam in 2014; since then, over 40 Malaysian products have been added. Furthermore, there has been an increase in community-led gatherings, game jams and other events.

The International Game Developers Association (IGDA) is a global alliance of developers, with chapters in many countries, including Malaysia. Malaysia's game development communities are particularly vibrant and active compared to other larger countries, thanks to the strong participation from all community elements. IGDA Malaysia organises bi-annual gatherings that attract over 300 developers, often exceeding the capacity of available venues. In addition, state-focused communities in Sarawak, Sabah and Penang have formed and grown and are supported by other communities. " The game dev industry flourishes where communities are strong, as mutual support and shared resources fuel collective success", shares Shawn Beck, co-founder of Weyrdworks and the former chapter coordinator of the IGDA Malaysia.

Upon reflection, Malaysia has become a hub for all aspects of the game development industry, including sharing, gathering, and disseminating information, hiring, organising and growing businesses. While there are still many opportunities to improve communication and community building, the future of the game development industry looks promising.

This is why there is a need for such community builders for every tech industry out there, whether it be for the sectors under MDEC's purview, such as trade, agriculture, services, cities, health, finance, content, tourism or even Islamic digital economies. Trade associations could play that role in a more official capacity, but grassroots movements and initiatives are always closer to the ground, which allows like-minded people to come together and dedicate themselves to something greater than just a sum of individuals.

Catalysing
Metaverse Usage in Schools

By Nadya Jaafar (Digital Talent, MDEC), Assoc. Prof Ts. Dr. Helmi Norman
and Dr Nor Hafizah Adnan (Faculty of Education, UKM)

In primary and secondary schools everywhere, students sit in class, take out their books as instructed by the teacher and the teacher turns to the board to write the day's lesson. Students must pay attention. We rely on books for information and reference, flipping through page after page. Some books will have pictures to portray a little of what is what. Perhaps that bit would suffice to feed students' curiosity and wonder. However, there will be books where only words go on end and only words.

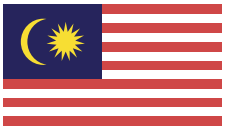
To nurture curiosity, words in books can only do so much. As the saying goes, a picture is worth a thousand words. Learning can be so much more with visuals to stimulate holistic thinking and challenge their interests led by curiosity. Visuals and words open up meanings and enhance comprehension by providing a multi-sensory learning experience that stimulates curiosity and deepens understanding.

Learning and being a lifelong learner in this modern age remains an age-old challenge; each generation faces new obstacles that hinder learning. The problem today is not access to tools or materials but the desire to learn and the drive to remain a lifelong learner. Reading, even now, is a habit that must be nurtured and groomed, requiring time and commitment. In this visually captivating era, education must adapt to this reality.

Visual stimulation and reading must go in tandem. Technology now can facilitate this with the potentials to give birth to visually exciting and thought-provoking educational content that can be both teacher and student generated. Going where it strikes automatically and holistically leads to their interest.

Metaverse is one of the technologies that revolutionises interactive and immersive learning experiences, bridging virtual and physical educational environments seamlessly, and would fantastically improve education. Integrating metaverse in classrooms facilitates collaborative learning experiences where students can collaborate virtually, regardless of physical location, thereby enhancing their digital collaboration skills and confidence. This fosters teamwork, effective online communication and the ability to navigate diverse digital environments. Students engage in interactive projects, discussions and virtual simulations, which enrich their educational experience and develop their digital competence in real-time scenarios. Several governments, companies, communities, organisations and individuals have started incorporating policies for technologies such as metaverse into primary and secondary education globally.

Proactive in adopting metaverse technology in education, the South Korean government announced plans to invest in metaverse education initiatives as part of their "Digital New Deal" initiative. They are focusing on creating virtual classrooms and educational content within the metaverse to enhance student engagement and learning experiences as part of broader efforts to improve digital learning experiences and prepare students for the future digital economy.



Malaysia's Digital Education Policy Framework (DEP) 2021-2030 aims to transform the education sector through digital technologies. It emphasises experiential and inquiry-based learning, leveraging tools like metaverse to enhance engagement and understanding across subjects. The policy focuses on equitable access to quality digital education, preparing students for a tech-driven future while fostering global citizenship and innovation.

Organisations

VR First is a global initiative collaborating with academic institutions to establish VR/AR labs. They provide resources and support to integrate virtual reality into the curriculum, effectively allowing students to experience subjects like science and history in a more immersive and interactive wamore.

Global Online Academy (GOA) is a non-profit organisation that has been exploring the use of virtual reality in education. They provide online courses and have experimented with VR to create engaging student learning experiences.

Roblox, a popular online gaming platform, has launched educational initiatives through Roblox Education, leveraging its virtual world for learning purposes. This programme provides resources and lesson plans for educators, allowing them to teach various subjects—such as coding, mathematics, and creative arts—in an immersive environment.

Meta (formerly Facebook) has been investing in virtual and augmented reality technologies for education. They have created immersive learning experiences through platforms like Oculus, providing VR-based educational content for history, science and geography subjects.

Community and Individual Initiatives

Matthew Ball is a metaverse expert and author of The Metaverse: And How It Will Revolutionise Everything. He has advocated for the use of metaverse technologies in education. His writings and talks emphasise the potential of immersive environments to transform traditional educational practices.

Teachers and Educators around the world have also embraced metaverse technologies. For instance, some teachers use platforms like Minecraft Education Edition to create virtual classrooms where students can collaborate on projects and explore subjects interactively.

Notable Projects

MetaSkool

A pioneering initiative by the Malaysia Digital Economy Corporation (MDEC), aims to enhance traditional teaching methods with advanced technologies, including the metaverse. In collaboration with Universiti Kebangsaan Malaysia (UKM) and VirtualTech Frontier (VTF), MetaSkool has created immersive learning environments for various subjects in nine pilot schools across Malaysia.

Microsoft's HoloLens

in Education has introduced HoloLens, a mixed reality device, into educational settings. Schools and universities use HoloLens to create interactive and immersive learning experiences, particularly in subjects like anatomy, engineering and design.

Google Expeditions

uses virtual reality to take students on virtual field trips. This programme allows students to explore different parts of the world and historical periods, providing a more engaging and interactive learning experience.

These examples illustrate the growing interest and application of metaverse technologies in primary and secondary education, showcasing the potential to transform traditional learning methods into more immersive and interactive experiences.

Zooming in on Malaysia's National Digital Education Policy Framework

Digital Education Policy (DEP) represents Malaysia's Ministry of Education's (MoE) commitment to revolutionise the digital education landscape, aimed at cultivating a competitive generation proficient in digital literacy. This transformation focuses on enhancing the knowledge, skills and values of students, educators and educational leaders. It includes provisions for high-quality infrastructure, information systems, educational content and active engagement from strategic partners across all academic levels from preschool to post-secondary.

Aligned with national agendas such as Building a MADANI Nation, the Blueprint for Digital Economy Malaysia (MyDIGITAL), the Fourth Industrial Revolution (4IR), the National Digital Network (JENDELA), the Malaysia Education Blueprint (MEB) 2013–2025, and the National Science, Technology and Innovation Policy 2021–2030 (NSTIP), DEP ensures a cohesive and integrated approach to tackle the challenges posed by the Fifth Industrial Revolution (5IR).

DEP sets forth four objectives, six thrusts, 18 strategies, and 41 initiatives to sse its digital education vision. Each thrust provides strategic direction for the operational plan, addressing ongoing challenges that necessitate commitment from all stakeholders.

A collective, shared virtual space, the metaverse is not just a new frontier in digital education but a powerful tool that aligns with Malaysia's Digital Education Policy (DEP) 2021-2030 objectives. The metaverse's immersive, interactive three-dimensional landscapes, shaping an environment where students can 'learn by doing,' reflect DEP's emphasis on experiential and inquiry-based learning. It allows learners to engage with history, science, or literature more actively and meaningfully,

thereby fostering a deeper understanding and retention of knowledge.

By providing a platform where students can connect and collaborate, the metaverse cultivates a sense of digital community and global citizenship, echoing the DEP's vision of nurturing holistic, balanced well-rounded individuals. The metaverse's ability to transcend geographical constraints aligns with DEP's commitment to ensuring equitable access to quality digital education for every student, regardless of location.

MetaSkool is a pioneering initiative by the Malaysia Digital Economy Corporation (MDEC) under the Ministry of Digital in collaboration with the Ministry of Education (MoE). This project leverages the MyDigitalMaker youth movement to transform school education by integrating conventional teaching methods with cutting-edge technologies, including Web2 and Web3, such as the metaverse. The goal is to enhance classroom learning and promote self-directed learning.

A metaverse world created by a teacher for the subject Principle of Accounting

In 2023, the first year of the Proof of Concept, MetaSkool strategically partnered with Universiti Kebangsaan Malaysia (UKM), a pedagogy specialist in teaching and learning with technology and impact study researchers, and VirtualTech Frontier (VTF), a metaverse platform provider and technology trainer. Together, they implemented the project across nine pilot schools nationwide. The initiative included awareness workshops and socialisation sessions to familiarise students and teachers with metaverse-based learning environments.

UKM played a crucial role in designing the framework and learning modules, deploying 18 metaverse worlds tailored to principles of accounting, additional mathematics, Japanese and English languages and science subjects like biology and physics. These environments featured 3D models, digital materials and interactive activities aligned with the MetaSkool framework.

Soft Launch of MetaSkool

The project progressed through several phases, including teacher training, student engagement, classroom simulations, framework creation and impact study execution. It culminated in a showcase at the annual MyDigitalMaker Fair and the Ministry of Education's Digital Education Policy Framework launch. Evaluations highlighted the metaverse's ability to actively engage students and provide structured learning pathways, though challenges such as connectivity issues and cultural adaptation of digital assets were noted.

During its inaugural year, this initiative impacted nine educators and involved 500 students across nine pilot schools nationwide:

- SMK Bukit Sentosa (Selangor)
- SMK SS17 (Selangor)
- SMK Sultan Badlishah (Kedah)
- SMK Orkid Desa (WP Kuala Lumpur)
- Sekolah Tun Fatimah (Johor)
- MRSM Batu Pahat (Johor)
- Kolej Melayu Kuala Kangsar (Perak)
- Sekolah Sultan Alam Shah (WP Putrajaya)
- MRSM Tun Ghafar Baba (Melaka)

MetaSkool's pedagogy specialist and impact study conducted in schools

The MetaLearn Framework for Metaverse-based Learning consists of 3 constructs (learning design, space design, and learning assessments) and 10 sub-constructs.

