



ECONOMIC AND DIGITAL JOB MARKET OUTLOOK 2023

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Disclaimer

This publication contains findings based on data provided by JobStreet.com Sdn Bhd (449122-K) and sourced from other databases such as Payscale, Salary Expert and the Economic Research Institute, with PIKOM collaboratively carrying out the data analysis. Although a professional effort has been made to ensure the accuracy of data analysis and presentation, all information furnished in this publication is provided strictly on an 'as is' and 'as available' basis and is so provided for your information and reference only. With this caution, kindly be informed that this release is not presented to address the circumstances of any particular individual or entity. As such, PIKOM including their sponsors, partners and associates, whether named or unnamed, do not warrant the accuracy or adequacy of the data and findings. Moreover, all parties concerned explicitly disclaim any liability for errors or omissions or inaccuracies pertaining to the contents of this publication. Therefore, the use of data and findings presented in this publication is solely at the user's risk. PIKOM shall in no event be liable for damages, loss or expense including without limitation, direct, incidental, special, or consequential damage or economic loss arising from or in connection with the data and / or findings published in this series. However, professional advice can be sought from the producers of this publication.

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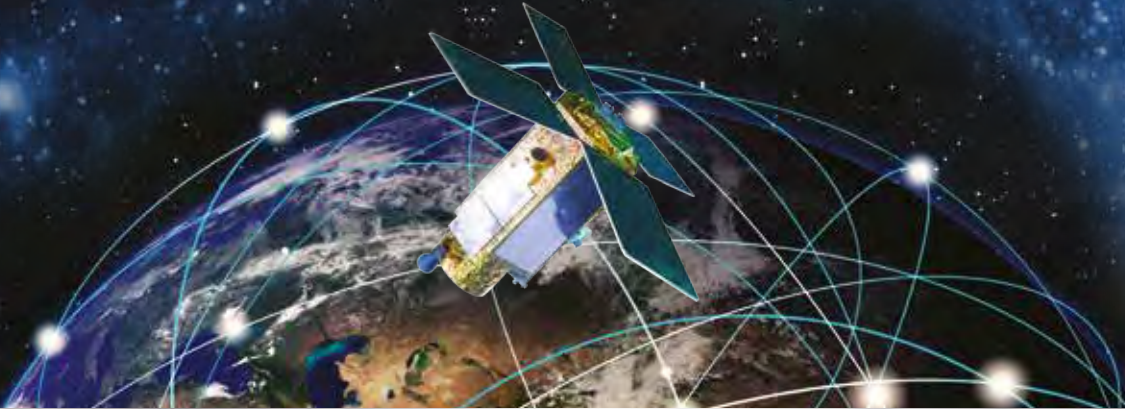
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FOREWORD BY THE CHAIRMAN OF PIKOM

ONG CHIN SEONG

The Economic and Digital Job Market Outlook, published annually by PIKOM, has become a leading report on developments in the tech industry and their impact on digital employment cum salary trends in Malaysia.

Over the years, this publication has gained an eager following from among digital professionals, tech industry players, captains of economic sectors, researchers, consultants and policy makers in Government.

I am proud and privileged to present this year's publication with its extended insights on opportunities and challenges in the digital and talent markets as well as salary landscape.

I would like to take this opportunity to extend PIKOM's appreciation to our long-standing partner Jobstreet by SEEK for its generous provision of data essential for the development of this report.

PIKOM is also grateful to other data banks such as Payscale, Salary Expert, the Department of Statistics Malaysia (DOSM), Bank Negara Malaysia (BNM) and many other organisations whose information we have sourced to make this report as comprehensive as can be.

Let me take this opportunity to express our gratitude to TalentCorp and the Asian-Oceanian Computing Industry Organization (ASOCIO), our strategic partner which have always supported our efforts, as well as our loyal advertisers.

In addition, I would like to pay tribute to PIKOM Research Committee Chair Mr Woon Tai Hai and the publication team for their time and efforts in producing yet another informative publication and valuable resource.

Thank you



MESSAGE BY THE CHAIRMAN OF ASOCIO

DR BRIAN CHEN

On behalf of ASOCIO, I would like to express my sincere gratitude to PIKOM for extending the honour of participating in the *PIKOM Economic and Digital Job Market Outlook 2023*.

It is indeed a privilege for ASOCIO to be a part of this important initiative. It is also worth mentioning that PIKOM has been a valued member of ASOCIO for several years, contributing significantly to our association's objectives. This marks the second consecutive year of our collaboration in this endeavour.

I would like to extend my warmest congratulations on the continuous publication of this report since its inception in 2008. The report's longevity is a testament to its importance and relevance, not just within the tech industry, but also across various sectors in Malaysia.

Allow me to take a moment to briefly define ASOCIO and its mission. The Asian-Oceanian Computing Industry Organization (ASOCIO) is dedicated to fostering collaboration and growth in the ICT industry across the Asia-Oceania region. Our mission is to facilitate information exchange, promote technological advancements and encourage innovation.

From my understanding, a standout feature of this report is the benchmarking of salaries, both globally and regionally. This content is of paramount significance to ASOCIO and its member economies. It enables us to gain valuable insights into compensation trends within the tech industry, helping us make informed decisions and stay competitive on a global scale.

We eagerly anticipate further collaboration with PIKOM on similar projects that contribute to the advancement of our regional economies and the tech industry as a whole.

Thank you once again for this invaluable partnership, and we look forward to achieving great milestones together.



EXECUTIVE SUMMARY BY THE RESEARCH COMMITTEE CHAIR OF PIKOM

MR WOON TAI HAI

We are pleased to announce the release of the 15th edition of *PIKOM's Economic and Digital Job Market Outlook 2023*. PIKOM is proud to have sustained this annual publication over the past 16 years, with the exception of a hiatus during the first pandemic year of 2020.

We are also extremely excited to announce a year-on-year salary growth of 13.9% in 2023, a double-digit growth we have not witnessed for many years based on the advertised salaries published by Jobstreet by SEEK.

This is in sharp contrast to the approximately 2.0% growth in the last two years. We have also projected a 4.13% salary growth for 2024 and an AAGR of 6.45% measured over a 10-year period.

The current growth trend is in line with our view that healthy economic growth of the preceding year will translate into more jobs and increase in salaries in the following year, with lagging time of six to twelve months.

While the number of data records reported by Jobstreet by SEEK from January 2022 to June 2023 have been dropped in comparison with same period last year, advertised salaries of all categories reflected the double-digit growth.

A number of factors may have precipitated this outcome including increased competition for talent workforce, the return of brain-drain after two years of pandemic, the weakening of our ringgit, higher digital transformation in the private sector and greater impetus from more proactive government policies.

In tandem, the digital economy is also trending upwards, as our research and analysis have shown that the digital economy contribution to GDP will surpass the 25.0% mark before 2025, given it will reach a projected 24.4% this year.

Trend analysis and forecasting models are related but serve different purposes in data analysis and prediction. Different approaches are used depending on the availability of data sets. The primary purpose of trend analysis is to examine historical data to identify patterns, tendencies or underlying trends. It helps in understanding how a variable has behaved over time. As for forecasting models, they are applied in situations where future values are crucial for decision-making, utilising various mathematical and statistical techniques such as regression analysis and, exponential smoothing for future predictions.

However, we are less optimistic on the outlook for the overall economy with our projected GDP growth of 4.2% for 2023 and 4.5% for 2024, due largely to both domestic and global influences. These projections are certainly a significant departure from the growth of 8.7% in 2022 and further explains our rationale of a lower salary growth in 2024.

As in the previous years, the 2023 report continues to produce a comprehensive set of jobs and salaries in the local tech market encompassing an analysis of five job levels in 21 industries with data from Jobstreet by SEEK.

For the first time, we have also incorporated a section on the results of a sentiment survey of our members conducted recently to gauge their economic and industry expectations. The results are summarised and published here.

Highly specialised and in-demand jobs like cybersecurity, AI and data science will continue to be a focus, with reporting on 19 jobs and their respective salaries. A debut section in this year's report showcases CEO salaries in 21 different industries and

this is yet another effort to continuously add value to the report.

Benchmarking of technology salary is a valuable tool among global and regional economies to remain competitive, foster innovation and make informed policy decisions in a rapidly-evolving tech landscape.

In offering the reader an understanding of where Malaysia stands, we have converted the raw salary data of the respective countries in different currency denominations to an equivalent international currency (USD) adjusted for purchasing power parity (PPP).

Over the past six months, PIKOM has also published a number of thought leadership articles in the media and these are reproduced for all our readers here. While the data content is imperative, our research and analytical approach must also be consistent and methodical. Over the years we have also enhanced this approach by leveraging on a number of mathematical models including in this report.

They include the requisite estimation using Single Exponential Forecasting and Smoothing Model (SEFS) and concepts that involve 'neighborhood' in

statistics and modeling was used. (Nearest Neighbor Methods are techniques used in machine learning and statistics where you determine the similarity or distance between data points in a dataset. "The 'neighborhood' of a data point consists of its closest data points in the feature space.).

It is also an opportune time to recognise and acknowledge the sources of raw data including Jobstreet by SEEK, Payscale, Salary Expert and the Economic Research Institute. Our sincere appreciation to these organisations.

Once again on behalf of PIKOM, we would like to express our appreciation to our partners and advertisers, in particular the TalentCorp and Asian-Oceanian Computing Industry Organization (ASOCIO).

We are delighted to announce that we will be distributing this report to participants in the ASOCIO Digital Summit in Seoul in November 2023.

The following are the infographic extracts of the salient salary figures including the PIKOM forecasts from the core report:

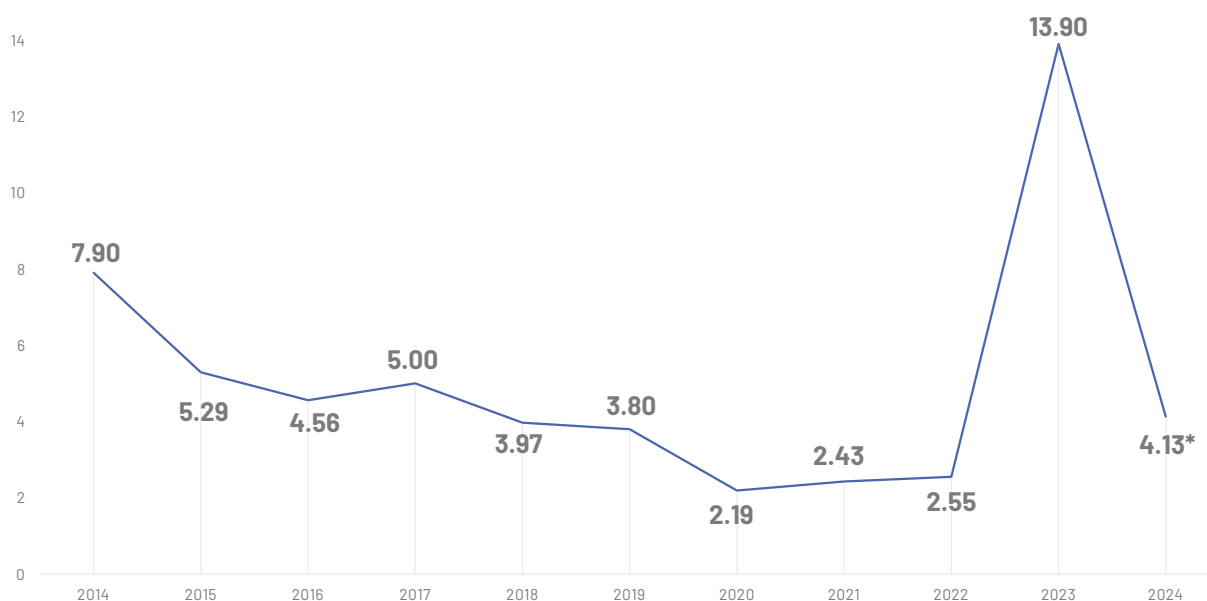
Average Monthly Advertised Salaries of Digital Professionals by Overall and Position Level (RM) 2013 - 2024

Year	RM2500- RM4000	RM4000- RM6000	RM6000- RM8500	RM8500- RM20000	RM20000- RM40000	RM2500- RM40000
	Entry Level	Junior Executive	Senior Executive	Manager	Senior Manager	Overall
2013	2,438	3,459	5,744	8,986	14,661	7,142
2014	2,581	3,719	6,157	9,591	16,057	7,706
2015	2,718	3,894	6,483	10,195	17,053	8,114
2016	2,817	4,052	6,727	10,646	18,132	8,484
2017	2,958	4,259	7,057	11,168	19,147	8,908
2018	3,080	4,458	7,469	11,888	20,521	9,262
2019	3,210	4,663	7,865	12,589	21,916	9,614
2020	3,282	4,716	7,841	12,994	22,497	9,825
2021	3,398	4,816	8,020	13,152	22,558	10,064
2022	3,560	5,020	8,289	13,882	23,057	10,321
2023	4,098	6,230	10,096	16,173	25,662	11,756
2024*	4,315	6,603	10,635	17,082	26,619	12,242
Y-o-Y: 2023-2022 (%)	15.11	24.10	21.80	16.50	11.30	13.90
AAGR: 2013-2023 (%)	6.81	8.01	7.58	8.00	7.50	6.46
Forecast Rate: Y-o-Y 2024-2023 (%)	5.30	5.99	5.34	5.62	3.73	4.13

* Forecast

Sources: Jobstreet & PIKOM estimates

Growth Rates of Overall Average Monthly Advertised Salaries of Digital Professionals (%) 2014 - 2024



* Forecast

Sources: Jobstreet & PIKOM estimates

Average Monthly Salaries of CEO by Industry (RM) 2023

Industry	2023 Estimate
Agriculture / Plantation / Aquaculture	46,417
Automotive / Heavy Industry / Machinery	39,389
Banking	53,135
Call Center / IT-Enabled Services / BPO	59,920
Computer / Information Technology (Hardware)	57,116
Computer / Information Technology (Software)	36,073
Construction / Building / Engineering	45,097
Consulting (Business/Technical)	43,655
Education	37,570
Electrical & Electronics	64,602
Financial Services/Securities/Insurance	53,398
Hotel/Restaurant/Food Service/Hospitality	36,706
Manufacturing / Production	44,671
Oil / Gas / Petroleum	50,234
Printing / Publishing	34,178
Property / Real Estate	49,703
Science & Technology / Aerospace / Bio Technology	51,153
Semiconductor / Wafer Fabrication	34,709
Telecommunication	48,624
Transport/Storage/Freight/Shipping	38,432
Utilities	30,952
Wholesale/Retail/Trading	32,236