The impact study embraced the metaverse's potential to revolutionise education, transforming traditional learning into immersive, interactive experiences that transcend physical boundaries. However, this can only be fully realised through a collaborative effort involving policymakers, educators, and tech-industry leaders in line with the DEP's call for a multi-stakeholder approach. Investments in infrastructure, training of educators, and development of engaging content are crucial to ensure the seamless integration of the metaverse into the educational ecosystem. By catalysing the metaverse in schools, Malaysia is not only revolutionising digital education but also translating the vision of the DEP into a tangible reality, preparing students for a future where the virtual and physical realms are seamlessly integrated.

The Aspiration

Our objective is to seamlessly integrate traditional teaching methods with cutting-edge technologies like MetaSkool, aiming to awaken and amplify students' innate curiosity and sense of exploration while fostering digital confidence. This hopefully brings a new norm in education via national adoption.

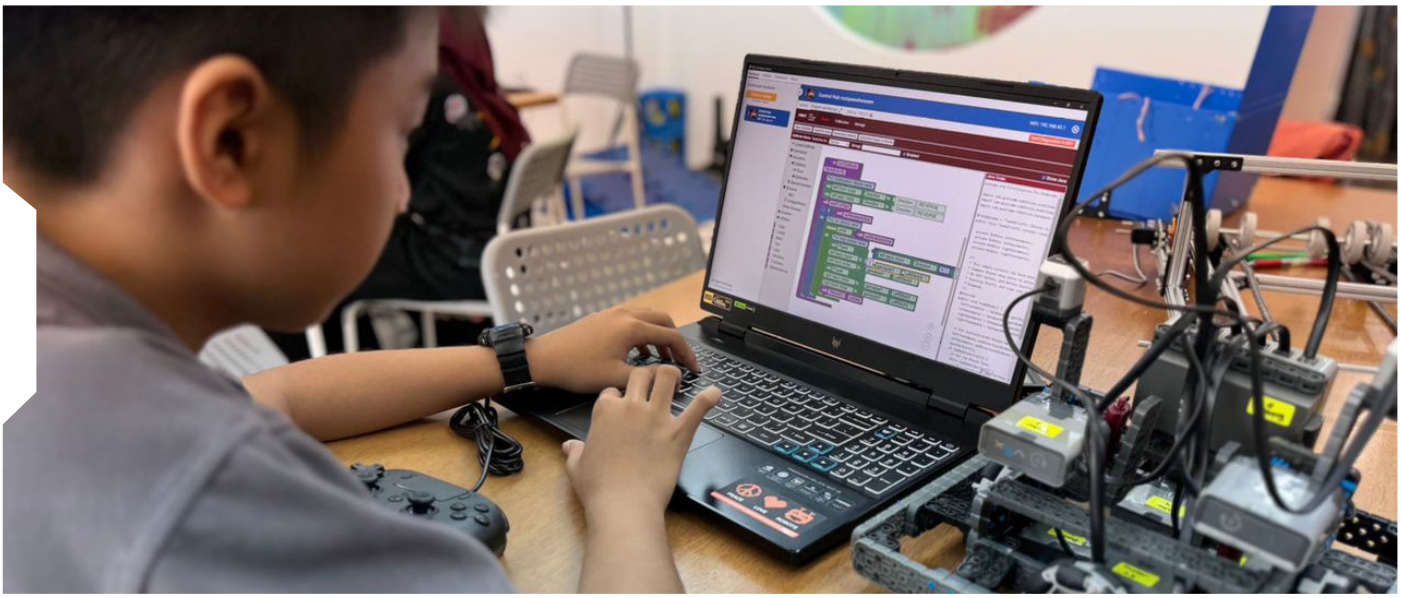
MetaSkool welcomes strategic collaborations to further this vision and promote nationwide adoption. Encompassing usage of emerging technologies for classroom education and homework assignments, enabling students to explore immersive learning materials, participate in virtual experiments and conduct research in virtual spaces.

MDEC seeks to lead by example. This approach aims to inspire and influence national and regional educational advancements, fostering collaboration, innovation, and enhanced learning outcomes across the region.

Ultimately, the vision is straightforward: to inspire and empower students to see learning as a lifelong journey. This includes fostering digital confidence and skills essential for thriving in today's rapidly evolving educational landscape driven by technology and innovation. Additionally, the goal is for students to become socially connected and economically empowered individuals capable of excelling in a digitally integrated world and making meaningful contributions to the digital economy.

Nurturing Malaysia's **Future Innovators**

By Nur Farawahidah Binti Mohd Yusof @ Mokhles and Sofia Akmal Abu Bakar, Digital Talent, MDEC



We stand at the precipice of a new era defined by artificial intelligence, virtual reality, and beyond. To navigate this uncharted territory, we need a new generation of visionary leaders equipped with the digital skills to shape the world of tomorrow. In an era marked by unprecedented technological advancement, the demand for individuals capable of turning innovative ideas into reality has never been higher.

The future hinges on the ability to nurture and develop digital talent, a resource as crucial as any natural resource. Cultivating these future innovators is not just an option but a necessity.

The world is undergoing a digital revolution, demanding a new breed of innovators who can harness technology's potential to solve complex challenges. Cultivating a robust pipeline of digital talent is imperative for nations and businesses seeking to thrive in this rapidly evolving landscape. We must take this opportunity to drive Malaysia towards becoming a high-income, progressive and innovative nation.

This central role is emphasised in both the MyDigital Economy Blueprint (MDEB) and the Fourth Industrial Revolution (4IR) Policy. A key enabler of the digital economy agenda is Digital Talent as highlighted in Thrust 4 of the MDEB, which stresses the need to develop agile and competent digital talents, aligning with the National Education Policy's goal to nurture students' full potential.

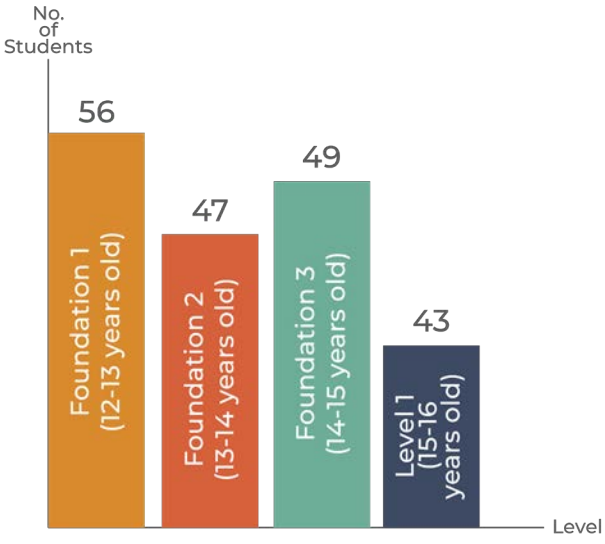
As the Fourth Industrial Revolution (4IR) and rapidly emerging technologies like Artificial Intelligence (AI) reinvent the future of work, experts agree on the necessity of radical changes to the education system. While revamping all 10,000 schools in Malaysia simultaneously may be too disruptive and time-consuming, a specialised pathway can serve as a model programme or “4IR education sandbox.” This approach helps identify the best ways to prepare the next generation for a world dominated by AI and smart robotics.

To maintain Malaysia's global competitiveness, it is insufficient to merely develop digitally skilled talents. We need to foster a new generation of creative and innovative thinkers capable of generating cutting-edge ideas and solutions that benefit humanity. It is time for Malaysia to establish more institutional and scalable education pathways to nurture our high-potential young talents, potentially transforming them into the nation's future innovators and unicorns. This is especially critical considering the intense global competition to attract and retain the brightest technopreneurs and innovators.

In our effort to create a conducive environment for such digitally-gifted students, a strategic collaboration between the Ministry of Education, MDEC, Universiti Kebangsaan Malaysia (UKM) and Pusat PERMATA @ Pintar Negara via a Quadruple Helix Model has established the Digital Innovator Programme (DIP), a special digital technology track designed to nurture the country's next generation of digital innovators.

Introduced at Pusat PERMATA@Pintar Negara, UKM, the DIP focuses on digital technology, entrepreneurship, and a project-based learning curriculum. This ensures the consistent development of top digital talents to fuel the digital economy. With this new track, students with a strong aptitude for digital innovation and creativity can pursue their interests through a focused secondary education path at Pusat PERMATA@Pintar Negara, UKM. Since welcoming its first cohort in 2021, the programme now enrols about 195 students, with the youngest being 12 years old.

DIP Enrolment (May 2024)



Unique Traits of DIP

DIP students engage with a more advanced Computer Science curriculum compared to the students at public schools. In the first three years, they complete standard school-level Computer Science courses. In the upper secondary years, they explore specialised subjects such as Data Science, Artificial Intelligence, Internet of Things (IoT) and Cybersecurity. The curriculum is delivered through a project-based learning approach, providing the ideal environment for students to create their own digital projects. The programme's focus on grooming future digital innovators means students also acquire entrepreneurial skills through a Technopreneurship subject.

> "I was inspired by the things that I could achieve or create like a robot or programme or anything fun in general. I feel like I am more welcomed to the future due to the subject, activities like Computer Science, Curriculum Vitae, and it just prepares us more for the future."
>
> *Ezril Firdaus Faiz Hussain, Foundation 2 DIP student*

Equipped with state-of-the-art facilities like Digital Maker Space (DMS), students can access high-technology equipment, further enhancing their learning experiences. They also benefit from industry exposure through mentoring sessions, talks, industry visits and the opportunity to earn industry certifications.

> "Currently, companies are looking forward to adopt new innovative technologies such as AI, machine learning and real-time rendering for the game industry to move forward to the next frontier. The digital world requires new job roles and skillsets among young talent. Thankfully, DIP provides the upskilling for the Malaysian workforce to adapt with the technological advancement."
>
> *Bazil Akmal Bidin,*
> *PlayStation Studios Malaysia*

In 2024, the first cohort of DIP students enrolled into Forward College's one-year intensive Certificate of Integrated Tech Sprint in Fullstack Web & Data Science programme. The programme was tailored for DIP students, making them the youngest students in the programme.

These exceptional students, ranked within the top 1% nationwide in terms of IQ, embarked on an educational journey that blends rigorous academic study with practical application in full-stack development and data science. This approach ensures they are well-prepared to drive significant technological advancements and assume future leadership roles.

> "This collaboration not only brings together the brightest young minds but also sets a new standard for tech education in our region. We are committed to providing a curriculum beyond theoretical knowledge to include practical, real-world problem-solving skills essential for future innovation."
>
> *Howie Chang,*
> *CEO and Co-Founder of Forward College*

The programme immerses students in a tech-centric environment, encouraging them to live and breathe technology throughout their stay on campus. This hands-on approach is designed to prepare them for the challenges and opportunities of tomorrow's tech landscape.

> "The dynamic energy of these students is incredible. They're not just here to learn but to enhance their teamwork skills, develop essential soft skills, and innovate through hands-on projects."
>
> *Emerson*
> *Instructor, Forward College*

It's high time to cultivate Malaysia's future digital innovators

By identifying and cultivating high-potential students to be future digital innovators, Malaysia would be able to create a robust pipeline of digital talent capable of driving innovation and economic growth. With the right mentorship and resources, these young minds will be empowered to launch groundbreaking tech ventures, positioning Malaysia at the forefront of the digital revolution.

The DIP envisions a Malaysia where technology is seamlessly woven into the fabric of society, driven by a homegrown ecosystem of world-class innovators. By encouraging students to develop projects with Intellectual Property (IP), it provides a strong foundation for their journey as innovators, as well as serves as a testament to a radical approach that targets exceptionally talented students, enhancing Malaysia's capabilities in digital technology.

> "Technopreneurship has taught me creative thinking and also how to pitch my ideas to large audience. Hopefully, in 10 years, I hope to be a successful entrepreneur and have my own start-up business."
>
> *Cheah Loke Yin,*
> *Level 1 DIP student*

There is a significant potential for this programme to be scaled up in the future as shown by a global trend on nurturing young talent for future digital innovators. Several examples showcased this trend such as the Singapore's NUS High School – a school within university similar to Kolej PERMATA@Pintar Negara – which introduced a special programme called TESLA initiative aiming to nurture maker mindsets and develop students' readiness and capabilities to become future engineering and innovation leaders. Secondly, in the UK, professionals from various industries volunteer to inspire and mentor students in Science, Technology, Engineering and Mathematics (STEM). Last but not least, China has also embarked on the journey of incorporating AI in their education system. The adoption of AI in primary and secondary schools in China is becoming increasingly prevalent for various activities such as personalised learning programs, data analysis for educational insights, digital learning platforms, evaluation as well as behavior monitoring and attendance tracking.

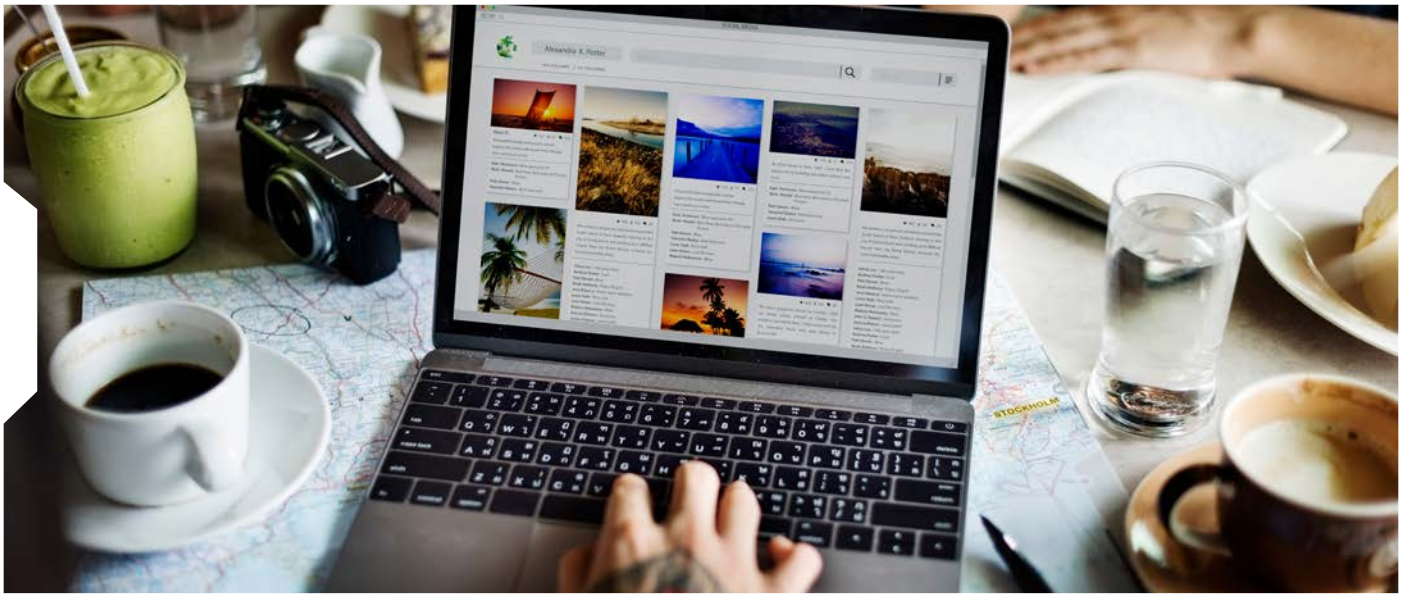
For Malaysia, we are on the right track to embrace the technological advancement in the education sector and efforts must continue to develop high potential talent to become future digital innovators.

Among DIP students' success in the international platform – 2 Gold medalists, 2 Silver medalists and 4 Bronze medalists at the Southeast Asia Computer Science Olympiad (SEACSO) held in Da Nang, Vietnam. 1 DIP student placed among the top 3 for Category IV.


Gallery

Digital Heaven: Recognising The Value Of **Digital Technology In Today's Modern Living**

By Saffiya Binti Samion @ Fuad,
Corporate Planning & Performance, MDEC



We are familiar with the concept of "shopping heaven," but have we stopped to consider that we are living in a digital paradise? This is not about any specific brand or song - it reflects the world we are in today.

Living in the digital era and having access to the plethora of technologies available today surely feels like being in a digital paradise. This phrase is fitting for several reasons, given the array of sophisticated tools and technologies at our disposal. It is remarkable to think that technology was once considered a luxury or even non-existent in the past - a nostalgic reflection that invites us to stroll down memory lane.

Young and full of energy, we indulged in outdoor activities – playing games of *batu seremban, galah panjang*, bottle caps and even climbing trees with our friends back then. Listening to the radio cassette of our favourite artistes, watching limited TV channels and taking pictures with a film camera gave us the simplest pleasures then.

However, time alters everything, not just our perspectives but also our way of life. Even creating memories has taken on a new significance in the digital age. Gone are the days of snapping pictures with a film camera and waiting for negatives to be developed. Terms like photo negatives, Cathode-ray tube (CRT) TV, and Walkman now evoke a sense of antiquity.

One tends to wonder how previous generations managed before the advent of the Internet and the technologies that define our lives today. In essence, you would not miss what you never had. People who lived in the '70s, '80s and '90s cherished the simple pleasures of their time, finding contentment without the reliance on modern technology.

In decades past, we did not have the luxury of browsing or searching for any topic or question on Google. Instead, we relied on libraries, where we combed shelves manually in search of the needed books or materials. Translating words or sentences in English or other languages was not as simple as using Google Translate; we had to resort to dictionaries. Just imagine the effort required to translate or decipher the meaning of an entire sentence!

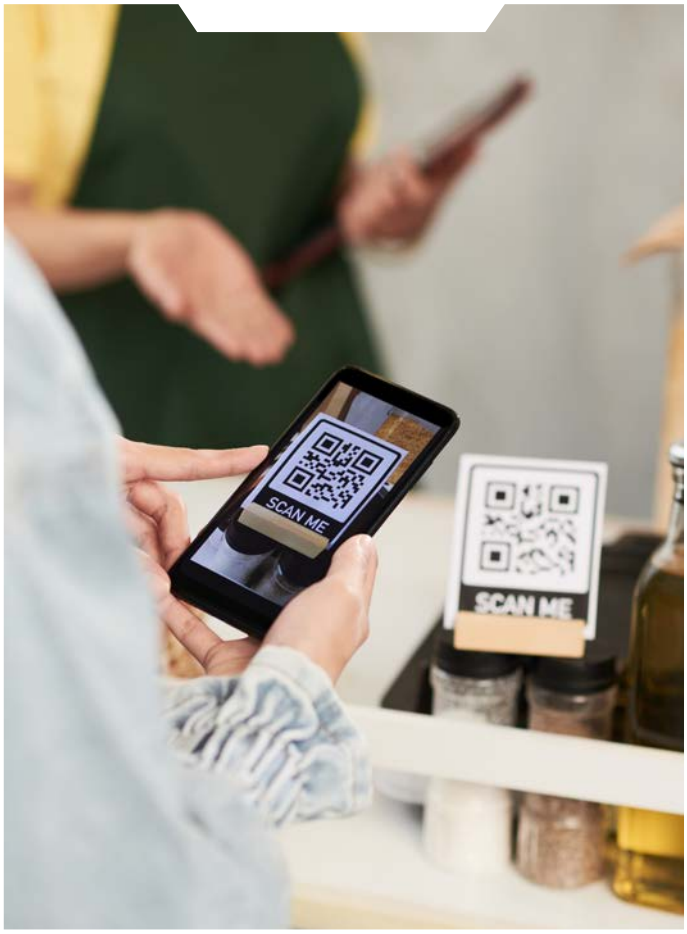
Back then, we did not have the convenience of navigating or searching for locations using apps like Waze or Google Maps. Instead, we relied on signboards, physical maps (although not many of us used them!), or asked locals for directions. Reflecting on the times we visited relatives and friends during Hari Raya or Syawal, it was always an adventure filled with fun and sometimes humorous moments!

Since we are on the topic of Raya, Raya greeting cards were highly popular in the past. Selecting distinctive Raya greeting cards once displayed in stores today is now a distant memory, as it is no longer a tradition to send physical cards or adorn homes with them. Nowadays, people typically send greetings digitally through WhatsApp messages, e-cards, videos or other digital mediums. This shift to digital communication is also evident across many other festive occasions.