Sources: Economic Research Institute (ERI) & PIKOM estimates

Average Salaries Earned by Digital Professionals by Technology Positions (RM & Ratio) 2023

IT Jobs	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average
TECHNOLOGY POSITIONS	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	BENCHMARKED RATIO AGAINST ENTRY LEVEL UNDER TECHNOLOGY CATEGORY				
Solutions Architect	11,599	6,156	7,742	11,667	15,306	1.88	1.00	1.26	1.90	2.49
Development Operations (DevOps) Engineer	5,945	4,042	5,083	9,698	15,000	1.47	1.00	1.26	2.40	3.71
Data Scientist	4,821	3,830	4,808	7,450	9,554	1.26	1.00	1.26	1.95	2.49
Network Administrator	4,716	2,849	3,583	6,629	10,938	1.65	1.00	1.26	2.33	3.84
Business Analyst, IT	4,690	3,395	4,065	6,587	9,230	1.38	1.00	1.20	1.94	2.72
Business Intelligence (BI) Analyst	4,545	3,584	4,200	6,400	9,779	1.27	1.00	1.17	1.79	2.73
Technical Support Specialist	4,506	3,038	3,820	4,464	7,250	1.48	1.00	1.26	1.47	2.39
Database Administrator (DBA)	4,347	2,650	3,006	6,000	9,900	1.64	1.00	1.13	2.26	3.74
Data Engineer	4,294	3,302	4,056	7,733	10,174	1.30	1.00	1.23	2.34	3.08
Java Developer	4,142	3,052	4,090	6,333	5,633	1.36	1.00	1.34	2.08	1.85
Software Engineer	4,074	3,107	4,015	5,959	10,993	1.31	1.00	1.29	1.92	3.54
Quality Assurance (QA) Analyst Software	4,067	2,651	3,333	5,833	9,625	1.53	1.00	1.26	2.20	3.63
System Administrator, Computer / Network	4,051	2,800	3,875	5,833	4,898	1.45	1.00	1.38	2.08	1.75
Systems Analyst	4,044	2,529	3,512	5,151	7,899	1.60	1.00	1.39	2.04	3.12
Help Desk Technician	3,994	2,982	3,750	4,000	5,432	1.34	1.00	1.26	1.34	1.82
Technical Support Analyst IT	3,949	3,000	3,876	5,087	8,393	1.32	1.00	1.29	1.70	2.80
Network Engineer	3,852	2,948	5,222	6,656	10,983	1.31	1.00	1.77	2.26	3.73
.NET Software Developer / Programmer	3,800	3,000	3,665	5,300	8,000	1.27	1.00	1.22	1.77	2.67
Applications Engineer	3,747	3,025	3,678	5,535	7,355	1.24	1.00	1.22	1.83	2.43

IT Jobs	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average
TECHNOLOGY POSITIONS	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	BENCHMARKED RATIO AGAINST ENTRY LEVEL UNDER TECHNOLOGY CATEGORY				
Network Security Engineer	3,733	2,344	2,948	6,582	9,975	1.59	1.00	1.26	2.81	4.26
Test / Quality Assurance (QA) Engineer (Computer Software)	3,733	2,691	3,499	5,391	7,686	1.39	1.00	1.30	2.00	2.86
Software Developer	3,692	2,926	3,627	5,466	7,167	1.26	1.00	1.24	1.87	2.45
Data Analyst	3,668	3,166	3,641	5,048	7,632	1.16	1.00	1.15	1.59	2.41
Software Engineer / Developer / Programmer	3,636	3,406	3,469	6,158	7,861	1.07	1.00	1.02	1.81	2.31
Cyber Security Analyst	3,626	3,389	3,965	6,269	9,333	1.07	1.00	1.17	1.85	2.75
System Administrator, Windows Server	3,537	2,481	3,120	3,594	5,930	1.43	1.00	1.26	1.45	2.39
Quality Assurance (QA) Analyst	3,359	2,673	3,362	4,300	7,095	1.26	1.00	1.26	1.61	2.65
Systems Engineer, IT	3,306	2,732	3,219	4,204	5,990	1.21	1.00	1.18	1.54	2.19
Quality Assurance (QA) Engineer	3,289	2,758	3,048	4,103	5,995	1.19	1.00	1.11	1.49	2.17
Web Developer	3,208	2,755	3,282	4,861	5,953	1.16	1.00	1.19	1.76	2.16
Web Developer	3,208	2,755	3,282	4,861	5,953	1.16	1.00	1.19	1.76	2.16
Junior Software Engineer	2,989	3,003	3,513	5,094	8,405	1.00	1.00	1.17	1.70	2.80
Network Technician	2,704	2,000	2,340	5,622	9,276	1.35	1.00	1.17	2.81	4.64
Support Technician Computer / Network / IT	2,607	2,000	2,260	5,622	5,072	1.30	1.00	1.13	2.81	2.54
Support Technician, Information Technology (IT)	2,607	2,000	2,525	2,933	4,012	1.30	1.00	1.26	1.47	2.01

Sources: Payscale & PIKOM estimates

Benchmarking Average Annual Salaries of Digital Professionals in Malaysia Against Selected Economies Based on \$PPP Currency (Ratio) 2023

COUNTRY	Overall	Technology Positions	Managerial Positions	C-Level Positions
Saudi Arabia	2.12	2.42	1.95	2.05
UAE	1.94	2.02	1.87	1.94
Singapore	1.88	2.16	1.85	1.70
Qatar	1.83	1.63	1.74	2.04
USA	1.75	2.64	1.78	1.07
South Korea	1.64	2.09	1.37	1.51
Kuwait	1.59	1.56	1.47	1.72
Hong Kong	1.59	1.74	1.48	1.57
China	1.53	1.89	1.18	1.55
Thailand	1.50	1.41	1.38	1.66
Canada	1.33	1.97	1.36	0.83
South Africa	1.22	1.34	1.26	1.10
Australia	1.21	1.74	1.27	0.76
Brazil	1.21	1.10	1.04	1.42
United Kingdom	1.15	1.53	1.14	0.87
New Zealand	1.05	1.54	1.10	0.66
Malaysia	1.00	1.00	1.00	1.00
Japan	0.96	1.32	0.95	0.71
India	0.90	0.79	0.92	0.97
Philippines	0.73	0.70	0.79	0.71
Indonesia	0.58	0.68	0.66	0.45

Sources: Payscale & PIKOM estimates

PUBLICATION TEAM PROFILES



WOON TAI HAI

Woon boasts a wealth of experience spanning over 35 years in various sectors. He accumulated 20 years in management consulting and risk management at KPMG and BDO Malaysia. Prior to that, he spent 11 years in the Australian banking and finance industry before returning to Malaysia in 1993. His educational background includes a Master of Business Administration, a Post Graduate diploma in Accounting and Finance, and a Bachelor of Science degree in computer science from UTS and UNSW, respectively.

In September and October of 2019, Bank Negara Malaysia appointed him as an Independent Non-Executive Director (INED) on the boards of Takaful Ikhlas General and Takaful Ikhlas Family Berhad, both subsidiaries of Malaysian Reinsurance (MRE). He relinquished his directorship in Takaful Ikhlas Family Berhad on August 31st, 2023 in accordance with corporate governance standards. In August 2022, he assumed the role of Independent Non-Executive Director at DayThree Digital Berhad. Since 2013, Woon has served as an Advisor to PIKOM, Malaysia's national tech industry association. Additionally, he has held the appointed position of Ex-Officio in the Malaysia Australia Business Council for the past five years.



ONG KIAN YEW

Kian Yew is the CEO of PIKOM, the National Tech Association of Malaysia, an industry association representing 1,000 member companies that command 80% of the total ICT trade in Malaysia. As CEO, he is responsible for the operations of the association and its wholly-owned events arm, PIKOM Services Sdn Bhd. Kian Yew actively represents PIKOM at international fora including the World IT and Services Alliance (WITSA) and the Asian Oceanian Computing Industry Organisation (ASOCIO). Kian Yew is also responsible for government engagement in PIKOM. He sits on various committees representing the digital industry and plays a key role in digital industry advocacy to the government. A graduate of the University of Strathclyde in Scotland, Kian Yew has 25 years experience in the digital industry.



RAYMOND DEVADASS

Founder & CEO of Daythree Business Services. Raymond specialises in providing strategic management direction, particularly in the field of digital transformation strategy and management. He holds a Master of Business Administration majoring in Strategy & Planning, and is a Chartered Accountant, registered with CPA Australia and Malaysian Institute of Accountants. Raymond is the author of several articles and research papers. He was twice selected by peers in the industry as 'Best Thought Leader' in 2017 and once again in 2019 – an award reserved for recognizing leadership aimed at external positioning of the individual's competencies in delivering value.



MUZHABID SHAH ABDUL RAHMAN

Muzahid is the Chief Executive Officer of SteerQuest Sdn Bhd, the Group Chief Executive Officer of SQ Digital Vision Group Sdn Bhd and the Senior Advisor of Brandt Group. He is passionate about creating value through synergistic win-win relationships; between tech and business, between service provider and solution creator, between customer and partner. This is grounded in his experience in both customer and partner's organisations, in which co-creation and collaboration are essential to ensure better business outcomes. He has first-hand experience in leading and scaling tech businesses across ASEAN encompassing a myriad of digitalisation initiatives delivered for customers across industries. A telecommunication engineer by background, he is also certified in Enterprise Architecture and Project Management and trained in various areas such as IT Governance, Finance etc.



NURUL ASYIQIN MOHD NASIR

Nurul has been involved in the Startup and Tech ecosystem for over 20 years in various scopes. She started her career as a Microsoft Certified Trainer and progressively moved towards Training Content Developer, Project Management and Management in multiple companies and associations. The projects she was involved in were both at national and international levels. Currently, she manages PIKOM's Media Relations and supports the Government Affairs and Research Committee.



R. RAMACHANDRAN

Ramachandran is a freelance consultant with four decades of working experience in various capacities in the public and private sectors. He specialises in the area of statistical collation, socioeconomic and demographic research, information communication technology for development (ICT4D) modelling and process and quality improvement (Six Sigma Black Belt), among many others. He holds a Bachelor of Science (London) degree majoring in Physics – Mathematics in 1979 followed by a Master of Philosophy from Multimedia University in 2008. To his credit, he has published numerous research papers in peer-reviewed international journals and conference papers.



MICHAEL LAI

Michael is the sole proprietor of Mjlaikc Infoworks, a provider of content and consultancy in business, industry, technology, corporate sustainability and related areas. He has over 25 years of experience in a wide range of disciplines including journalism, publication, advertising, public relations and event management. Mjlaikc Infoworks has produced PIKOM's job market reports and digital economy reviews for the past 10 years.

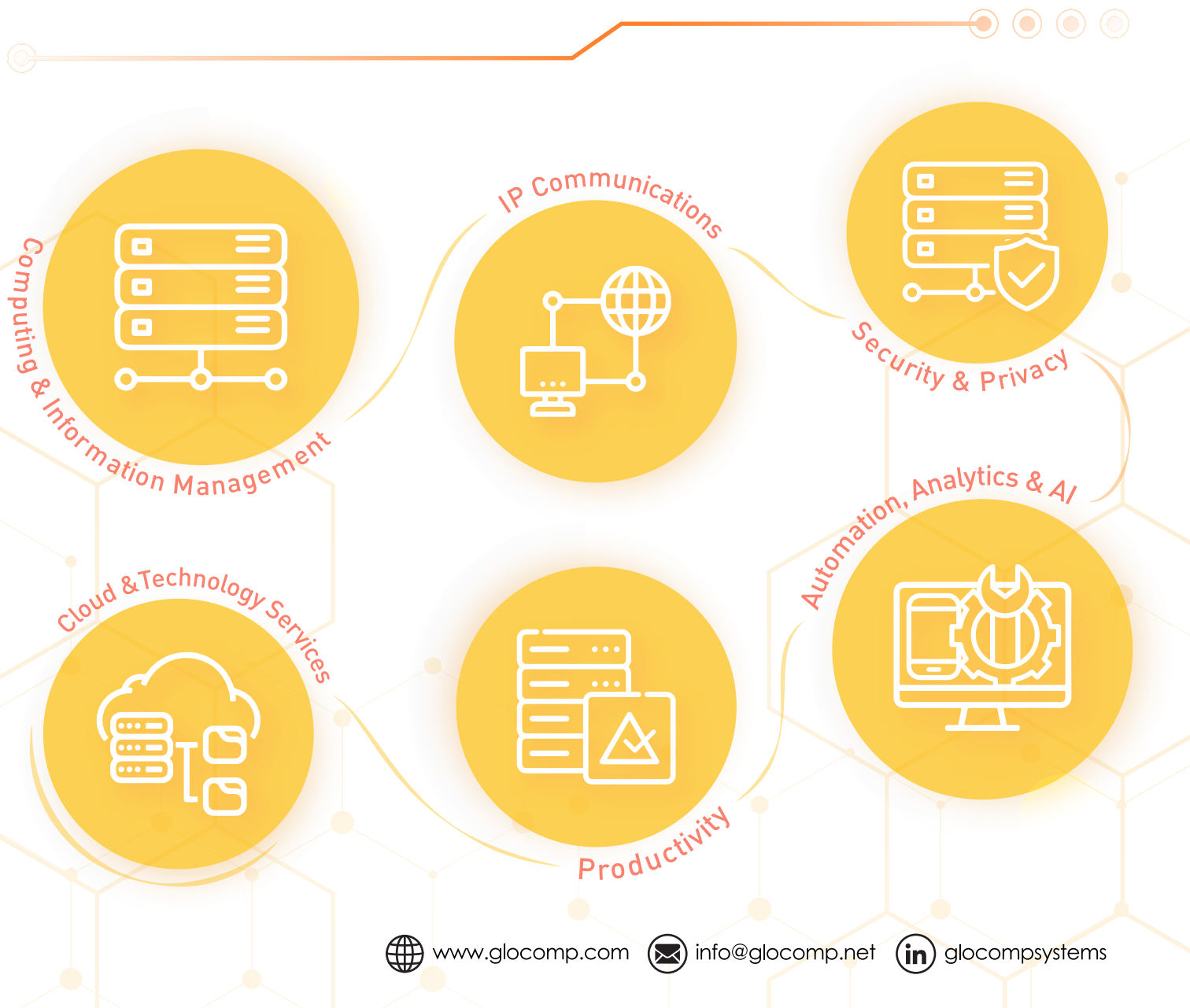


HAWARUDIN RASANI

Rudin is a publication designer with almost 20 years of experience. He is an associate of Mjlaikc Infoworks apart from having his own portfolio of clients. He was instrumental in revamping both PIKOM's job market outlook and digital economy review into the aesthetic and professional publications they are today.

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LGMS Berhad made its debut on the ACE Market of Bursa Malaysia on 8 June 2022. LGMS is also the first listed cyber security services company in Malaysia.

LGMS Berhad upholds uniqueness in providing independent cyber security professional services with an impartial approach. We concentrate our efforts and resources on building strong cyber security fundamentals and core proficiencies. As much as we are passionate about providing objective and unbiased cyber security consulting services, our drive comes from assuring precedence to client's interests.

Cyber Risk Management & Compliance

Cyber Risk Prevention

Cyber Threat & Incident Response



SECTION A

ECONOMIC REVIEW AND OUTLOOK IN MALAYSIA



Economic growth in Malaysia is beginning to ease in 2023 after an extraordinary surge the year before, with the slowdown in the external market tempered by strong domestic demand and other positive factors.

The economy is projected to grow moderately over the next two years at rates marginally below the seven-year (2013 – 2019) average of 5.0% before the Covid-19 pandemic upended the apple cart.

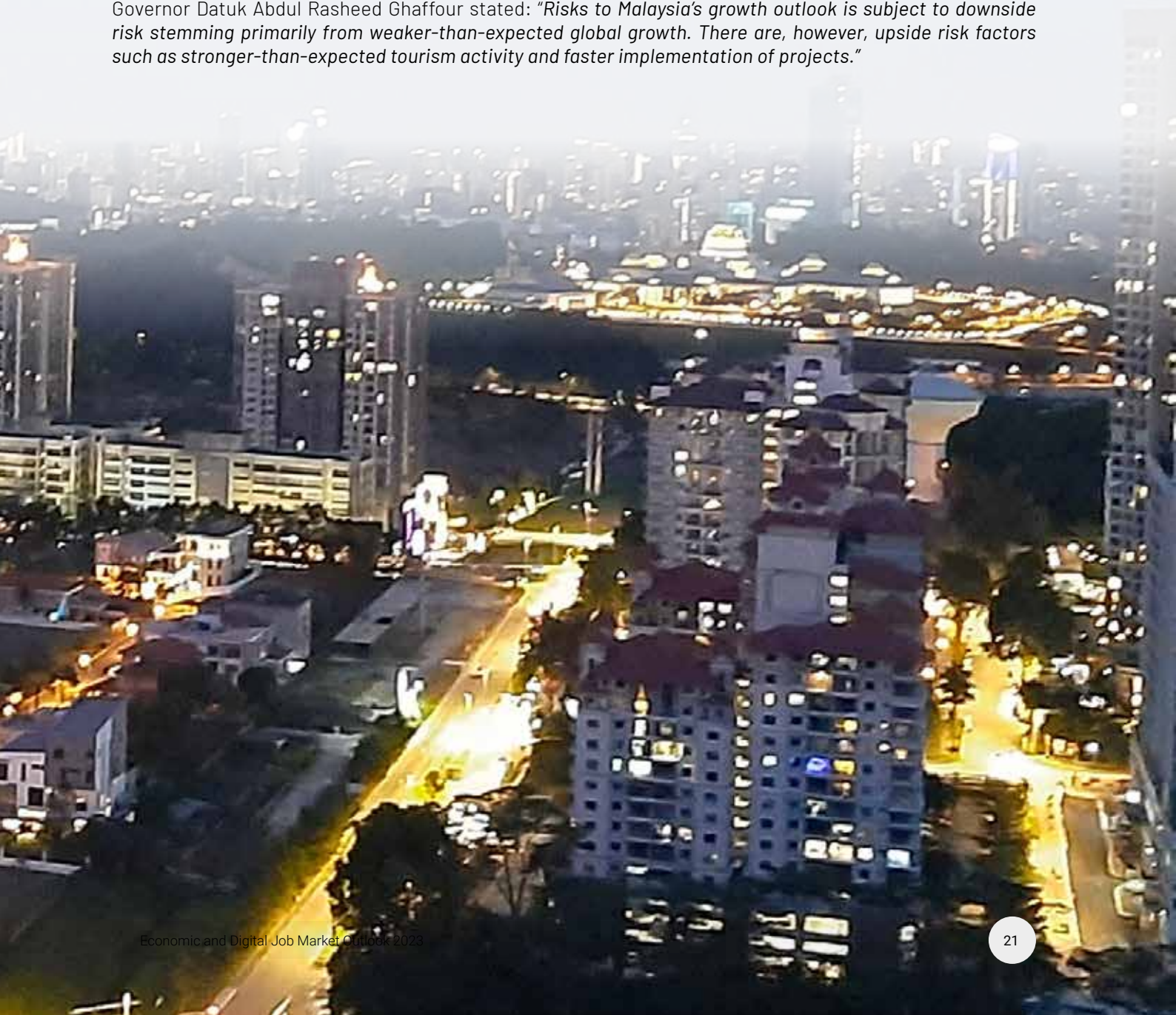
Merchandise exports, one of the major drivers of growth in 2022, have slowed in the first half of 2023 due to sluggish economic recovery in China coupled with weakening demand from American and European markets.

However, this downward trend has been offset by a rise in services exports as inbound tourism continues to recover this year.

In addition, domestic demand has remained resilient with sustained foreign investments, revival of major infrastructure projects, employment growth and higher wages supporting private consumption spending.

Nevertheless, there remains considerable downside risks for the remainder of 2023 and 2024. They include a slowing global economy impacting on market demand, persistent disruption to the global supply chain, falling commodity prices affecting export revenue, and weak currency leading to higher cost of imports.

This is reflected by Bank Negara Malaysia's (BNM) report for the second quarter of 2023, in which BNM Governor Datuk Abdul Rasheed Ghaffour stated: *"Risks to Malaysia's growth outlook is subject to downside risk stemming primarily from weaker-than-expected global growth. There are, however, upside risk factors such as stronger-than-expected tourism activity and faster implementation of projects."*



THE ECONOMY IN 2022 /2023

Table 1: Economic Growth Performance 2022, Q1 & Q2 2023 (%)

	2022	Q1 2023	Q2 2023
Gross Domestic Product (GDP)	8.7	5.6	2.9
PRODUCTION			
Services	10.9	7.3	4.7
Manufacturing	8.1	3.2	0.1
Agriculture	0.1	0.9	-1.1
Mining & Quarrying	2.6	2.4	-2.3
Construction	5.0	7.4	7.4
CONSUMPTION			
Private Final Consumption Expenditure	11.2	5.9	4.3
Gross Fixed Capital Formation	6.8	4.9	3.5
Government Final Consumption Expenditure	4.5	-2.2	4.6
Exports	14.5	-3.3	-9.4
Imports	15.9	-6.5	-9.7

Source: DOSM

Table 1 presents the performance of the Malaysian economy from 2022 until the second quarter of 2023 in terms of production and consumption metrics.

The Malaysian economy is beginning to cool off this year after recording in 2022 its highest gross domestic product (GDP) growth of 8.7% since 2000 (**See Chart 1**). Given this downward trend, BNM has set a growth forecast of 4.0 – 5.0% for this year.

In acknowledging the decline in export revenue, BNM stated in its Q2 2023 review that: *“Growth will continue to be supported by domestic demand amid improving employment and income as well as implementation of multi-year projects. Tourist arrivals are expected to continue rising, which would support tourism-related activities.”*

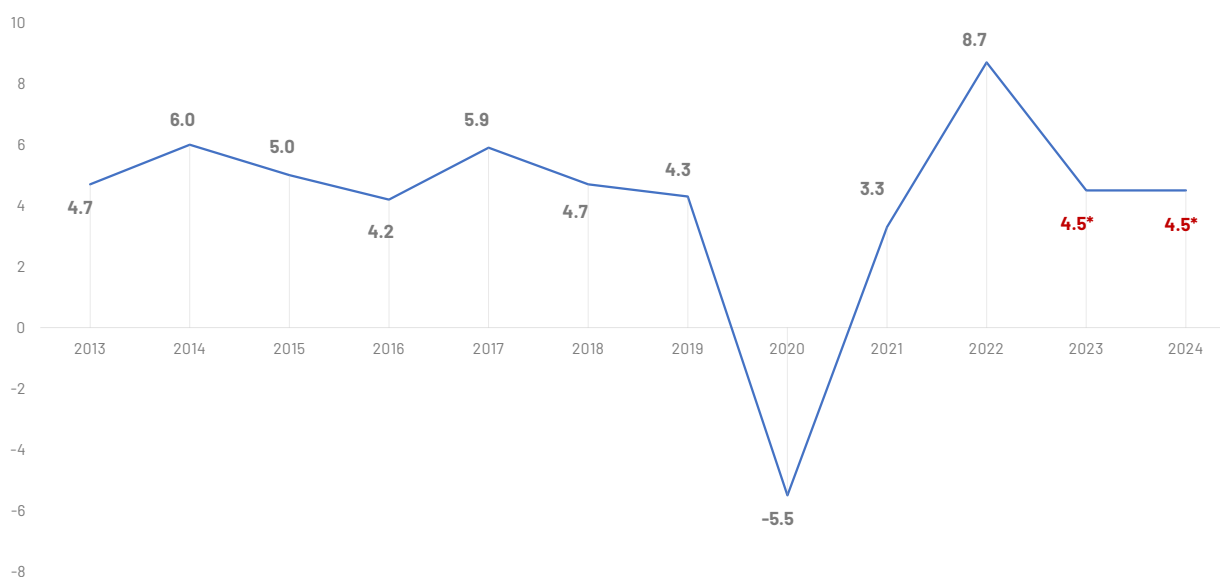
Chart 2 shows that economic growth reached a peak with a quarterly rate of 14.2% in Q3 2022 after progressively recovering from -4.5% in the corresponding quarter for the previous year. Since Q3 2022 however, the trajectory has been trending downwards over the past three quarters with growth moderating to 5.6% in Q1 2023 and 2.9% in Q2 2023.

The 2022 performance was a considerable improvement over the 3.1% achieved in 2021 and represented a mark-up from BNM’s October 2022 projection of 6.5 – 7.0% for the year.

GDP growth was driven by surging exports; record and near-record prices of palm oil and crude oil respectively; healthy net inflow of foreign direct investment (FDI); as well as rising employment and higher disposable income leading to a recovery in the consumer market.

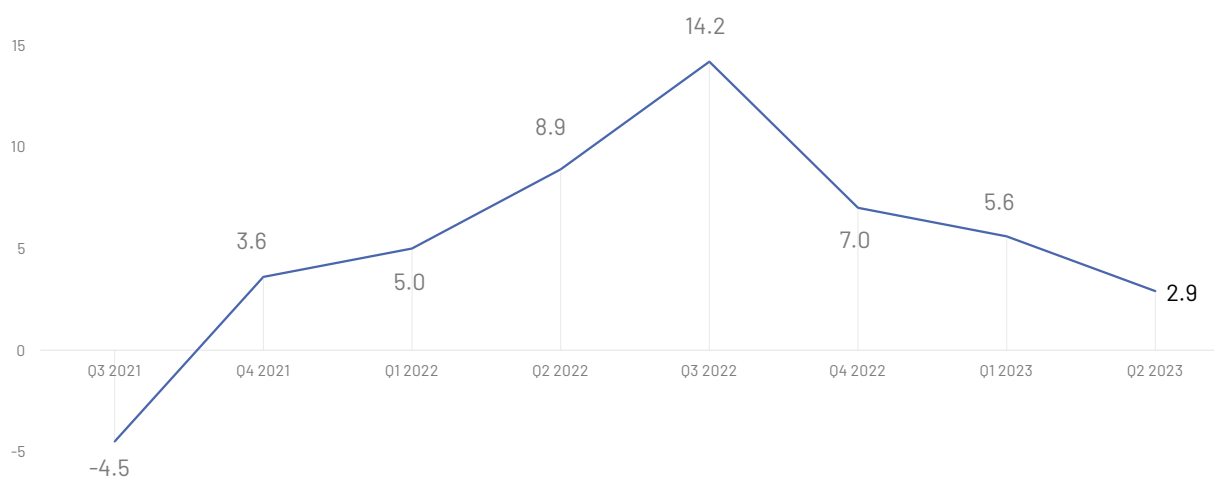
Reviewing the national economic performance for 2022, Prime Minister Dato’ Seri Anwar Ibrahim stated in a press citation on 11 February 2023: *“This clearly shows the recovery of consumer, business and investor confidence in the national economy.”*

Moving into 2024, the International Monetary Fund (IMF) has projected growth at 4.5%, stating in a press release on 1 June 2023: *“Downside risks, mostly external, cloud the near-term outlook. External risks include the possibility of an abrupt global slowdown or recession, with an associated spike in global risk premia, capital outflows and sudden stop risks.”*

Chart 1: Malaysia's GDP Growth Rate (%) 2013 – 2024

* Forecast – The 2023 forecast represents the average between BNM's projection of 4.0 – 5.0%

Sources: DOSM, BNM, MIDF, Statista

Chart 2: Malaysia's Quarterly Growth Rate (%) Q3 2021 – Q2 2023

Sources: DOSM

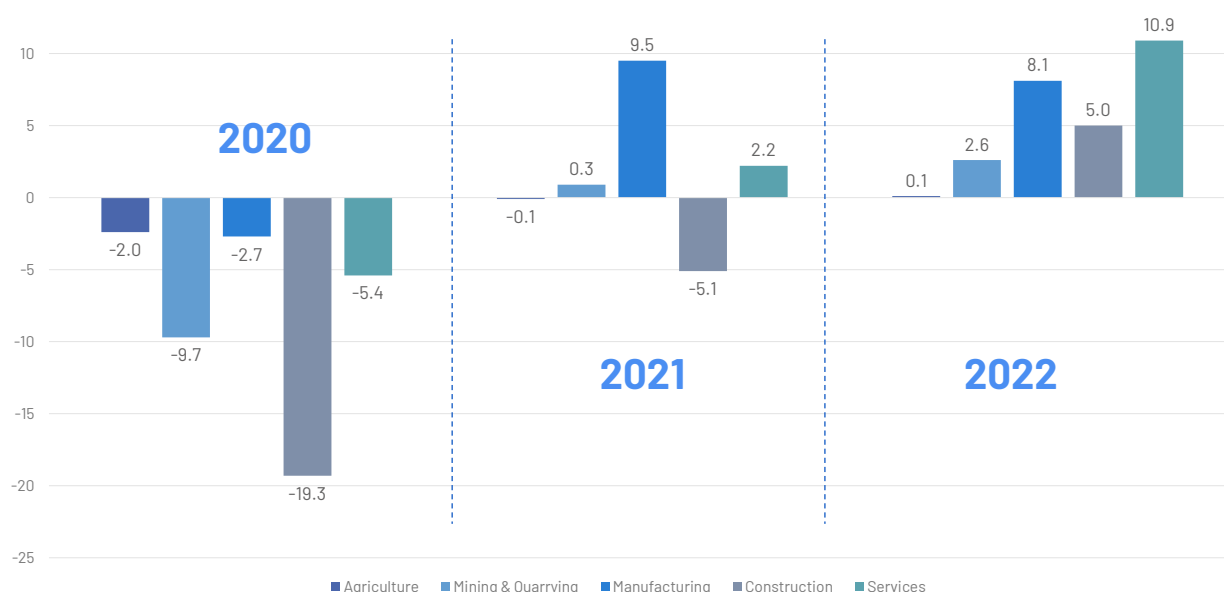
SECTORIAL PERFORMANCE

The stellar performance in 2022 was reflected by the positive growth of all economic sectors led by Services and Manufacturing (**See Chart 3**).