We no longer eagerly wait for the postman to deliver our mail. Instead, we anxiously anticipate the arrival of our numerous online shopping parcels. Waiting days or weeks for a response to a letter is a thing of the past. Now, everyone desires instant communication, which email provides. Distance is no longer an issue with the widespread use of video calls.

Previously, banking transactions could only be performed at physical bank branches, and transferring money to others online was not an option. Who could have imagined years ago that we would now pay using e-wallets, QR codes and other digital payment methods to buy stuff? Statista reported that the adoption rate of cashless payments in Malaysia was 96 percent, a close second behind Singapore which had the highest adoption rate of 97 percent in Southeast Asia, based on a survey in 2021[1].

While digital technology is here to stay and will undoubtedly continue to evolve, we must remain cautious about its vulnerabilities. Privacy and security issues are significant in both the physical and virtual worlds. Cybersecurity is crucial in our connected digital environment, especially when it comes to electronic transactions, secure communications, and data exchange.



Data is a powerful instrument, and the importance of trust in managing it cannot be overstated. Sharing data and providing personal information to responsible parties can offer benefits, but if it falls into the wrong hands, it can lead to disaster. This issue is particularly pressing with the rise in cyberattacks and cybercrimes, making it an aspect that cannot be ignored.

Although Malaysia recorded a slight decrease in cyberattack cases in 2022, with over 28,000 cyberattacks compared to around 33,000 attacks in 2021[2], it remains a cause for concern. According to the same report, cyberattacks in the country have gradually risen in the last four years. Online frauds were the most reported cyber threat incidents released by Cybersecurity Malaysia in 2022, with more than four thousand reports[3].

There will always be debates on the pros and cons of technology too, especially the impact of gadgets and screen time on the younger generations. But life is all about balance, and the same principle we treat our food

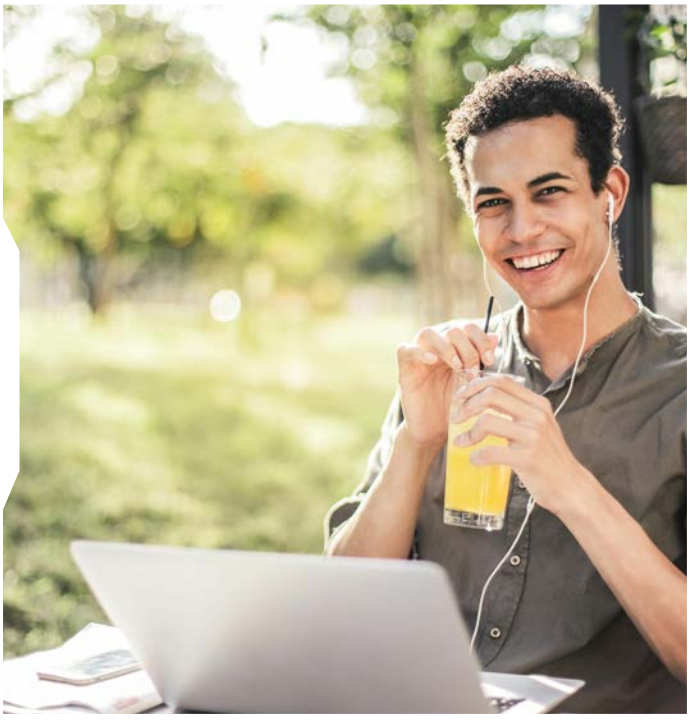
[1]Statista https://www.statista.com/statistics/1234061/sea-cashless-payments-adoption-rate-by-country/
[2]Statista https://www.statista.com/forecasts/1410670/malaysia-recorded-cyberattacks
[3]Statista https://www.statista.com/statistics/1043272/malaysia-cyber-crime-incidents/

can be applied to technology. People tend to maintain their diets and enjoy certain foods in moderation. When we set certain limits – like ensuring gadget-free moments for our family – we can achieve a sense of balance and avert detrimental effects on our lives.

Whatever the reason, we should not let it prevent us from capitalising on this digital heaven. The virtual world is an infinite creation that exceeds expectations, and it would be a waste not to take advantage of its wealth. The paths to these 'treasures' are mostly accessible to everyone. Everything is at your fingertips, with information at mere clicks. Everything that could make our lives easier is being brandished and marketed widely, and people are so keen to stay up-to-date that they are willing to line up to lay hands on them. The younger generation is especially advanced and tech-savvy; no one wants to be left behind. Knowing that most of them are born digital natives, who could blame them?

However, it would not be fair to associate technology solely with a specific generation. It is safe to say that the fascination with and usage of technology transcends age or income groups. Who would not be thrilled to receive the latest iPhone as a gift or win a smart TV in a lucky draw. Generally, buying and owning a new gadget – be it a smartphone, computer or any AI-powered device, can bring immense joy to an individual, regardless of age or income.

Nothing beats the thrill of getting hold of these state-of-the-art technologies, compelling people to splurge their income. Depending on which model or specification you are buying, these technologies are no longer a luxury but a necessity. In fact, human survival can sometimes depend on them.



Life without these devices will leave us feeling miserable, void and anxious, especially during emergencies. Just imagine being stranded in a secluded area with a broken-down car and no mobile phone, not to mention having to go without WIFI or data for even a few hours can be distressing. Although they come with scores of risks and concerns, we cannot deny how these technologies have been a great help and made our lives easier.

The future holds endless possibilities with the emergence of technologies like Artificial Intelligence (AI), Blockchain, and 5G. Superior technologies such as robot vacuums, 3D printers, and smartwatches may surpass current innovations. Imagine clothes fashioned by 3D printers or ready-to-eat food produced by portable food machines. The potential of digital heaven knows no bounds.

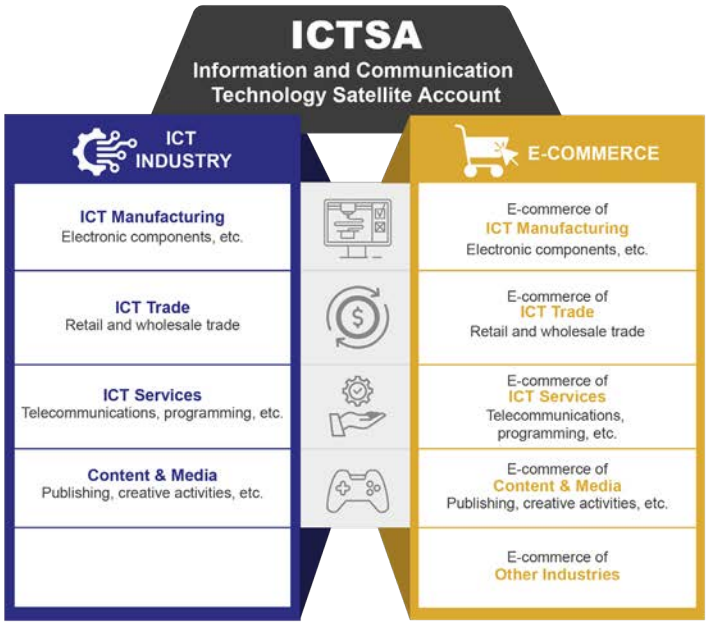
An abundance of opportunities also awaits, with many sides offering initiatives that will impact specific recipients or the community at large. This includes various promotional initiatives by the Government to create awareness and increase digital literacy, namely MDEC's Saya Digital campaign, 100 Go Digital and #mydigitalmaker initiatives or Kementerian Ekonomi's AI for Rakyat free online programme, to name a few.

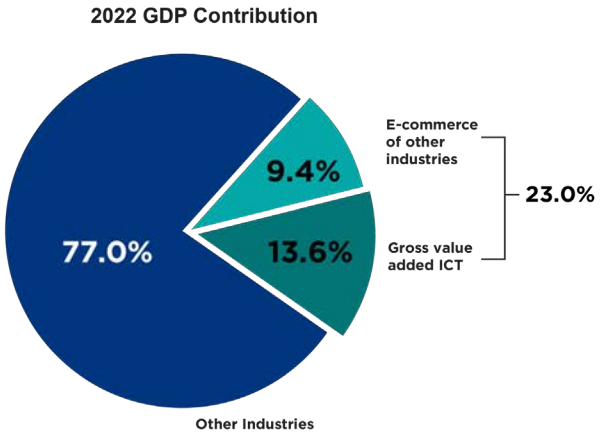
Nearly five years after the COVID-19 pandemic, Malaysia's digital landscape continues to flourish, influencing our lives in profound ways. Failure to embrace advancement, whether personal or business, could lead to missed opportunities in the long run. So, take the leap forward and embark on this digital adventure, equipping yourself with the necessary digital skills. From boosting productivity to enhancing living standards, the potential rewards are yours for the taking!

DIGITAL ECONOMY AT A GLANCE

Current State of Malaysia's **Digital Economy**

An MDEC analysis based on ICTSA 2022





Towards the end of every year, the Department of Statistics Malaysia (DOSM) publishes the economic performance of Malaysia's Digital Economy via a strategically delineated Information and Communication Technology Satellite Account (ICTSA). The ICTSA findings offers valuable insights into the contribution of ICT to the national economy, the trends and growth of our digital economy as well as some indicative impact of our government's policies and interventions.