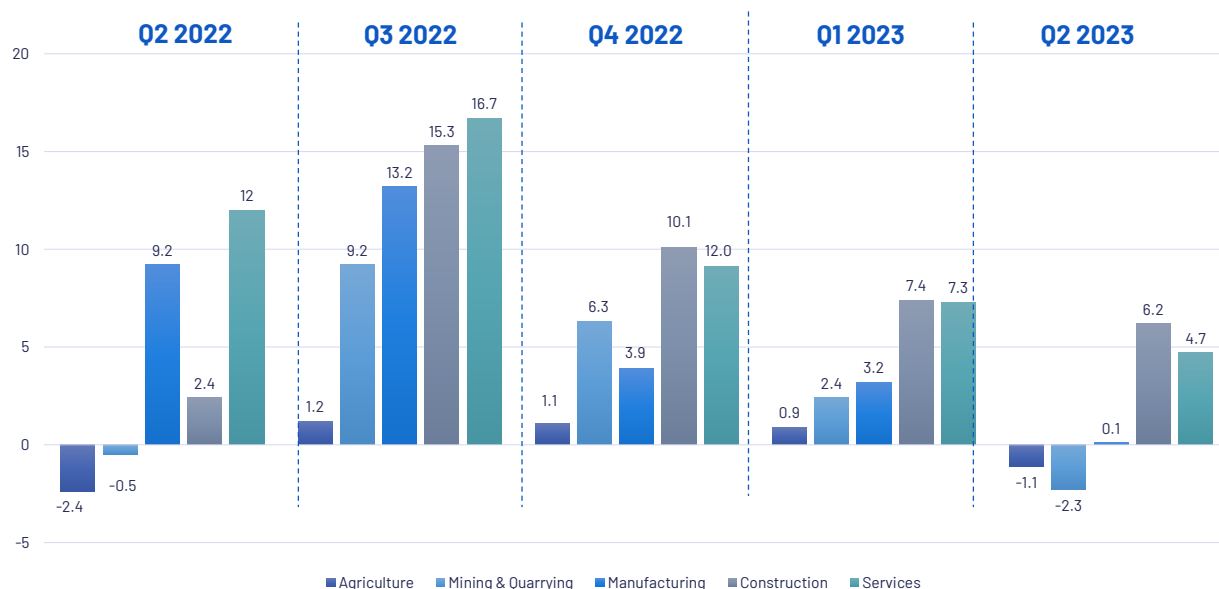
In particular, the services sector expanded appreciably by 10.9% from 2.2% previously and more than

compensated for the slight dip in the manufacturing sector at 8.1% from 9.5% the year before.

Significantly, the construction sector made a resounding comeback to grow by 5.0% after enduring several shutdowns during the pandemic in the previous two years. The resumption of public infrastructure and other private development projects were the main factors for this turnaround.

Chart 3: Growth Rates of Economic Sectors (%) 2020 – 2022

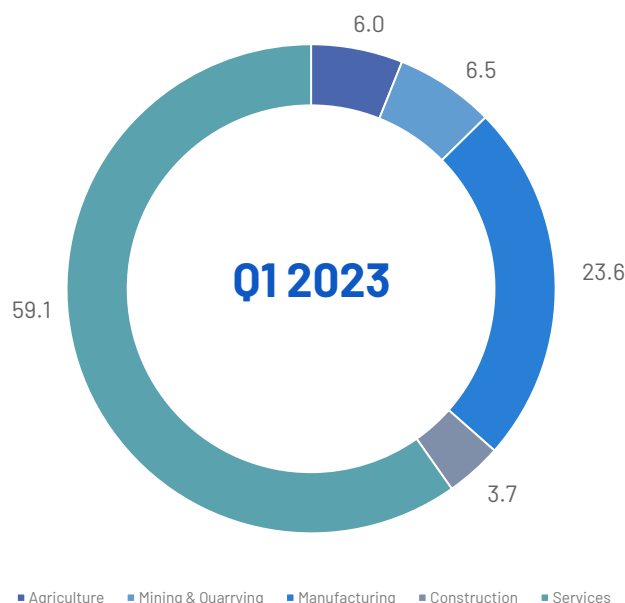
Source: DOSM

Chart 4: Quarterly Growth Rates of Economic Sectors (%) Q2 2022 – Q2 2023

Sources: DOSM

All economic sectors sustained their positive growth into the first quarter of 2023, albeit at less robust rates. (See Chart 4). The decline continued into Q2 2023 with the agriculture and mining & quarrying sectors falling back into the negative zone.

More importantly, Manufacturing hardly registered any growth in Q2 2023 while there was a climbdown by Services to below 5.0%.

Chart 5: Share of Economic Sectors (%) Q1 2023

Source: DOSM

In addition, the Construction sector recorded the highest growth rates in both quarters of the year, indicating its much-needed boost to the national economy at this point in time.

As to be expected, Services and Manufacturing grew their respective share of the economy to 59.1% and 23.6% at the end of Q1 2023 for a combined 82.7% (See Chart 5). The mining & quarrying and agriculture sectors maintained their respective proportions at or above 6.0%.

MSME PERFORMANCE

A critical barometer of Malaysia's socioeconomic wellbeing and journey to become a fully-developed high-income nation is the performance of the micro, small and medium enterprises (MSME).

According to the Annual Report on European SMEs published by the European Commission, MSMEs contributed 51.8% to regional GDP in 2021. In the case of the ASEAN region, MSMEs' share of GDP during the period 2010 – 2020 stood at 40.5%, as pointed out by the Asian Small and Medium-sized Enterprise Monitor 2021 by the Asian Development Bank (ADB).

In Malaysia, MSMEs accounted for 97.4% of all registered businesses and 48.2% of total employment in 2022, but only contributed 38.4% to national GDP (See Infographic 1). Although this quantum falls short

in comparison, it has gradually increased over the years (2021: 37.4%, 2018: 36.6%).

The MSME contribution to national exports has been narrowing in the same timeframe: from 18.6% in 2018 to 11.7% in 2021 and 10.5% in 2022. In all likelihood, this would suggest that MSME output caters primarily to the domestic market.

Statistics by the Department of Statistics Malaysia (DOSM) and SME Corporation (SMECorp) reinforce this supposition as almost 80% of MSMEs are micro business while close to 85% are companies in the services sector.

The Malaysian Government has prioritised the development of MSMEs, introducing various initiatives such as the National Entrepreneurship Policy 2030 to achieve GDP and export contributions by MSMEs of 50% and 30% respectively by 2030.

EXPORT PERFORMANCE

With global demand for merchandise exports tailing off, Malaysia's export revenue has fallen in the first half of 2023 after being the driving force for the economy the year before (See Chart 6 & Chart 7).

Exports in 1H 2023 was down 4.5% in comparison with the same period the year before and a more pronounced 13.5% when compared against the last six

Infographic 1: Economic Performance of MSMEs 2022

**BUSINESS**

97.4%
of total businesses
(**1,173,601 MSMEs**)

78.7%
micro

19.7%
small

1.6%
medium

84.7%
in Services

**GDP**

38.4%
share of total GDP
(**RM580.4 billion**)

11.6%
growth
(above national
growth rate of
8.7%)

**EXPORTS**

10.5%
share of total exports
(**RM144.5 billion**)

16.3%
growth
(above national
growth rate of
14.5%)

**EMPLOYMENT**

48.2%
share of total employment
(**7.59 million workers**)

3.8%
growth
(above national
growth rate of
2.6%)

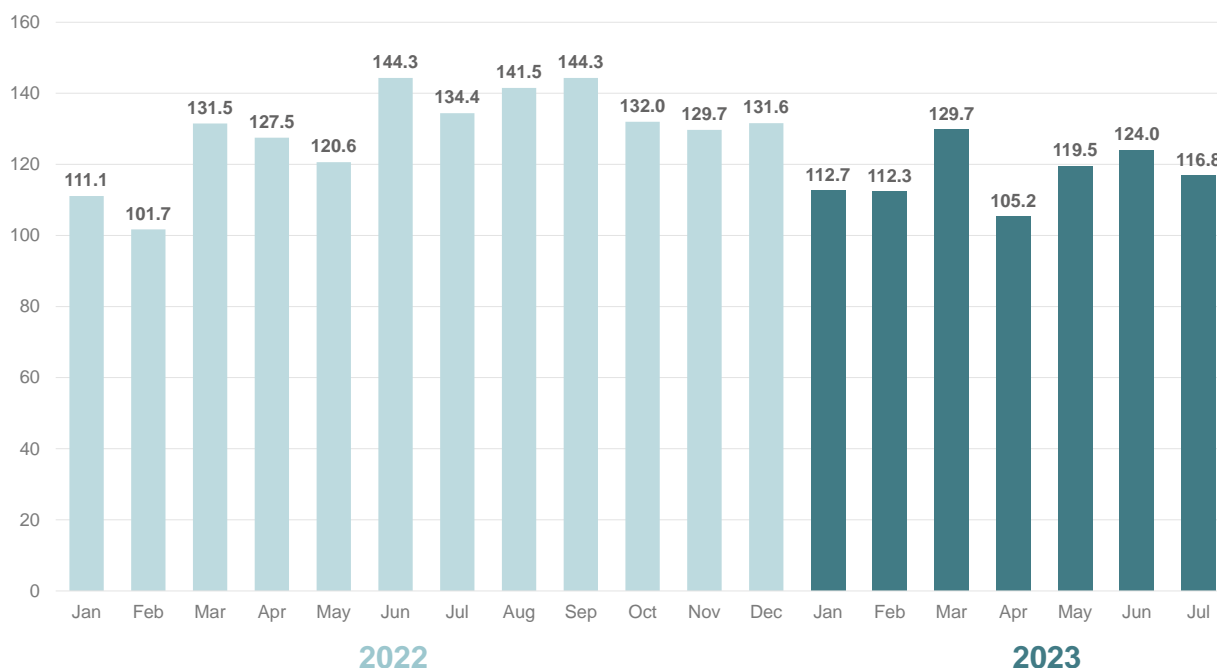
Sources: SMECorp, DOSM

Chart 6: Annual Exports and Growth Rate (RM billion / %) 2018 – 1H 2023



* As compared with 1H 2022

Sources: DOSM, MATRADE

Chart 7: Monthly Exports (RM billion) January 2022 – June 2023

Source: MATRADE

months of 2022. Export revenue grew by 25.0% year-on-year in 2022 to breach the RM1.5 trillion milestone and contributed more than 86.0% to national GDP.

This performance was all the more remarkable given that export revenue only crossed RM1 trillion the year before, after having fallen short of this mark the previous three years (2018 – 2020) in a row.

In the previous two years, Malaysia's export manufacturers had capitalised on growing, and in many cases, pent-up demand from the external market as economies worldwide recovered gradually from dampened activity especially in the first year of Covid-19.

Meanwhile, imports also declined in the first half of 2023, having dropped by 6.5% and 9.7% over the previous two quarters. In 2022, imports expanded by 31.3% to RM1.3 trillion, bringing total trade for the year to RM2.8 trillion. According to DOSM, the growth of total trade by 27.8% is the fastest since 1994. Trade surplus was sustained for a 25th consecutive year, reaching an all-time high of RM255.1 billion in 2022.

DOMESTIC DEMAND

Domestic demand, an aggregate of consumption and investment expenditure, surged to five-year highs

in 2022 in tandem with the sustained recovery of Malaysia's post-pandemic economy.

As expected, private expenditure led the way with growth of 8.1%, supported by expansion of government expenditure by 3.6% for the year. Their respective growth rates are the highest for the period 2018 – 2022 (**See Chart 8**).

Domestic demand has remained resilient during the first half of 2023, anchoring the economy at a time when external demand is beginning to ease. While private consumption has been trending downwards over four consecutive quarters, the Government has taken up the slack by increasing its spending in the second quarter of 2023 (**See Chart 9**).

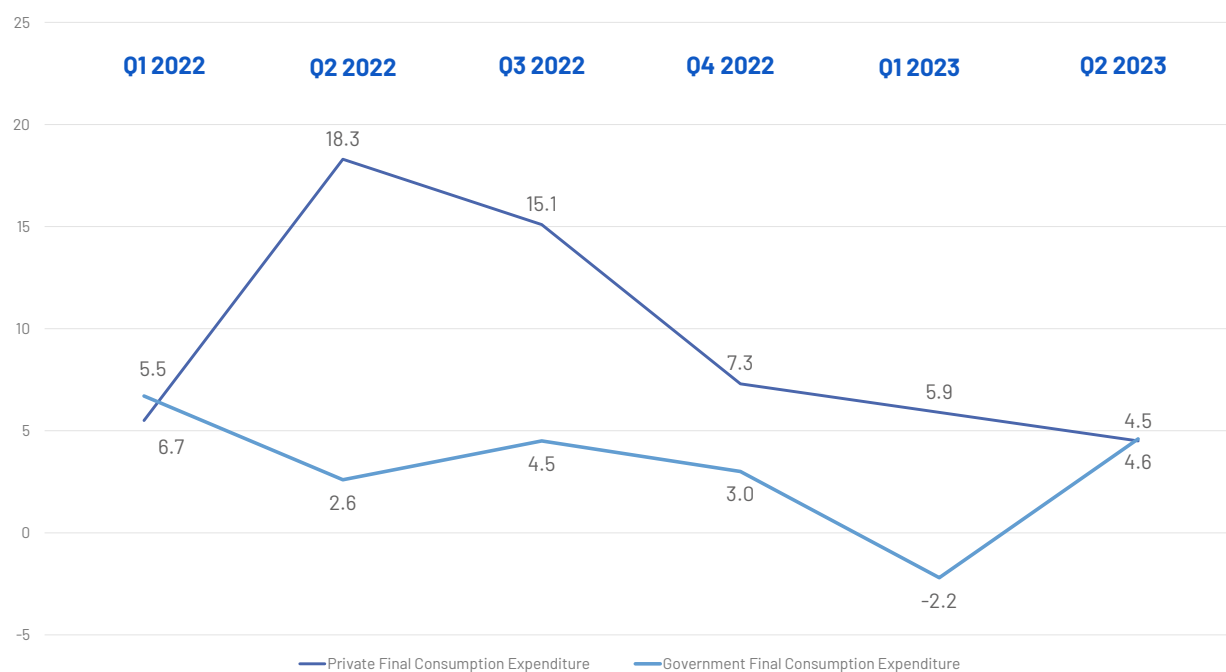
FOREIGN DIRECT INVESTMENT (FDI)

Malaysia remains a beacon for foreign investment with net inflow growing by 48% to RM74.6 billion in 2022 from RM50.4 billion previously, which is the highest over the five-year 2018 – 2022 period (**See Chart 10**).

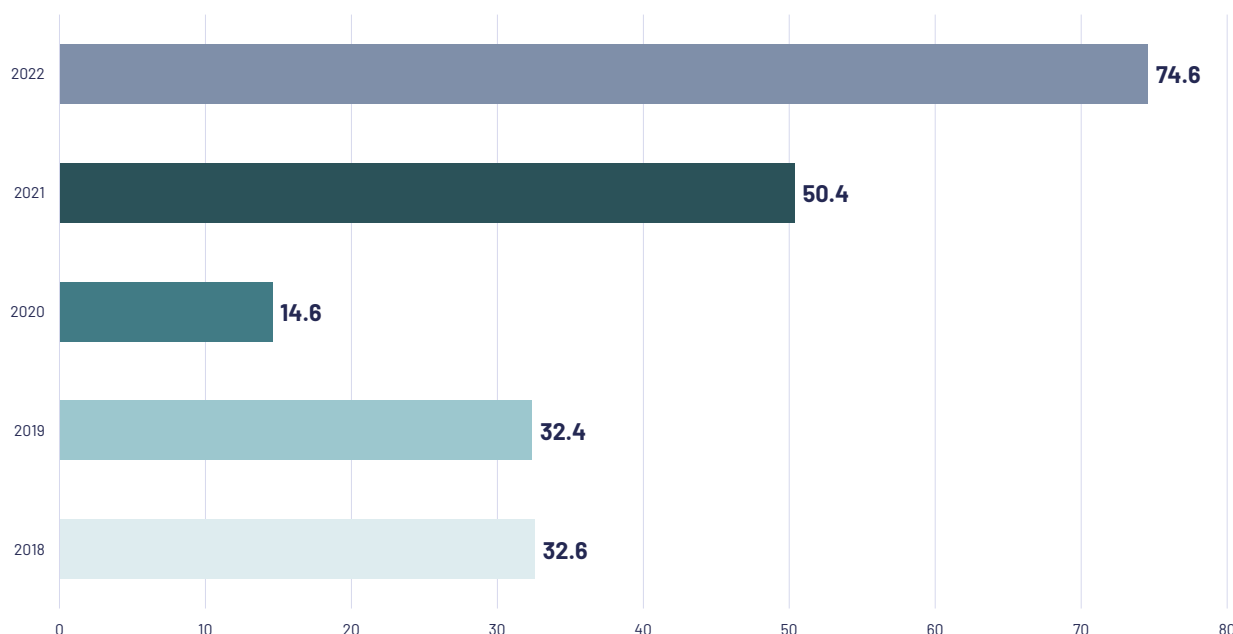
According to DOSM, the country's FDI position stood at RM879.1 billion at the close of 2022 as compared with RM782.0 billion the year before, reflecting a conducive landscape that appeals to foreign investors.

Chart 8: Growth Rate of Private & Public Expenditure* (%) 2018 - 2022

Source: EPU

Chart 9: Growth Rate of Consumption Expenditure (%) Q1 2022 - Q2 2023

Source: DOSM

Chart 10: FDI Net Inflow (RM billion) 2018 – 2022

Source: DOSM

The manufacturing sector received the largest quantum of FDI inflow at RM49.5 billion, followed by Services and Mining & Quarrying. According to statista.com, the US remained the largest source of FDI for Malaysia with Singapore, Japan, Hong Kong and China next on the list.

Malaysia was once again one of the best performing economies in terms of FDI growth (**See Infographic 2**). Based on figures by the United Nations Conference on Trade and Development (Unctad), FDI in Malaysia grew by 39% in 2022.

In comparison, FDI growth for Southeast Asia was 5% and developing economies 4%. These rates were in stark contrast with developed economies where FDI contracted by 37% and the world at large, -12%.

INFLATION

While remaining at elevated levels, headline inflation in Malaysia is expected to ease going forward with BNM forecasting a rate of between 2.8% and 3.8% for 2023. The June inflation rate of 2.4% was the lowest in the first six months of the year.

According to DOSM, inflation over the past few months was driven by restaurants, hotels, food and beverages

as well as miscellaneous goods and services, health and education.

In 2022, inflation rose by 3.3% as a result of global inflationary pressure caused by the combination of post-pandemic pent-up demand and supply chain constraints (**See Chart 11**). Global headline inflation reached 8.7% in 2022, but is expected to moderate to 6.8% in 2023, according to the IMF.

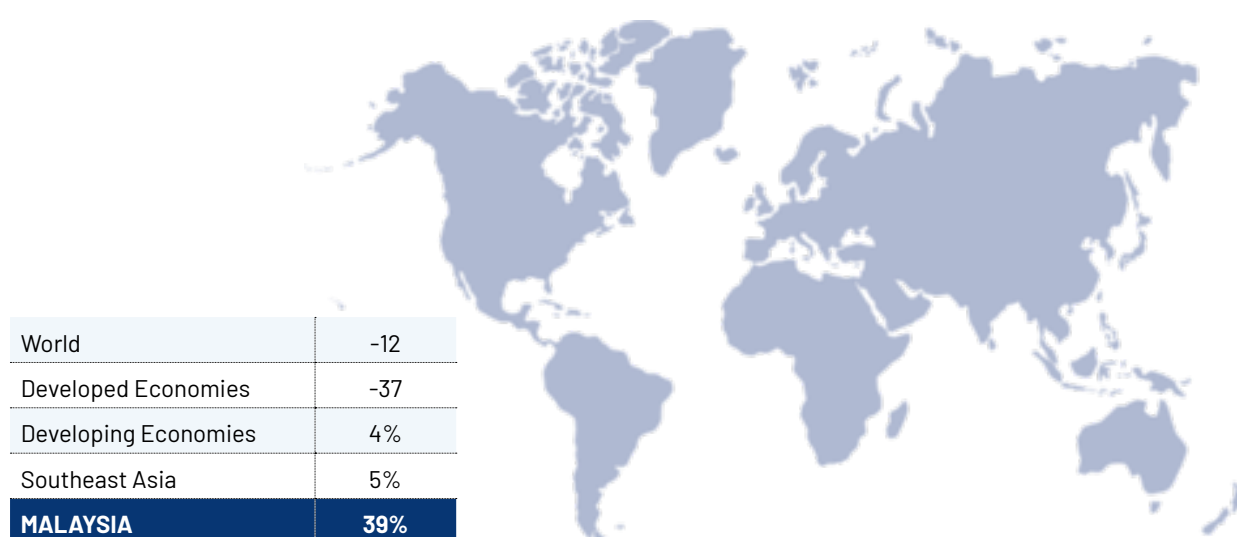
For the second half of the year, inflation is projected to dip, partly due to the higher base in the corresponding period last year. BNM has, however, cautioned that this is subject to changes to subsidies and price controls, global commodity prices and financial market developments.

CURRENCY EXCHANGE

The Ringgit remains under pressure in 2023 due to Malaysia's greater exposure to China's sluggish economy and moderating prices for export commodities such as crude oil and crude palm oil.

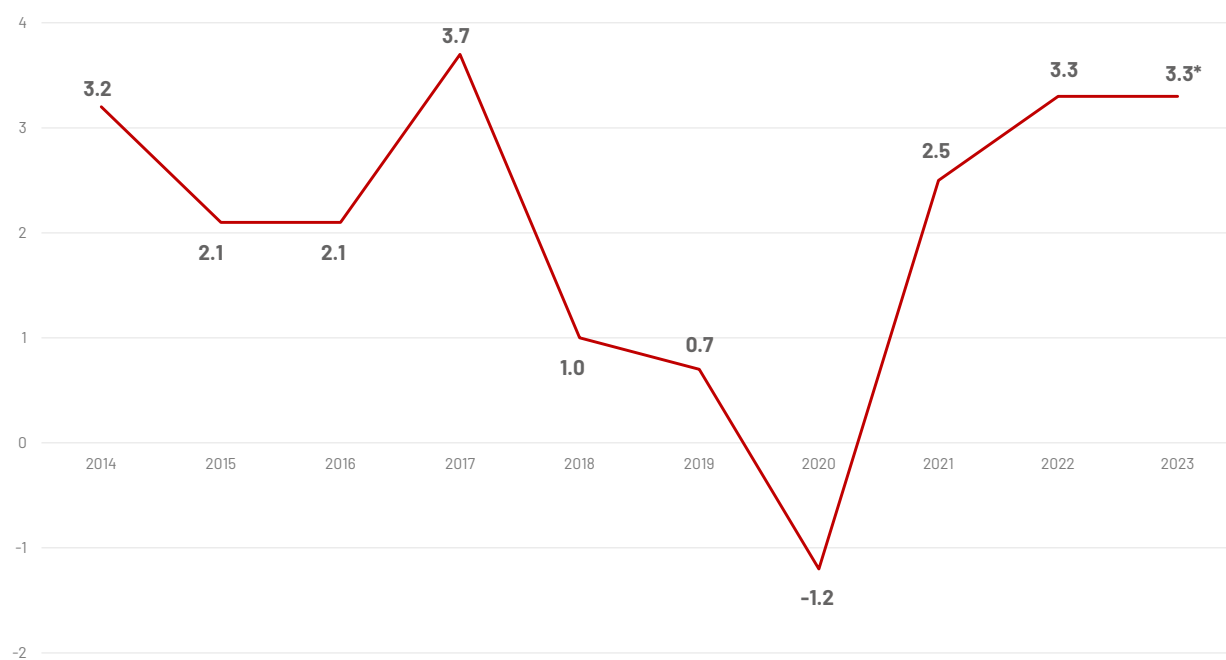
While a weak Ringgit has the potential to boost Malaysia's exports, at the same time, it can stoke inflation via higher import prices of goods and services.

Infographic 2: Comparison of FDI Growth (%) 2022



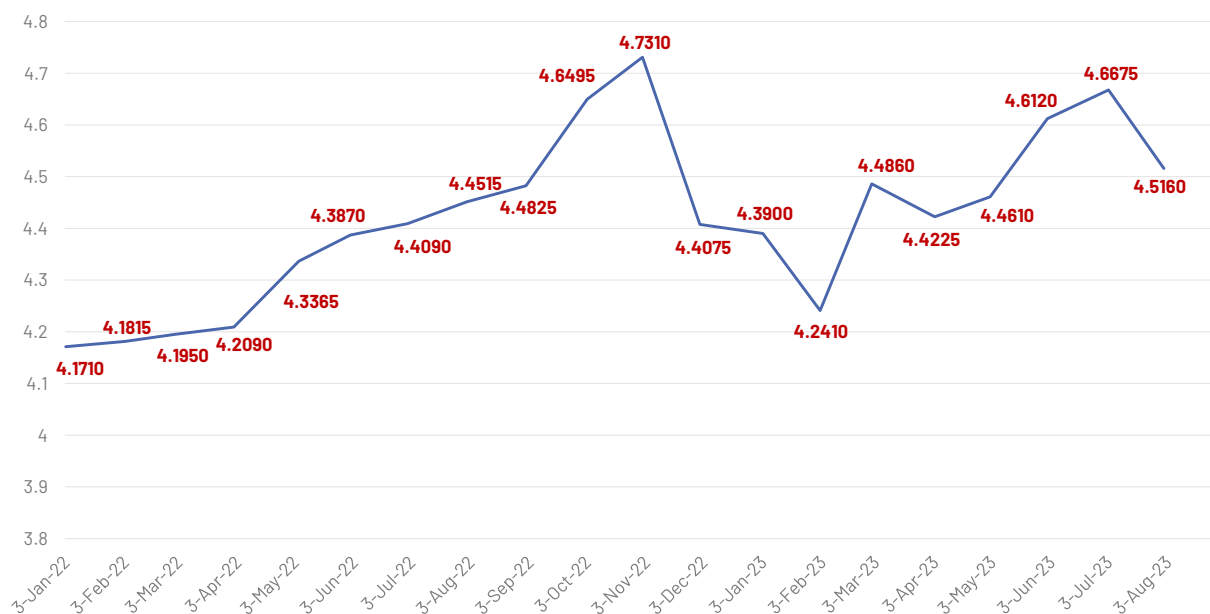
Source: UNCTAD

Chart 11: Inflation Rate (%) 2014 – 2023



* The 2022 forecast represents the average between BNM's projection of 2.8 – 3.8%

Sources: DOSM, BNM

Chart 12: Forex (USD-MYR) 1 January 2022 – 1 August 2023

Source: BNM

The currency had dropped to a historical low against the US dollar in 2022, declining to an exchange rate of 4.7425 on 25 October in response to repeated interest rate hikes by the US Federal Reserve in its bid to lower inflation.