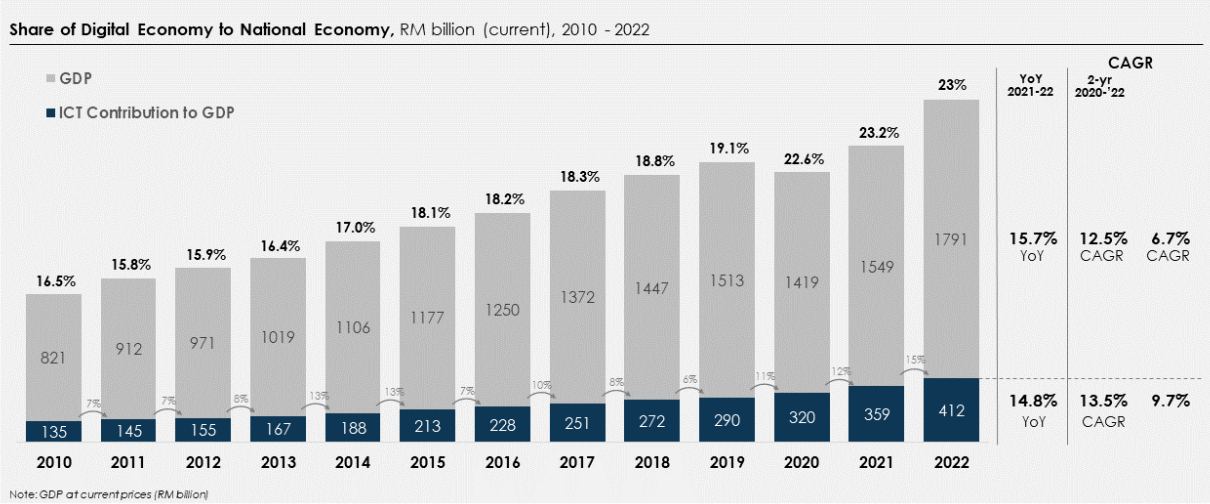
According to the ICTSA findings, the ICT sector contributed 23% to the national Gross Domestic Product (GDP) in 2022. This contribution includes 13.6% from the ICT sub-sectors and 9.4% from e-commerce activities in other industries. Key highlights from a deeper analysis of the ICTSA data include:

1. Malaysia's Digital Economy grew at its fastest rate since 2010

Malaysia's Digital Economy has shown impressive performance over the past decade, demonstrating resilience during the pandemic, and an unpredictable global landscape. In 2022, the digital economy grew by 14.8% compared to the previous year. Notably, this marks the third consecutive year that Malaysia has achieved a double-digit growth rate.

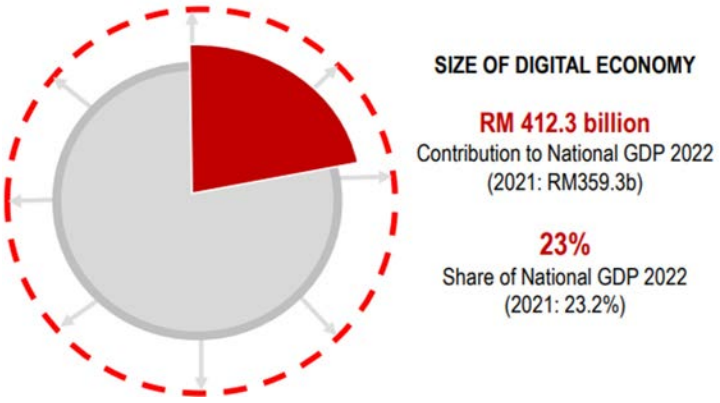
2. Malaysia's digital economy continues to outpace the national economic growth

In 2022, our digital economy grew by 14.8% compared to the previous year, slightly lower than the overall national economic growth of 15.7%. However, a mid-term to long-term analysis reveals that the Digital Economy's growth far outpaces national economic growth. For instance, the mid-term CAGR (2020-2022) for the digital economy is 13.5%, while the national CAGR in the same period is 12.5%. Over a longer-term analysis (2010-2022), the digital economy's CAGR stands at 9.7%, compared to the national economic CAGR of 6.7%. This demonstrates that the digital economy is a key driver of Malaysia's overall economic growth.



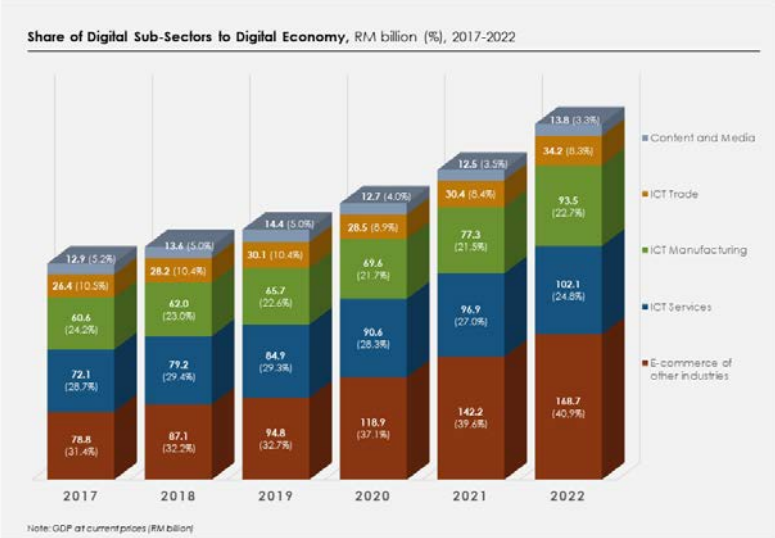
3. Malaysia experienced stronger GDP growth in 2022

In 2022, the total gross value added of Malaysia's digital economy was recorded at RM 412.3 billion, up from RM 359.3 billion in 2021. Although the ICT sector's contribution to GDP slightly decreased to 23% from 23.2% the previous year, this contraction is attributed to stronger overall GDP growth for Malaysia. The substantial increase in the digital economy's value underscores its significant impact on the national economy, reflecting the global trend where more digitally evolved economies tend to generate larger GDPs.



4. E-commerce continues to be the key driver of Malaysia's ICT growth

It is encouraging to see that e-commerce maintains its strong positioning, particularly a year into post-covid, allaying concerns that its prominent rise was only short-term and heavily catalysed by the pandemic. In 2022, e-commerce contributed more than 40% of the total ICT contribution to GDP. On the bigger picture, the total e-commerce gross value added (GVA) was 13.3% of the national GDP, reflecting a 0.3% increase from 2021. With regard to the ICT sub-sectors, e-commerce contributed the most to the growth, at RM 26.5 billion more than the previous year.



5. ICT Services has an opportunity to be a Digital Economy driver

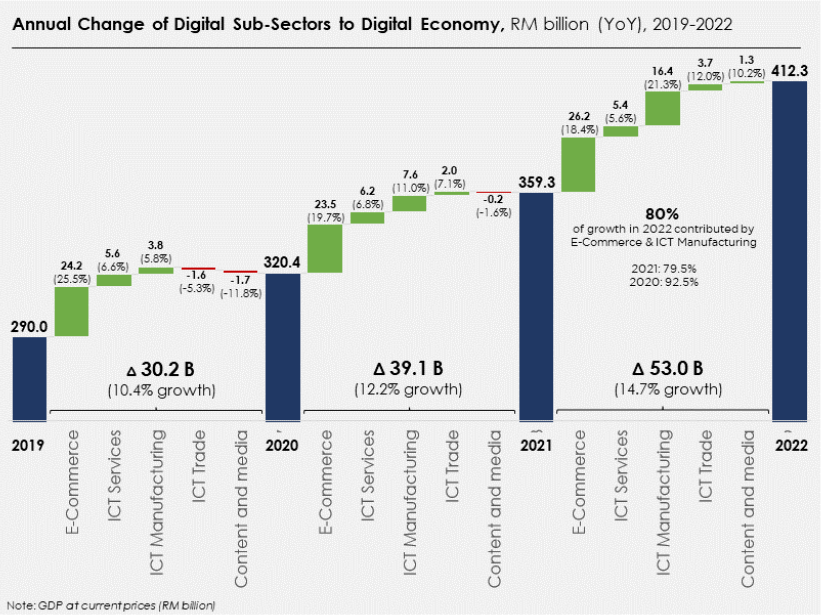
In 2022, e-commerce and ICT services made up approximately 66% of Malaysia's total GVAICT. However, the GVA of ICT Services declined from 27% to 24.8%, or RM 102.1 billion. It is also interesting to note that more than 70% of this was from the Telecommunications industry, with a GVA of RM 68.4 billion. The ICT Services segment has a huge opportunity to grow with the increasing emphasis given to 5G adoption moving forward.

6. ICT manufacturing experienced the fastest growth rate at 21.3% from the previous year

Apart from e-commerce, ICT Manufacturing has always been one of the stronger drivers of our Digital Economy. Out of the RM 53 billion growth in the ICT sub-sectors in 2022, 80% of it was contributed by e-commerce and ICT Manufacturing. ICT Manufacturing t has the fastest rate of all the sub-sectors compared to 2021. This was largely driven by a 23.4% annual growth from electrical components & boards, communications equipment and consumer electronics products.

7. Content & Media has media has recovered from its decline since 2019

Of all the industries, the Content and Media industry was arguably one of the worst hit during the pandemic. For example, many companies in the broadcasting and traditional media space were affected by tech disruptions that grew rapidly during that period, like various Over The Top (OTT) platforms, digital broadcasts and limitations of live filming. The economic performance of this ICT sub-sector in 2022 is encouraging indeed. It is observed that the 31.4% growth was largely driven by more motion picture, video, television, photographic and creative activities. Although the signs of recovery are apparent, we also need to be cognisant that this industry is currently only at 96% of its pre-pandemic level figures.



Moving Forward

The global landscape has undoubtedly shifted significantly due to technology. This is seen quite clearly in Malaysia, where the digital economy continues to remain strong and is a key contributor regardless of what is happening around the world. In this aspect, Malaysia must accelerate its digital economic growth to stay competitive.

Firstly, we need to acknowledge a very distinct change of consumer preferences for digital. This will increase digital consumption and adoption. In addition, we are also seeing how e-commerce and digitally delivered services are fast becoming the norm in our everyday lives. All these increase the need to ensure digital trust and cyber safety for our society.

Next, we also see the increased adoption of automation, digital platforms and emerging technologies across all businesses. Digital transformation is increasingly apparent in financial institutions and other industries. All these changes to the way of work will lead to a transition in the labour market and skills demand. Malaysia needs to be fully prepared for the impending globalisation of talent and the rise of more high-skilled digital jobs.

Last but not least, there is a global rise in Big Tech regulation and protection. Malaysia needs to stay at the forefront of addressing the regulations of digital platforms and services, the cybersecurity agenda and all technology and technical regulations in the digital economy space.

An Overview of Digital Talent **Landscape in Malaysia**

By Velladurai Balakrishnan & Norjehan Binti Mohd Hussein
Digital Talent, MDEC

With a focus on being a regional digital powerhouse, the Local digital talent landscape experiences a revolutionary change in Malaysia.

As more industries embrace digitalisation, the demand for individuals who excel in areas such as software development, cyber security, artificial intelligence, data science and digital transformation has increased drastically.

The Malaysian government is in full swing trying to enhance the quality of workforce in the country's IT sector by partnering with academic institutions and private industries to form public-private partnerships (PPP).

Through such measures as the inclusion of technology-oriented studies in schools, establishing partnerships with technology companies and launching Premier Digital Tech Institution (PDTI), are used to respond to the labour market's need for new skills and talents.