At that point, the Ringgit had depreciated by 13.7% against the greenback since the start of the year. However, the Malaysian currency recovered by the close of 2022 to USD1=4.3900, a drop by 5.3% year-on-year (**See Chart 12**).

The Ringgit also performed poorly against the Singapore Dollar in 2023, similarly dipping to a historical low of SGD1=3.4967. This is largely due to the island republic's monetary policy of a managed float exchange rate regime designed to adjust to variations in other currencies, particularly the US Dollar.

The ringgit is expected to remain at the current level against the US Dollar for the rest of 2023 and into 2024 but may strengthen in the third quarter of 2024 as a

result of proposed actions by Malaysia's Government to drive the economy.

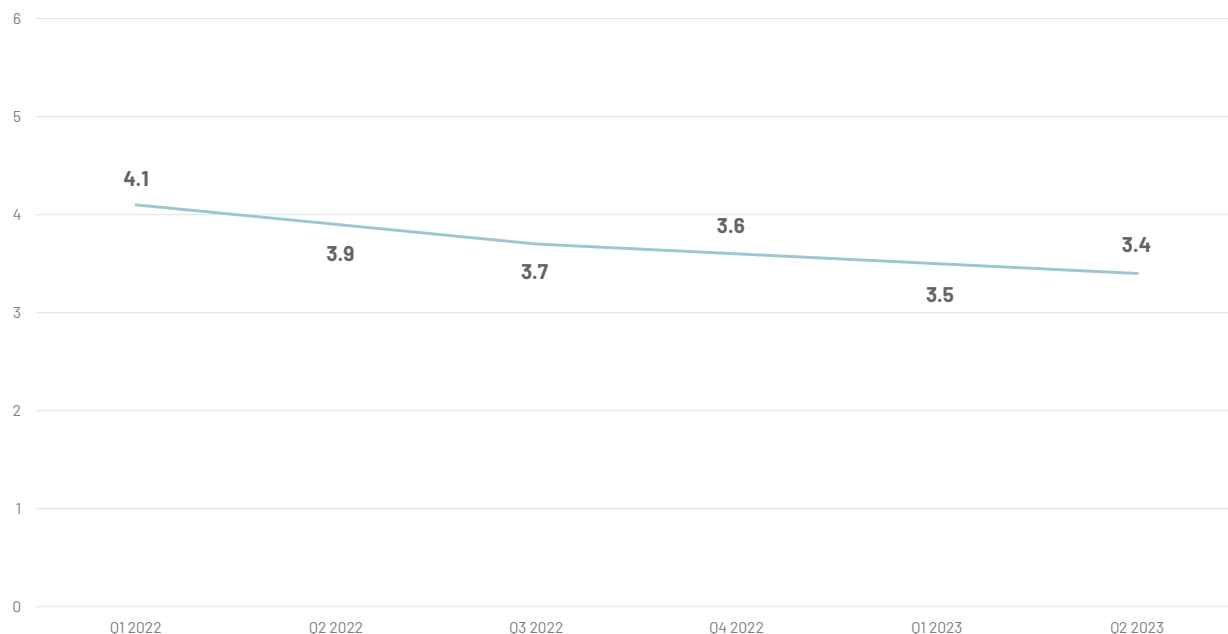
EMPLOYMENT

Employment has been progressively increasing in tandem with the post-pandemic recovery of the economy. The unemployment rate in 2022 was 3.7% as compared against 4.1% in 2021 and 4.5% in 2020.

This rate has further improved this year, with unemployment at 3.4% for Q2 2023 (**See Chart 13**).

Infographic 3 shows the relevant employment statistics for 2022, where the number of employed people rose to 16.73 million while the ranks of the unemployed dropped to just below 600,000.

In addition, the labour force participation rate appreciated during the year to almost 70.0% versus 68.7% the previous year.

Chart 13: Quarterly Unemployment Rate (%) Q1 2022 – Q2 2023

Source: DOSM

Infographic 3: Employment Statistics 2022

Source: DOSM

FACTORS IMPACTING THE ECONOMY

The Malaysian economy is moderating after performing above expectations in 2022 on a combination of global economic recovery post-pandemic leading to a rise in external demand, a similar release of pent-up demand in the domestic market plus the emphatic return of tourism from both foreign and local sources.

From such a high base, it was only natural that the economy would slow down moving into 2023. Although exports appear on the downward trend, domestic demand remains strong via support from consumer spending and private sector investment.

In this section, we review the main factors impacting the economy through the perspective of the global economic landscape, geopolitical events and developments as well as commodity prices and interest rates.

GLOBAL ECONOMY

The IMF expects the world economy to grow by 3.0% in 2023. In its World Economic Outlook, July 2023 Update, the IMF stated that: *“The rise in central bank policy rates to fight inflation continues to weigh on economic activity. Global headline inflation is expected to fall from 8.7 percent in 2022 to 6.8 percent in 2023 and 5.2 percent in 2024 ... in most economies, the priority remains achieving sustained disinflation while ensuring financial stability.”*

In 2022, the global economy was weighed down by the outbreak of war between Russia and neighbouring Ukraine, which led to inflation spiking across Europe and other parts of the developed world.

According to the latest estimates by the IMF, global growth dropped to 3.5% during that year from 6.0% the year before.

In addition, the world's second largest economy of China was constrained by its Zero-Covid policy, which severely hampered economic activities and dampened economic recovery to growth of only 3.0% for the year.

GEOPOLITICAL AND GEOECONOMIC DEVELOPMENTS

On all accounts, the conflict between Russia and Ukraine does not appear to be nearing any form of resolution. The European Central Bank has stated that the war will continue to impact on energy and food markets, squeeze supply and push up prices.

Arguably the greatest threat to the world and world economy is the climate crisis, which seems to be heading towards a point of no return. Parts of the world in 2022 were subject to extreme climate conditions including heatwaves, drought and wildfires. If left unchecked, climate change will impact severely on national and global economics / socioeconomics.

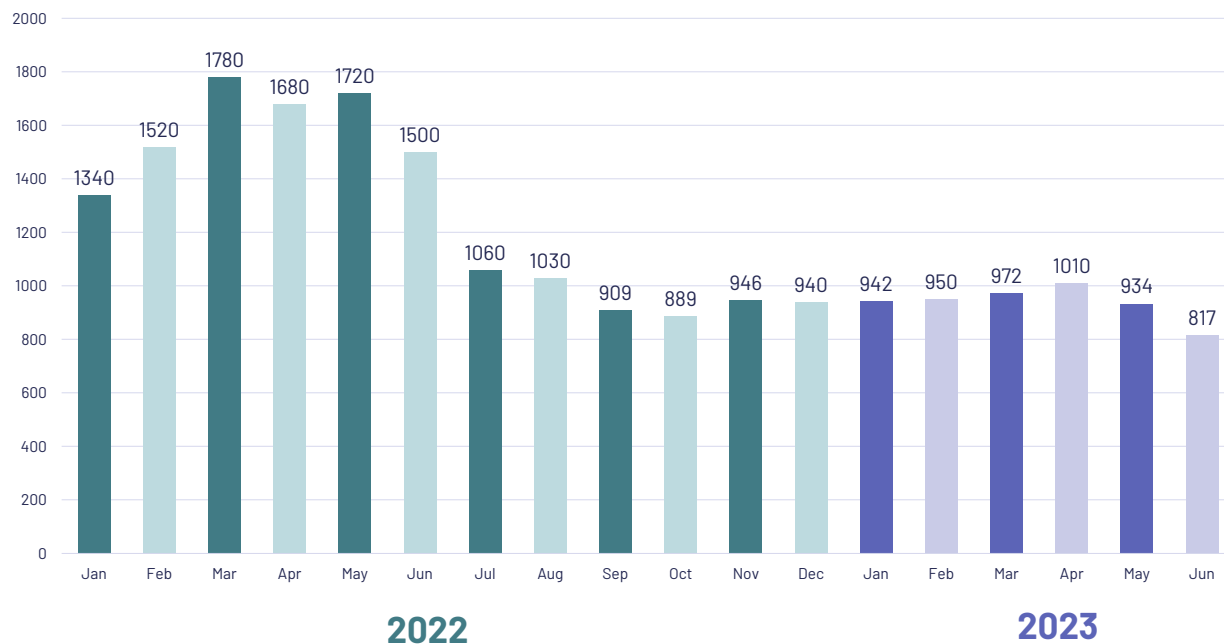
The collapse of several Chinese property developers in 2023 is another issue that could have knock-on effects on China's economy and by extension trading nations such as Malaysia. Developers such as Evergrande and Country Garden, which account for 40% of China's residential properties, have defaulted on loans in excess of US\$300 billion.

COMMODITY PRICES

Crude palm oil (CPO) and crude oil, along with their manufactured derivatives are Malaysia's largest export commodities. They account for an estimated 20% of export revenue based on statistics by the Malaysia External Trade Development Corporation (Martrade).

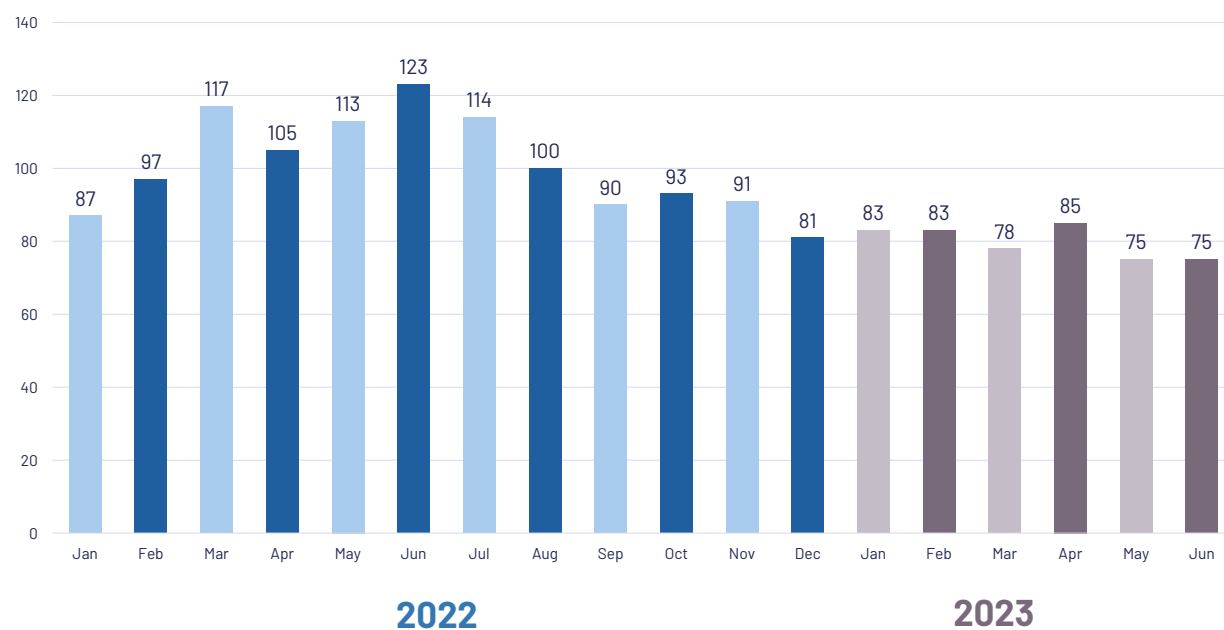
In 2022, prices of both commodities soared in the first half of the year, with CPO reaching a record level of US\$1,780 per tonne and crude oil touching US\$123 per barrel, close to its all-time high of US\$147 (**See Chart 14 and Chart 15**).

The high prices contributed to Malaysia's bumper export performance for the year. Since then, however, prices have moderated along with the drop in demand. CPO prices per tonne dropped below US\$1,000 in September 2022 and have mainly stayed below that threshold while crude oil prices per barrel have dipped below US\$100 since the same month.

Chart 14: Average Monthly Palm Oil Prices (US\$) Jan 2022 – June 2023

*All prices have been rounded off.

Source: Indexmundi.com

Chart 15: Average Monthly Crude Oil Prices (Brent) (US\$) Jan 2022 – June 2023

*All prices have been rounded off.

Source: Statista.com

Recommendations on Managing Volatility of Commodity Prices

The following are several recommendations to manage the volatility of commodity pricing. Depending on the market segment and strategies, a combination of these approaches may be warranted. However, these are long term strategies that may not yield the expected results in the short term.

- Diversifying their portfolios by investing in a range of commodities can help spread risk. This way, if one commodity experiences a sharp price drop, gains in other commodities can offset the losses.
- Using futures and options contracts to hedge against price volatility. Producers can lock in prices for their future production, while consumers can secure prices for their future purchases.
- Studying the supply and demand fundamentals of the specific commodity is crucial. Players monitor factors like weather, geopolitical events, and economic data to anticipate price movements.
- Analyse historical price patterns and charts to identify trends and potential reversal points. Technical analysis tools like moving averages and Bollinger Bands can assist in making trading decisions.
- Implementing strict risk management practices such as setting stop-loss orders to limit potential losses and using position sizing to control exposure.
- Continuously monitoring news, research reports and market sentiment to stay ahead of developments that may affect prices.
- Managing storage and transportation logistics effectively to take advantage of price differences in different locations (arbitrage).
- For businesses reliant on commodities, optimising their supply chain can help mitigate price volatility by reducing exposure to sudden price changes.
- Establishing long-term contracts with suppliers or consumers can provide stability in pricing and reduce exposure to short-term price fluctuations.
- Traders and investors may speculate on future price movements, but this approach carries higher risk and requires careful analysis.
- For commodities priced in foreign currencies, monitoring and hedging against currency fluctuations can be important.
- Governments may intervene in commodity markets to stabilise prices through measures like strategic reserves or price controls.

INTEREST RATES

In a bid to counter inflationary pressure, BNM raised the Overnight Policy Rate (OPR) four times in 2022 and once more in 2023, taking the rate from 1.75 before 11 May 2022 to 3.00 on 3 May 2023.

Following the latest increase, BNM explained its decision as follows: *“For most central banks, the monetary policy stance is likely to remain tight. The growth outlook remains subject to downside risks, mainly from a slower momentum in major economies, higher-than-anticipated inflation outturns, an escalation of geopolitical tensions, and a sharp tightening in financial market conditions.”*

“At the current OPR level, the monetary policy stance is slightly accommodative and remains supportive of the economy. The MPC (central bank’s Monetary Policy Committee) continues to see limited risks of future financial imbalances.”

NATIONAL DEBT

After breaching the 60% ceiling during the first pandemic year of 2020, Malaysia’s debt-to-GDP ratio has stayed above this mark since then. By the close of June 2023, the Ministry of Finance revealed this ratio stood at 63.8% with debts of an estimated RM1.0 trillion and over RM1.5 trillion if other liabilities are taken into consideration.

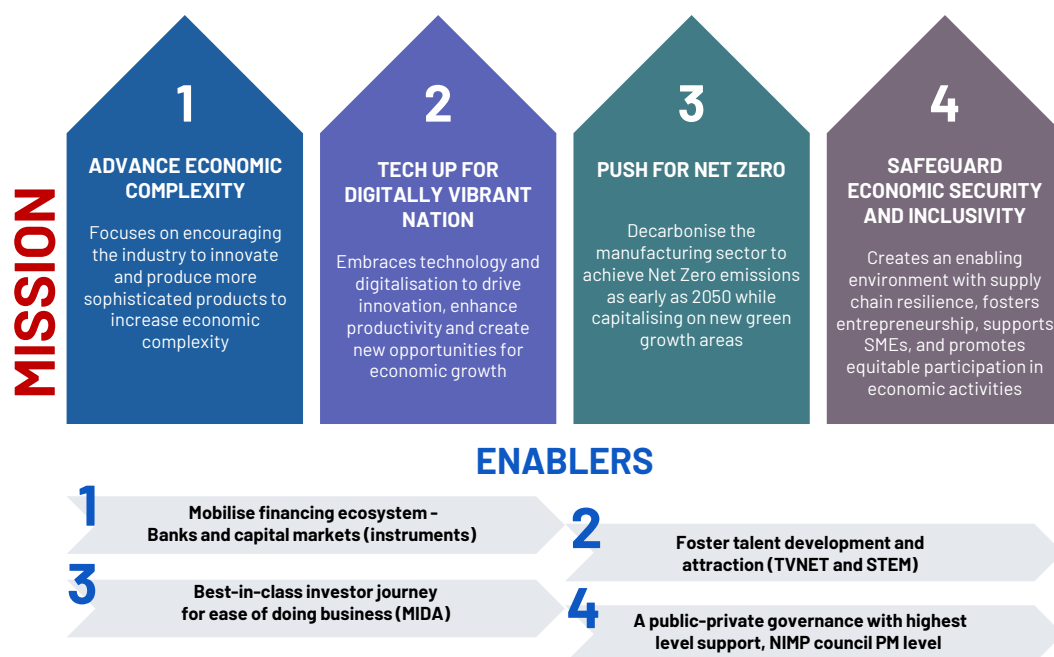
According to the [worldpopulationreview.com](https://www.worldpopulationreview.com), a ratio above 77% could hinder economic growth and expose such economies to market volatility while placing them at risk of defaulting on their financial obligations.

Addressing the situation recently, Prime Minister Dato’ Seri Anwar Ibrahim was quoted as saying this *“represents a significant challenge and that to spend and borrow as much as possible will only result in the deterioration of the nation’s economic management”*.

Towards this end, the Premier is against further borrowing to prevent Malaysia’s debt from escalating beyond manageable levels.

ECONOMIC OUTLOOK AND PIKOM'S PERSPECTIVES

Infographic 4: Malaysia's National Industrial Master Plan (NIMP) 2030



Despite moderating in 2023, Malaysia's economy is considered healthy with a favourable long-term growth outlook.

Over the next two years, the national economy is expected to consolidate while building a growth foundation through innovation and investments in digitalisation, trade expansion and the shift to a net-zero carbon economy.

In recognising future trends and prospects, the recently-launched National Industrial Master Plan (NIMP) 2023 incorporates three of the abovementioned areas: innovation, digitalisation and net-zero carbonisation (**See Infographic 4**).

As highlighted by the Prime Minister, the NIMP 2030 is a key component of *Ekonomi Madani*, a framework designed to restructure the economy and turn Malaysia into a regional economic powerhouse.

In his speech during the unveiling of NIMP 2030, the Prime Minister stated that it "is timely to expedite the transformation of industries in Malaysia, aligning them with the country's vision."

Meanwhile, the national economy is poised to grow by 4.0 – 5.0% this year and also in 2024. According to most analyses, domestic demand will prop up the economy in the face of moderating external demand. At the same time, inflation is set to ease in response to global trends and domestic monetary policies.

The following represent several perspectives on Malaysia's economic outlook:

BNM: "With the challenging global environment, the Malaysian economy is projected to expand close to the lower end of the 4.0% to 5.0% range in 2023. Growth will continue to be supported by domestic demand amid improving employment and income as well as implementation of multi-year projects. Tourist arrivals are expected to continue rising, which would support tourism-related activities."

ADB: "Growth is expected to moderate, and inflation to decelerate, in 2023 and 2024, mainly tracking changes in the global environment. Malaysia should promote gender-inclusive policies to boost women's participation in the labour market."

Infographic 5: Growth Forecast for Malaysian Economy 2023 & 2024



	2023	2024
BNM	4.0 - 5.0%	
OECD	4.0%	
ADB	4.7%	4.9%
WB	4.0%	
IMF	4.5%	4.4%

IMF: "Lower growth and elevated inflation define the near-term outlook. Growth is projected to moderate to 4.5 percent in 2023 reflecting largely the global external headwinds. Inflation is projected to remain elevated at 3.3 percent in 2023, with likely persistence in core inflation,

Yet, there remains downside risks this year and 2024. As mentioned earlier, the external market in the developed west continue to be weak while economic recovery in China has yet to pick up pace.

Mid-Term Review (MTR) of 12th Malaysia Plan: Challenges Outlined

The Malaysian government's Mid-Term Review (MTR) of the 12th Malaysia Plan (12MP) includes several noteworthy points and initiatives:

- **Revenue and GDP Targets:** The government has increased its revenue target for 2021-2025 to RM1.43 trillion, up from the previous forecast of RM1.22 trillion. Similarly, the GDP growth target has been raised to 5% to 6%, from 4.5% to 5.5%. This shows a more optimistic economic outlook.
- **Fiscal Deficit:** The MTR maintains the fiscal deficit target at 3% to 3.5% of national GDP by 2025, indicating a commitment to fiscal responsibility, especially after an expected deficit of 5% this year.
- **Development Expenditure:** The government has increased its development expenditure to RM415 billion over the five-year period, emphasising investments in infrastructure and development projects to spur economic growth.
- **Taxation:** The introduction of a capital gains tax in 2024 and the exploration of progressive taxation policies are steps towards increasing government revenue. This indicates a focus on redistributive policies and tax reform.
- **Fiscal Responsibility Act:** The upcoming Fiscal Responsibility Act, to be tabled in October's parliamentary session, suggests the government's commitment to managing debt and liabilities more effectively.
- **Efficiency Measures:** Efforts to expand the revenue base, streamline tax reliefs, reduce leakages, and improve debt management are mentioned. These actions aim to ensure efficient use of public funds.
- **Development Project Oversight:** The commitment to monitor development projects thoroughly to reduce spending leakages and wastages indicates a focus on transparency and accountability.
- **Progressive Taxes on Unhealthy Products:** The government's

consideration of progressive taxes on unhealthy products aligns with global health and wellness trends while generating revenue.

Overall, the MTR presents a more optimistic economic outlook and a commitment to fiscal responsibility and revenue enhancement through taxation and efficient public spending. However, its success will depend on effective implementation and monitoring of the proposed measures.

PIKOM's Take on Anticipated Challenges

While the government's MTR outlines several positive initiatives, there are also potential challenges to consider:

- The MTR's optimistic GDP growth target of 5% to 6% may be challenging to achieve, especially given global economic uncertainties, the ongoing impact of the Covid-19 pandemic and potential external shocks.
- Increasing the revenue target significantly to RM1.43 trillion is ambitious. Achieving this target will require effective tax collection, which can be

challenging given Malaysia's complex tax system and issues with tax evasion.

- While the MTR maintains a commitment to fiscal discipline, achieving a deficit target of 3% to 3.5% of GDP by 2025 might be challenging, especially if revenue collection falls short or if there are unexpected expenditure pressures.
- Implementing new taxes like the capital gains tax and exploring progressive taxes can face resistance from various stakeholders. Ensuring that these taxes are fair, well-structured, and efficiently administered will be crucial.
- The MTR emphasises improving debt management. Successfully managing public debt requires careful planning and adherence to fiscal responsibility, which may be difficult to achieve, especially with

competing demands for public spending.

- While the MTR mentions monitoring development projects to reduce wastage, executing these projects efficiently and transparently can be challenging, given historical issues with project delays and cost overruns.
- Achieving consensus on tax policy changes and fiscal measures in a politically diverse environment may be challenging. Political support for these initiatives can be crucial for their success.
- Malaysia's economy is influenced by global factors, including trade tensions and commodity price fluctuations. These external factors can impact the government's economic targets and fiscal stability.
- Ensuring that the revenue-enhancing and cost-saving

measures proposed in the MTR lead to long-term fiscal sustainability is a challenge. It requires ongoing commitment and monitoring beyond the current five-year plan.

- The MTR's focus on progressive taxation and revenue generation should also consider their impact on income inequality and social equity. Striking a balance between revenue generation and ensuring a fair distribution of the tax burden is crucial.

In summary, while the MTR outlines ambitious goals and positive steps towards fiscal responsibility and revenue enhancement, there are challenges related to economic uncertainties, political consensus, and the effective implementation of proposed measures. Careful planning and adaptability will be essential to address these challenges successfully.

An insightful analysis of the Malaysia and global economic outlook for the remainder of 2023 and 2024 should focus on key perspectives including the impact on the digital industry, SMEs and consumers.

The major challenges over the next 22 months include, among other issues the following:

- Stability of the current unity government;
- Effectiveness in implementation of Ekonomi MADANI and NIMP 2030;
- Management of national debt;
- Performance of the weak Ringgit;
- FDI inflow including new investments for NIMP missions;
- External factors including the export market, commodity prices, geopolitical conflicts and divergent interest rates.

For the moment, issues and factors that can be put on the back burner include:

- Inflation, which is already easing;
- Unemployment, which has been dramatically reduced.
- **Currency and Exchange Rates:** The appreciation of the USD against other currencies, including the Malaysian Ringgit, could impact import costs, foreign investments, and export competitiveness. Monitoring and adapting to exchange rate fluctuations will be crucial for businesses and policymakers.
- **Commodities Prices:** Fluctuations in commodities prices, including oil and natural gas, can significantly influence Malaysia's economy due to its status as a commodities exporter. The stability of global commodities markets will have implications on government revenues and trade balance.
- **Geopolitical Conflicts:** Ongoing geopolitical tensions and conflicts, such as trade disputes or political unrest, can disrupt global supply chains, impacting trade and investment flows. The resolution of these conflicts or their escalation will have consequences for economic stability.

- **FDI:** FDI is an ingredient for the economic health and is a 'lifeline' to an ailing economy. Competition among regional economies for FDI has steepened and transitional attractions and values are not the only factors since the inclusion of environment and sustainability factors.
- **Import-Export:** International trade plays a vital role in Malaysia's economy. Continued efforts to diversify export markets, reduce trade barriers and enhance competitiveness will help mitigate risks associated with global economic uncertainties.
- **Impact on the Digital Industry:** The digital sector has been a significant driver of Malaysia's economic growth. While digital transformation and increased demand for technology-driven solutions present opportunities, disruptions in the global supply chain and talent shortages may pose challenges. Collaboration between the government, industry players and academia is crucial to address these concerns and maintain the sector's competitiveness. The key challenges inherent in our industry are brain drain to developed economies with higher compensation, and skills deficiency of fresh graduates rendering them unemployable and their tendency to take the easy way out by joining the gig economy. Furthermore, we are also prone to being users rather than creators of technology, which will always place us behind others in this field. Finally with the ringgit depreciation against the USD, our imported components will be more expensive and in the medium term this will impact the industries and consumers.
- **SMEs:** They are the backbone of Malaysia's economy, contributing to employment and innovation. Economic uncertainties can impact their growth and sustainability. Access to financing, technology adoption and targeted government support programmes will be essential to mitigate risks and foster SME resilience.
- **Consumers:** Economic fluctuations can influence consumer purchasing power, impacting their spending behaviour and overall sentiment. Rising inflation and currency depreciation may lead to higher costs of living, affecting households' disposable income. Government measures such as social protection programmes and price stability initiatives can help alleviate the burden on consumers. A population of digitally-enabled consumers will be a gigantic step forward in building the nation. And there is confidence that

Malaysia can potentially achieved such status in the Southeast Asian region (excluding Singapore). An immediate initiative is to ensure that all our urban regions including East Malaysia are internet-enabled even with just the base 3G or 4G.

MID-YEAR SENTIMENT SURVEY BY PIKOM

Given the host of challenges, a Mid-Year Economic and Industry Survey conducted by PIKOM indicated an overall negative sentiment among the private sector including digital companies in Malaysia. This is also very much in line with our analysis in this report.

Approximately three quarters of survey respondents expressed pessimism over the economic outlook for the remainder of this year. Among SMEs, expectations were even lower with more than 90% concerned that the unfavorable outlook would impact on their businesses.

In addition, seven in 10 respondents expected the currency exchange rate and inflation to be high to very high.

To mitigate the risks associated with the aforementioned economic challenges, several strategies can be implemented at different levels. Here are some potential mitigating strategies:

- **Government Initiatives:**
 - Implement proactive fiscal policies to manage inflationary pressures, strike a balance between economic growth and price stability, and protect vulnerable segments of society from the impact of rising costs.
 - Strengthen regulatory frameworks and ensure fair competition to foster a conducive business environment and attract foreign direct investment.
 - Enhance support programmes for SMEs, including access to financing, capacity building, and technology adoption, to enhance their resilience and competitiveness.
 - Promote economic diversification and reduce dependency on commodities by encouraging the growth of non-commodity sectors such as technology, renewable energy and manufacturing.
- **BNM Measures:**
 - Adopt prudent monetary policies to manage inflation while supporting economic growth.

- Monitor and manage exchange rate fluctuations to ensure competitiveness and stability in the global market.
- Facilitate liquidity management in the financial system to support businesses and promote investment.

● **Collaboration and Partnerships:**

- Foster collaboration between the government, industry, and academia to address talent shortages in the IT sector through upskilling and reskilling programmes.
- Encourage partnerships between large corporations and SMEs to facilitate technology transfer, access to markets and knowledge sharing.
- Strengthen international cooperation to address geopolitical conflicts and ensure stable trade and investment flows.