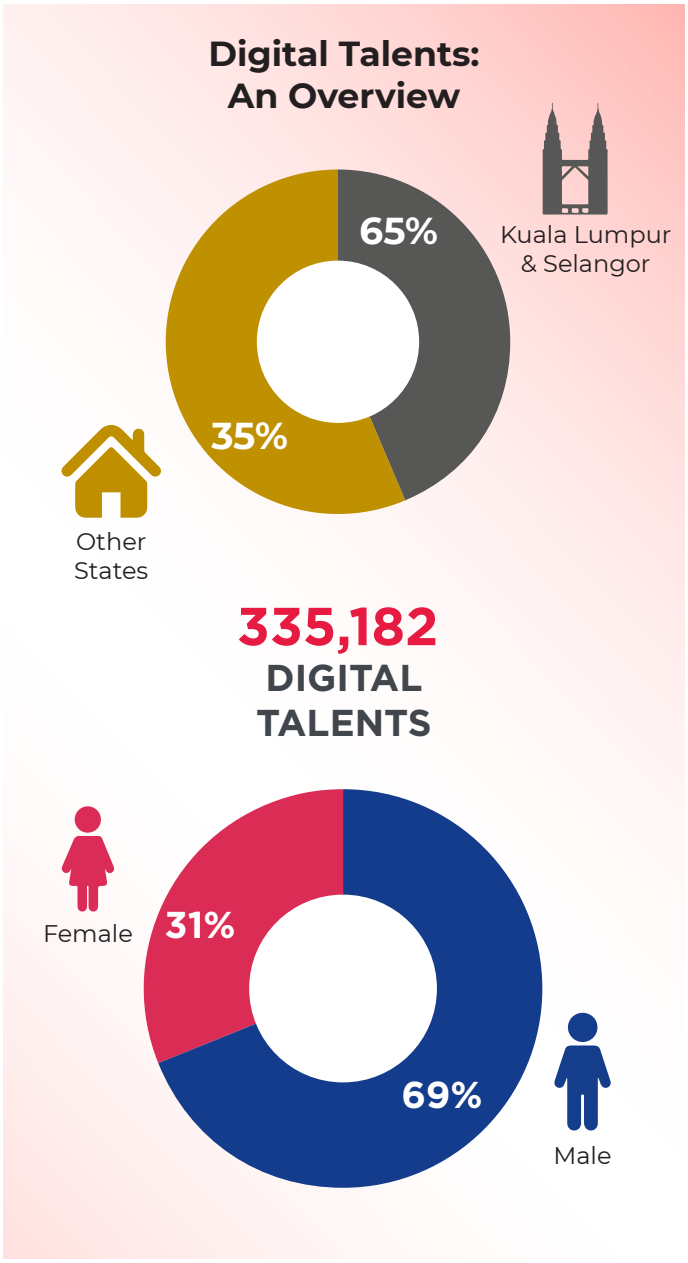
The establishment of digital companies and innovation incubators highlights the vibrant nature of Malaysia's digital talent industry, which creates a favourable multidimensional environment for professionals to thrive and offer their services in the nation's digital enterprise.

Building a strong digital workforce with diverse skills is essential for Malaysia's advanced digitalisation. This is particularly crucial for boosting the local economy and competing globally.

Breakdown of Digital Talents

According to LinkedIn Talent Insights (LTI), there are 335,182 digital talents in Malaysia. This represents a 20% increase compared to the last publication in 2022. The data also shows that 65% of this talent pool is concentrated in Kuala Lumpur and Selangor.

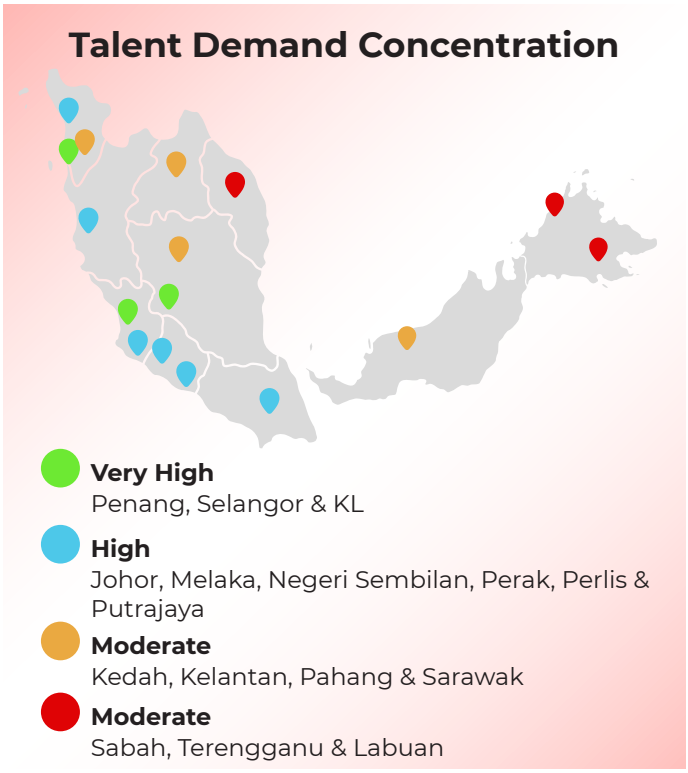
In Malaysia, male professionals constitute 69% of the workforce, while females comprise 31%. Gender diversity in Southeast Asia (SEA) shows a comparable trend, with males at 66% and females at 34%. However, compared to the broader Asian region, the proportion of male professionals is higher at 73%, with females comprising 27%. The difference in the proportion of male LinkedIn professionals between Southeast Asia (SEA) and the broader Asian region could be influenced by several factors, such as industry composition and cultural norms.



Demand for Digital Talents

The demand for digital talent across Malaysia remains consistent with the findings from the 2022 publication. Kuala Lumpur, Selangor, and Penang are leading the demand, showcasing the highest need for digital professionals. Following closely are Johor, Melaka, Negeri Sembilan, Perak, Perlis and Putrajaya, which also exhibit a significant demand for digital expertise.

Additionally, the data reveals a moderate demand for digital professionals in regions such as Kedah, Kelantan, Pahang and Sarawak. On the other hand, Sabah, Terengganu, and Labuan demonstrate the lowest demand for digital professionals, suggesting potential areas for targeted efforts to strengthen digital skill development and adoption.



Digital Talent Industry demand

The demand for digital talent surpasses traditional ICT-related industries and extends across various sectors. In its 2024 observations, LinkedIn noted a significant trend: 4 out of every 10 instances of very high demand for digital talent originate from non-ICT sectors. These include dynamic fields such as Instrument Manufacturing, Banking, Insurance Carriers, Marketing Services, Outsourcing & Offshore Consultancy, and Financial Services. This highlights the pervasive need for digital skills and expertise in today's rapidly evolving business landscape, where technology integration and digital transformation are becoming universal across industries.

LinkedIn also observes that Engineering Services, Computer Hardware and Manufacturing Services emerge as the top three industry segments demonstrating the most substantial hiring activity over the past year.

This trend reflects the growing emphasis on technological advancement and infrastructure development within these sectors. Engineering services signify a commitment to innovation and project-driven initiatives, while the demand for Computer Hardware underscores the importance of hardware development and support in an increasingly digital world.

Additionally, the surge in hiring within Manufacturing Services highlights the sector's resilience and adaptability as industries seek to streamline processes and enhance productivity through skilled personnel. This data provides valuable insights into the evolving job market dynamics and the industries driving employment growth in the current landscape.

Industries With Very High Demand for Digital Talents

- IT Systems Design
- Measuring & Control Instrument Manufacturing
- Marketing Services
- Outsourcing & Offshoring Consulting
- Banking
- IT Services & IT Consulting
- Technology, Information & Media
- Financial Services
- Insurance Carriers
- Information Services

Industries with Highest Digital Talent Growth (YoY)

- IT Systems Design +439%
- Entertainment Providers +45%
- Engineering Services +237%
- Human Resources Services +28%
- Measuring & Control Instrument Manufacturing +235%
- Manufacturing +27%
- Environmental Services +34%
- Industrial Machinery Manufacturing +25%
- Computer Hardware Manufacturing +47%
- Banking +24%

Digital professionals are not limited to traditional ICT sectors; they also play pivotal roles in driving innovation and transformation across various industries. Based on a 12-month observation of talent movement to and from ICT industries, the trends are as follows:

Industries with highest ICT Talent Flows over the past 12 months

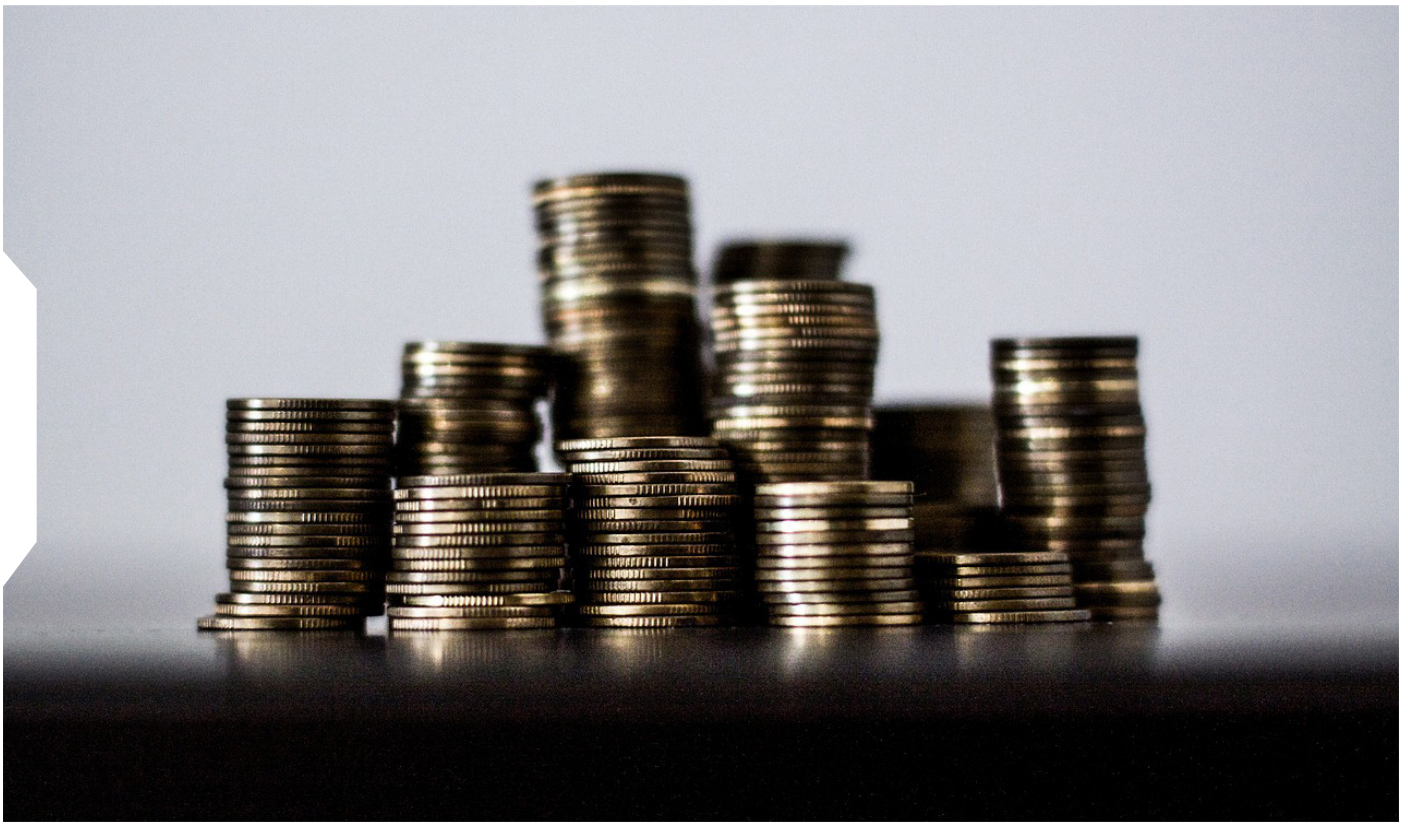
Education Administration Programmes	**IT System Design Services**	**Telecommunications**	**Computer and Network Security**	**IT Services and IT Consulting**
Outsourcing and Offshoring Consulting	**Semiconductor Manufacturing**	**Software Development**	**Advertising Services**	**Appliances, Electrical, and Electronics Manufacturing**

An interesting observation is the flow of digital talent from IT services and IT consulting to other industry sectors. Notably, digital professionals are moving from ICT industries to the following sectors:

1	Education Administration Programmes:	It is obvious that the changes are due to employees opting for new employment where such applications can develop efficiencies within the educational sector.
2	Outsourcing and Offshoring Consulting:	Enterprises are continually improving their operations, seeking insights into the collaborative and global efforts driving this business. These businesses can operate efficiently since they require little to no physical presence. Multilingual professionals and consultants in this field are transitioning to language-oriented roles, enhancing digital tools and providing quick, prompt solutions to meet customer expectations.
3	Semiconductor Manufacturing:	The lifecycle of technological and electronic devices with such innovative features has provided ICT workers with a platform for identifying the technology fields with a potential for improvement, thus boosting innovation and growth.
4	Advertising Services:	With the rising digital age, marketing and advertising methods have been transformed or updated and now rely on new technologies and data-based techniques. Such a step has even more encouraged the ICT specialists to apply for jobs within this service and use their technical skills effectively by using different advertising tools and getting audience attention thus.
5	Appliances, Electrical, and Electronics Manufacturing:	The increasing use of smart appliances and computerised devices drives demand for jobs in manufacturing. ICT specialists are now expanding their expertise to complex business areas and product creation, applying IT to enhance well-known industry items.

Looking Ahead 2025: **Future Outlook of Malaysia's Digital Economy – Challenges and Growth Opportunities**

By Azam Wan Hashim, Strategy & Policy, MDEC



Global Macroeconomic Headwinds

The global landscape has been characterised by deep uncertainty in recent years, with the post-pandemic economic growth momentum being met with significant friction from high interest rates and inflation, geopolitical conflicts and worries about a potential economic recession. At the same time, advancements in technological innovation, particularly in the field of Artificial Intelligence (AI), and the pervasive digitalisation of economic sectors has been the key driver of continuous transformation and growth of the global economy. This shift is not only reshaping market dynamics but also altering the economic landscapes of countries worldwide. Amidst the challenging global macroeconomic landscape, Malaysia, like many nations, is navigating these changes catalysed by technological advancements, aiming to capitalise on the digital economy's potential to drive future national growth.

Global growth is expected to remain stable in the coming year, expected to grow at 3.2% in 2024 and 3.3% in 2025. Signs of recovery in the manufacturing sector, coupled with improvements in business and household confidence, have bolstered the view that the sharpest risks to the near-term outlook have begun to stabilise. In line with the emerging market growth trajectories, ASEAN-5 countries (Malaysia, Indonesia, Philippines, Singapore and Thailand) are showing stronger activity, which is driving higher GDP growth rates of 4.5% in 2024 and 4.6% in 2025.[1]

[1] *International Monetary Fund, (July 2024). World Economic Outlook.*

However, these gains in global growth are occurring amidst persistent high levels of uncertainty, largely due to ongoing economic and geopolitical divisions and conflicts. In a recent survey of chief economists, a near-unanimous majority (97%) expressed the belief that geopolitical factors will contribute to global economic instability in 2024.[2] The world is also grappling with higher-for-longer inflation and interest rates, largely impeded by continued risks from slow disinflation of services prices and continued supply chain disruptions. The overall trend of global inflation in the first half of 2024 has been relatively mild, with worldwide headline inflation expected to stabilise at 5.9% in 2024 and cool down further to 4.5% in 2025, dropping from 6.8% in 2023.[3]

In addition, international conflicts, growing social strains, technological shifts and tight financial conditions have all contributed to heightened volatility and continue to reshape patterns of economic activity. In the context of the moderate growth and increasingly volatile landscape, businesses, investors and consumers alike, will display waning levels of confidence, leading to softer consumer spending, lower product demand, falling market capitalisations and tighter labour conditions. The four most common strategies which businesses may employ during this period may present further opportunities and challenges for countries like Malaysia. These strategies, as pointed out by analysts, may include revising supply chain strategies by localising and diversifying into new regions, enhancing internal efficiency and transitioning to leaner business models, investing in innovation and human capital to boost productivity growth, and exercising greater caution in capital allocation.[4]

Outlooks impacting Digital Economy growth

In light of these challenges, several factors are positively influencing the growth of the digital economy. Despite the various macroeconomic speed bumps over the past two years since the early-pandemic boom of digital transformation demand, analysts are optimistic that the tech sector could return to modest growth in 2024, with more robust prospects for 2025.[5] The worldwide spending on digital transformation is expected to grow at a compound annual growth rate (CAGR) of 16.2% to reach USD 3 trillion by 2025.[6] This growth is further underpinned by the unambiguous view that technology will have a positive impact on the trajectory of global growth over the next five years (Figure 1).

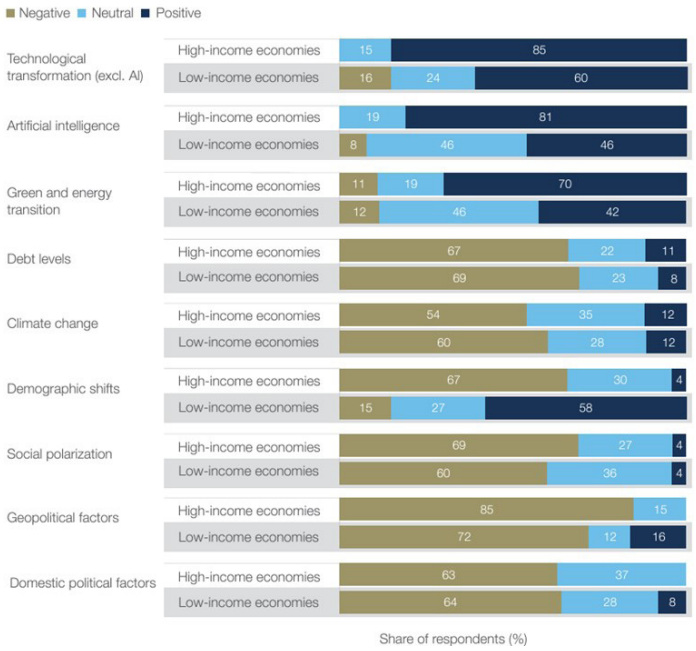


Figure 1 – Perceived impact on economic growth in the next 5 years, % share of respondents (WEF, 2024)

[2]*World Economic Forum, (May 2024). Chief Economist Outlook.*
[3]*Ibid*
[4]*Ibid*
[5]*Deloitte, (2023). 2024 technology industry outlook.*
[6]*IDC, (2024). Worldwide Digital Transformation Spending Guide*

The huge advances in technological innovation and the rapid adoption of digital technologies by organisations is reshaping industries and creating new avenues for revenue growth in the digital economy. Organisations are increasingly integrating advanced and emerging technologies into their organisation and towards their products in order to transform into more effective, more customer-centric organisations that can respond rapidly to changing customer demand and market dynamics. This continued industry demand for digitalisation will drive significant growth into emerging technologies such as blockchain, AI and Generative AI and Robotic Process Automation (RPA) (Figure 2). These emerging technologies are highly data intensive and rely heavily on foundational technologies, thereby further sustaining future demand into other digital markets associated with more enabling technological building blocks such as cloud computing, data centres and IoT devices.

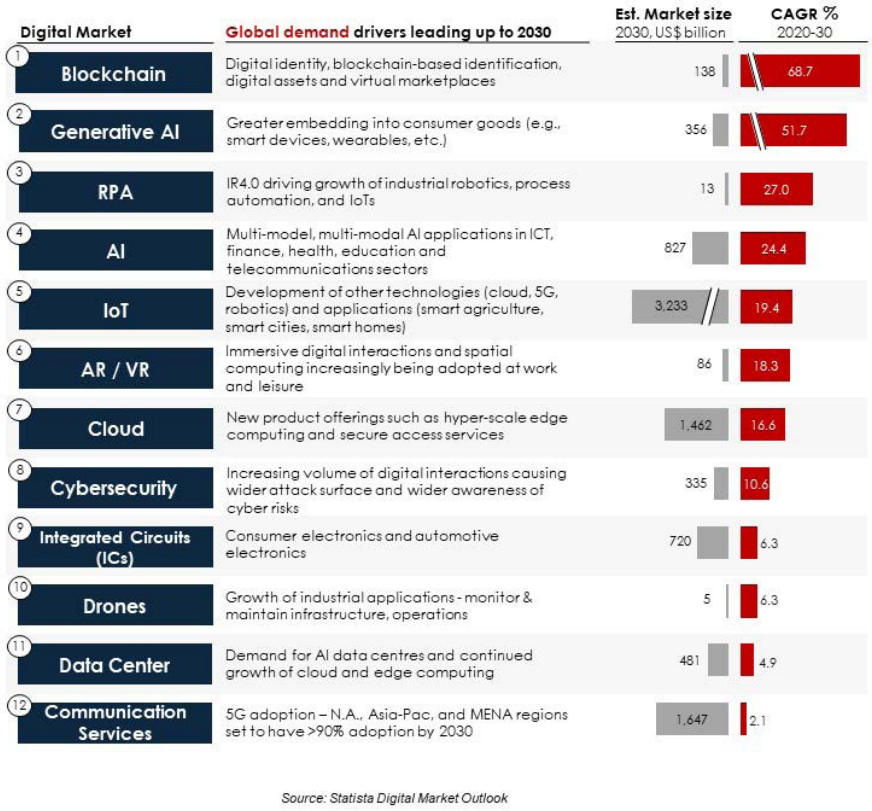


Figure 2 – Growth of digital markets 2020-2030 (MDEC Analysis based on Statista Digital Market Outlook)

Regional Launchpad with the ASEAN DEFA

ASEAN is well-poised to leverage the growth potential from an increasingly digitalised global economy. Driven by a youthful and tech-savvy population of over 670 million, internet users in ASEAN have surged by 100 million users from 2019, reaching 460 million total users by 2022.[7] The digital economy in Southeast Asia achieved a gross merchandise value nearing USD 200 billion in 2022, doubling since 2019.[8] Undoubtedly, the pandemic had presented itself as a unique opportunity for the growth of the digital economy, raising e-commerce's share of global retail trade from 14% in 2019 to about 17% in 2020.[9]

Driven by continued growth in online consumption, business digital transformation, investments in digital infrastructure, and continued developments in regional interconnectedness, the size of the regional digital economy is estimated to be valued at USD 1 trillion by 2030.[10] Against the backdrop of an ever-increasing need to enhance digital capabilities, ASEAN members have entered into various agreements to modernise the region in order to reap the benefits from the digitalised global economy. In September 2023, the ASEAN economic ministers initiated

[7] *Google, Temasek, and Bain & Company (2022), e-Conomy SEA 2022: Through the Waves, Towards a Sea of Opportunity.*
[8] *Ibid.,*
[9] *https://unctad.org/news/how-covid-19-triggered-digital-and-e-commerce-turning-point*
[10] *Google, Temasek, and Bain & Company (2023), e-Conomy SEA 2023: Reaching new heights: Navigating the path to profitable growth.*

negotiations for the ASEAN Digital Economy Framework Agreement (DEFA). Further digitalisation and regional integration facilitated by the aspirations of ASEAN's tentative DEFA could potentially double the growth, potentially bringing the total value of the region's digital economy to USD 2 trillion by 2030.[11]

The DEFA aims to propel ASEAN's evolution into a leading digital economy by fostering enhanced digital cooperation, paving the way for regional digital integration, and promoting inclusive growth and development. Its nine core elements are Cross-border data flows and data protection, Online safety and cybersecurity, Talent mobility and cooperation, Cooperation on emerging topics, Competition policy, Digital trade, Cross-border E-commerce, Digital payments and E-invoicing, and Digital ID and authentication (Table 1)

Principles of ASEAN DEFA	Elements of ASEAN DEFA
Ensure that ASEAN's digital transformation helps achieve the ASEAN Community's vision, boosts economic integration, supports regional recovery, enhances global integration, advances business technology, and improves the well-being of its people;	Digital Trade aims to facilitate cross-border trade by creating a seamless trade experience with electronic documents and interoperable processes.
Deliver benefits by collaborating on practical digital projects and initiatives;	Cross-border E-Commerce aims to create a more efficient and fairer environment for cross-border e-commerce, including digital goods and services.
Future-oriented, comprehensive and aim to enhance existing commitments and agreements, including those under the Bandar Seri Begawan Roadmap;	Payments and E-Invoicing aims to promote digital payments and electronic invoicing by fostering technical interoperability, encourage innovation and competition, and developing relevant regulation.
consider the different development levels of member countries and provide ways to address digital gaps within and among ASEAN Member States, aiming for mutual benefits in the ASEAN digital economy;	Digital ID and Authentication aims to develop a mutual recognisable and interoperable digital identity and electronic authentication framework within the region.
Flexible in its structure, accommodating the varying readiness levels of ASEAN Member States;	Online Safety and Cybersecurity aim to improve cooperation in cybersecurity and create an open and secure online environment, with comprehensive protection to parties in a digital transaction.
adaptable, allowing it to evolve with developments in the digital sphere and ensuring ASEAN remains relevant;	Cross-border Data Flows and Data Protection aims to facilitate cross-border data flow and establish frameworks to protect data privacy.
focus on maximising impact by targeting and prioritising significant barriers and opportunities;	Competition Policy aims to create a fair/non-discriminatory, transparent competitive environment with consistent guidelines on enforcement and better choice for consumers.
Be ambitious, building on relevant documents like the ASEAN Agreement on Electronic Commerce and the ASEAN Digital Integration Framework, without conflicting with other ASEAN and ASEAN Plus agreements.	Cooperation on Emerging Topics aims to establish mechanisms for regulatory cooperation for relevant standards and regulations to keep up with technological innovations in emerging topics such as AI.
	Talent Mobility and Cooperation aims to facilitate digital talent mobility between countries and close collaboration on talent building.

Table 1 – Principles and Main Elements of the Digital Economy Framework Agreement (DEFA)

[11] *Boston Consulting Group. "Study on the ASEAN Digital Economy Framework Agreement".*

The current DEFA negotiations represent a pivotal opportunity for ASEAN. Should DEFA result in inclusive regulatory frameworks and high-standard digital trade rules, it could revolutionise the region by creating more interconnected markets, expanding the range of available goods and services, and fostering a more dynamic digital economy. DEFA is expected to bring significant benefits to ASEAN member states, including increased economic growth, enhanced connectivity and interoperability, improved digital trust and improved digital talent mobility.

Awakening the AI Giant in Malaysia

Zooming into Malaysia, the nation has been reaping the dividends from an explosion in global AI demand, positioning itself as a key player in the global AI value chain with its strengths in housing the engines driving AI systems – data and compute capabilities. Most of the work to build, tune and run large AI models occurs in the cloud, and Malaysia has approved over RM 114 billion worth of investments in data centres and cloud services from 2021 to 2023. Malaysia was also ranked 23rd globally within Oxford Insight's Government AI Readiness Index, showing leadership in the Government pillar, which measures the strategic vision, regulations and the government's internal digital capacity and adaptability towards AI (Figure 3).

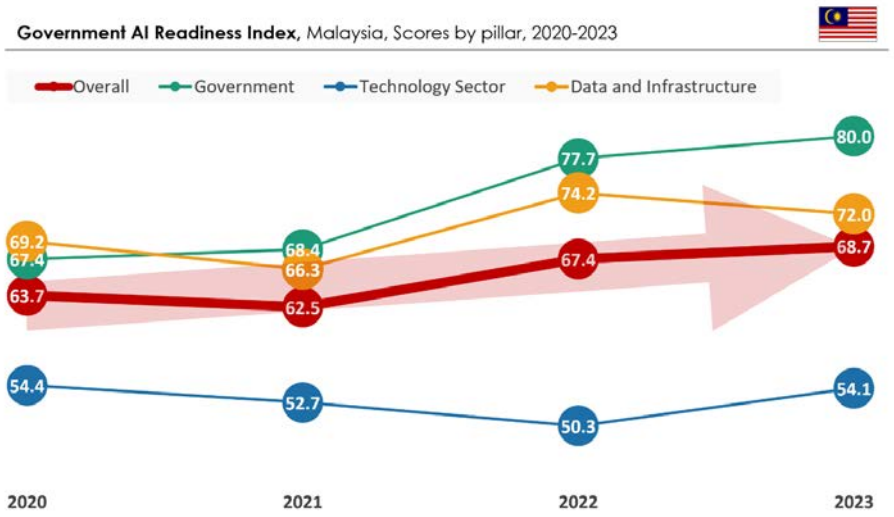


Figure 3 – Malaysia's scores in the Government AI Readiness Index (Oxford Insights, 2020-2023)

Applications of generative AI technology could help unlock an additional USD 113.4 billion of productive capacity across the Malaysian economy, with significant labour productivity gains from the transformation of workforce activities.[12] This growth is fueled by private sector investments in AI technologies across various sectors, including finance, healthcare, and manufacturing.

Furthermore, the Malaysian government has introduced initiatives such as the National AI Framework to encourage AI adoption and innovation, as well as the mission to make Malaysia a GenAI hub under the New Industrial Masterplan 2030. These initiatives aim to unlock the various national opportunities from AI adoption at scale, such as enhanced efficiency in traditional sectors, expanding industry of new AI-driven products and services and the creation of high-skilled jobs. However, challenges such as a shortage of AI talent, limited funding for AI startups, and a lack of data sharing and collaboration between academia and industry need to be addressed. Various policies also need to be explored with regards to the manner in which AI ethics and standards of use can mitigate potential risks of AI. Looking forward, the AI industry in Malaysia is poised for significant expansion, particularly if efforts are made to strengthen the ecosystem.

Malaysia's digital economy stands at a pivotal juncture, with immense potential for growth amid global challenges. By harnessing emerging technologies, investing in digital infrastructure, enhancing skills, and fostering a conducive regulatory environment, Malaysia can position itself as a digital leader in the region and beyond. The future outlook of Malaysia's digital economy is promising, provided it navigates the complexities of the global macroeconomic landscape and capitalises on the opportunities presented by digital transformation. With a strategic focus on innovation, sustainability, and inclusivity, Malaysia is well-positioned to drive economic growth and improve the well-being of its citizens in the digital age.

[12] *Access Partnership, MyDIGITAL Corp, Centre4IR & Microsoft, (2023). The Economic Impact of Generative AI: The future of work in Malaysia*

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