● **Risk Management and Adaptation:**

- Conduct thorough risk assessments and scenario planning to anticipate and prepare for potential economic shocks.
- Enhance supply chain resilience by diversifying sourcing options, developing local suppliers, and leveraging digital technologies.
- Encourage businesses to adopt hedging strategies to mitigate currency risks.
- Promote responsible and sustainable business practices to minimise the environmental impact and ensure long-term economic stability.

● **Consumer Support:**

- Implement social protection programs to alleviate the burden on vulnerable households and ensure access to basic necessities.
- Strengthen consumer education and protection mechanisms to empower individuals in making informed financial decisions and protect their rights.

Navigating the economic challenges and uncertainties of the remainder of 2023 requires a multi-faceted approach involving government initiatives, central bank measures, collaboration and partnerships, risk management, and consumer support.

By implementing these mitigating strategies, Malaysia can strive to maintain economic stability, foster growth, and minimise the negative impact on the IT industry, SMEs and consumers.

PIKOM's PROJECTIONS

METRIC	2023 FORECAST	AGAINST 2022
GDP	4.2	8.7
Exports	< RM1.40 trillion	RM1.55 trillion
Unemployment	3.3	3.3
Currency (average)	4.56	4.40
Inflation	3.3	3.3
OPR (by year end)	3.00	3.00

PIKOM's Estimates

SECTION B

DIGITAL ECONOMY REVIEW AND OUTLOOK IN MALAYSIA



The current post-pandemic period is an exciting time for Malaysia's digital economy with the nation well on course to becoming a regional hub for technology investment, innovation and integration.

The pervasive shift to all things digital following the onset of Covid-19 represents an inflection point that is building momentum for the use and development of tech platforms and applications across the board.

Local consumers, businesses and government agencies now count as among the most digitally-enabled and tech-empowered, a status that has obviously attracted multinational investors and global talent to local shores.

A case in point is the commitment made in March this year by cloud computing giant Amazon Web Services (AWS) to invest US\$6 billion (RM25.5 billion at the prevailing exchange rate) to build an AWS Infrastructure Region here. *(Further details later in this chapter)*

The following month, digital infrastructure developer DigitalBridge Group pledged an investment of RM4 billion for data centres, telecommunication towers and fibre-optic networks for this year alone. Then in June, Australia's NextDC Ltd announced it will invest AUD1 billion (RM3 billion) over the next five to 10 years to build its first overseas data centre. *(Further details later in this chapter)*

With this, total investments in cloud computing, data centres and data hosting services have climbed to almost RM80 billion since 2021, according to the Malaysia Investment Development Authority (MIDA).

With 30 data centres and counting, Malaysia is considered the premier data centre market in Southeast Asia with a value estimated by global market analyst Arizton in excess of US\$1 billion and poised to exceed US\$1.5 billion by 2027.

To capitalise on this surge of investments, the Government via the Malaysia Digital Economy Corporation (MDEC) has set a target of attracting a further RM1 billion for other digital sectors such as finance, trade, services, content, tourism, agriculture, cities, health and the Islamic economy. *(Further details later in this chapter)*

For these reasons, Communications and Digital Minister Fahmi Fadzil has labelled the country a potential "Asian digital tiger" and has expressed confidence the digital economy would meet its goal of contributing 25.5% of the national gross domestic product (GDP) by 2025.

By PIKOM's calculations, this target may even be achieved sooner than the abovementioned timeline. As the National Tech Association of Malaysia, PIKOM conducts and presents forecasts for the digital economy in this annual publication.

The following section reviews the performance of the digital economy and its various components in 2021 since the Department of Statistics Malaysia (DOSM) only releases data on the previous year's ICT Satellite Account in October.

As such the data for 2022 will be made available the month after this report is published. Nevertheless, we have included forecasts, trends and opinions to provide readers with a performance estimation for 2022 and 2023.

PERFORMANCE OF THE DIGITAL ECONOMY

Chart 1: Share of Digital Economy to National Economy (%) 2017 - 2024



The forecasts for 2022 - 2024 were determined with the following approach: First, we extrapolated the growth of the digital economy using geometric mean as the basis of calculation. Next, we projected the growth of the national economy using confirmed data (2022) and forecasts for 2023 (BNM) and 2024 (Statista). The share of the digital economy is then the size of the digital economy as a proportion of the national economy.

*Forecast

Sources: DOSM, BNM, Statista & PIKOM Estimates

The digital economy is poised to reach 24.4% in GDP contribution this year and achieve the Government's goal of 25.5% share of the national economy a year earlier than expected in 2024 (**See Chart 1**).

PIKOM's projections indicate the size of the digital economy will also reach RM428.8 billion in 2023 and RM469.5 billion in 2024, and in all probability, breach the half-trillion ringgit milestone by 2025.

Importantly, **Chart 1** shows a sustained upward trend for the growth of the digital economy, one that is set to double in just eight years since 2017 while accounting for an ever-increasing share of the economic pie.

The latest figures released by DOSM estimated a digital economy contribution of RM359.3 billion to GDP for a 23.2% share of the national economy in 2021.

The digital economy is set to grow at near double-digit rates for 2023 and 2024, according to PIKOM's estimates. The projected growth rates of 9.3%, 9.2% and 9.5% for 2022 - 2024 are a significant improvement from the pre-pandemic years up to 2019 (**See Chart 2**).

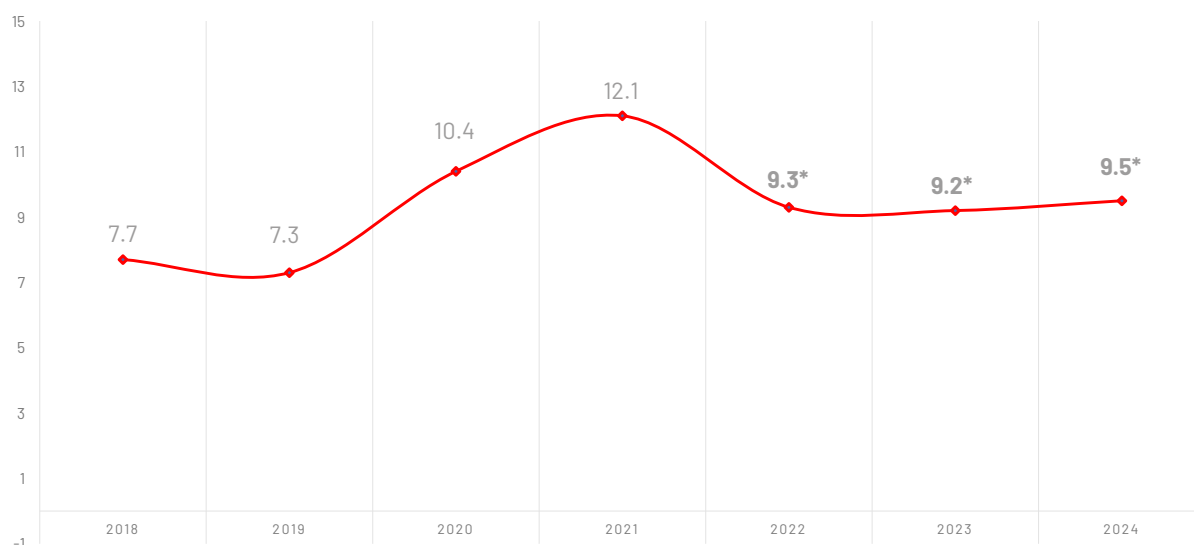
Clearly, the new normal precipitated by Covid-19 had accelerated the pace of digital development and broad-based adoption, as can be seen by the double-digit growth of the digital economy in 2020 and 2021.

Growth reached a peak of 12.1% in 2021 as Malaysian society, businesses and government migrated en masse to digital tools and platforms as an alternative means to resume work, life and play.

Since then, it is only natural that the digital economy will continue expanding, albeit at a slower rate compared to 2021 due to the high-base effect of that year.

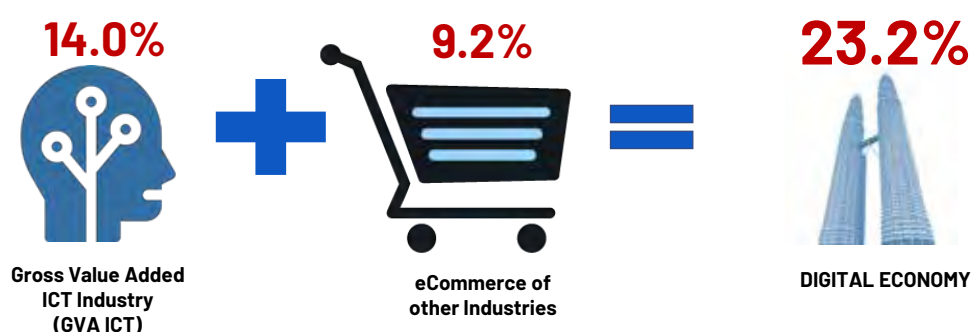
CONTRIBUTION BY DIGITAL ECONOMY COMPONENTS

(While DOSM refers to ICT, PIKOM prefers 'digital' or 'tech' as the nomenclature to encompass technologies whose functions go beyond information and communication. We liberally use these three references in this section, but they essentially carry the same meaning.)

Chart 2: Growth of Digital Economy (%) 2018 – 2024

* The forecasts for 2021 and 2022 are calculated using the geometric mean.

Sources: DOSM & PIKOM Estimates

Infographic 1: Contribution of Digital Economy Components to National Economy (%) 2021

Source: DOSM

DOSM categorises the digital economy as consisting of eCommerce and the ICT industry whose components include ICT Services, ICT Manufacturing, ICT Trade and Content & Media, which are also referred to as ICT / Digital sub-sectors.

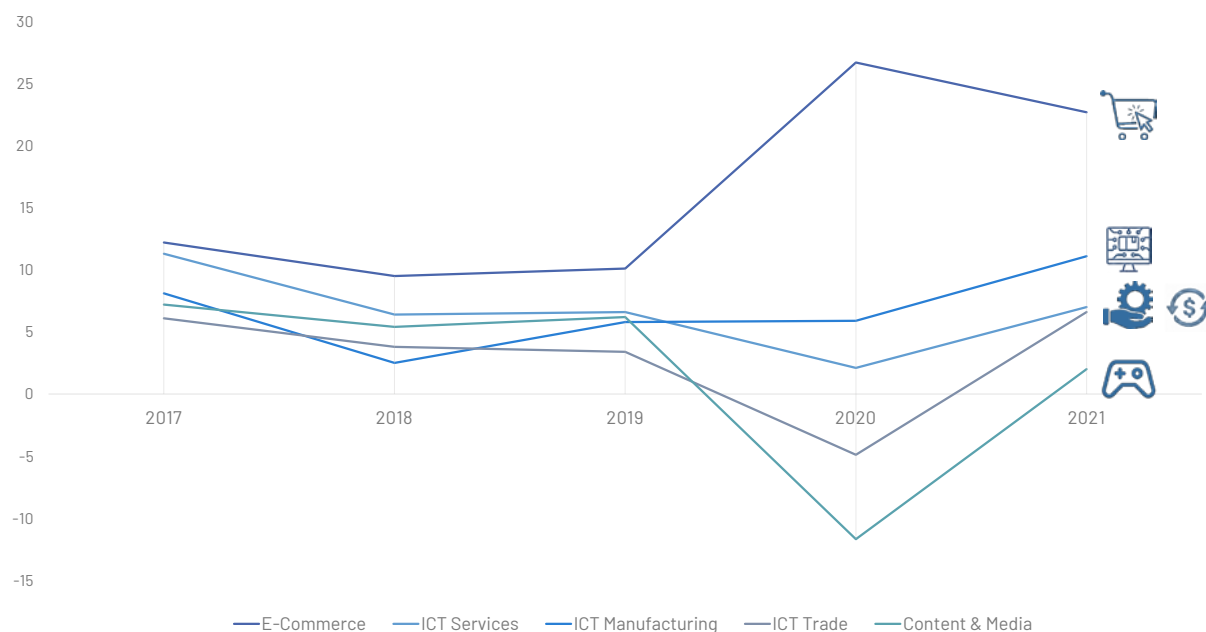
In 2021, the gross value-added output from the ICT industry (ICT GVA) contributed 14.0% to the national economy while eCommerce accounted for 9.2% of GDP for a combined total of 23.2% (**See Infographic 1**).

As expected, eCommerce has been the spearhead for the digital economy. The market expanded by a double-digit average of 16.2% during the period 2017 – 2021 and is poised to sustain this healthy growth rate for the foreseeable future now that digital / online has become the default mode in Malaysia (**See Chart & Table 3**).

Similarly, the provision of ICT Services, some of which undoubtedly for eCommerce, and development/production of ICT Manufacturing (*software and hardware*), also increased during that five-year period with an equivalent annual average growth rate (AAGR) of 6.7%.

Rounding off, ICT Trade and Content & Media recorded positive but low AAGRs of 3.0% and 1.8% respectively. In other words, all digital economy components registered positive growth trajectories between 2017 and 2021.

Reviewing the latest (2021) data by DOSM, eCommerce continued its pandemic-inspired trend of rapid growth to expand by 22.7% against 26.7% in 2020. This means that the eCommerce market grew by more than 50% during the Covid-19 years.

Chart & Table 3: Growth of Digital Economy Components (%) 2017 – 2021

Sources: DOSM

	2017	2018	2019	2020	2021	AAGR*
eCommerce	12.2%	9.5%	10.1%	26.7%	22.7%	16.2%
ICT Services	11.3%	6.4%	6.6%	2.1%	7.0%	6.7%
ICT Manufacturing	8.0%	2.5%	5.8%	5.9%	11.1%	6.7%
ICT Trade	6.1%	3.8%	3.4%	-4.9%	6.6%	3.0%
Content & Media	7.2%	5.4%	6.2%	-11.7%	2.0%	1.8%

*AAGR (2017-2021)

Source: DOSM & PIKOM Estimates

All four ICT sub-sectors also recorded positive growth in 2021 with ICT Manufacturing the best performer at 11.1% while ICT Trade and Content & Media reversed the trend of negative growth from 2020.

In terms of output value, the ICT industry generated a GVA of RM207.1 billion in 2021, up by 2.8% from the previous year. ICT Services remained the largest contributor with 44.7% of ICT GVA, followed by ICT Manufacturing at 35.6% (See Chart 4).

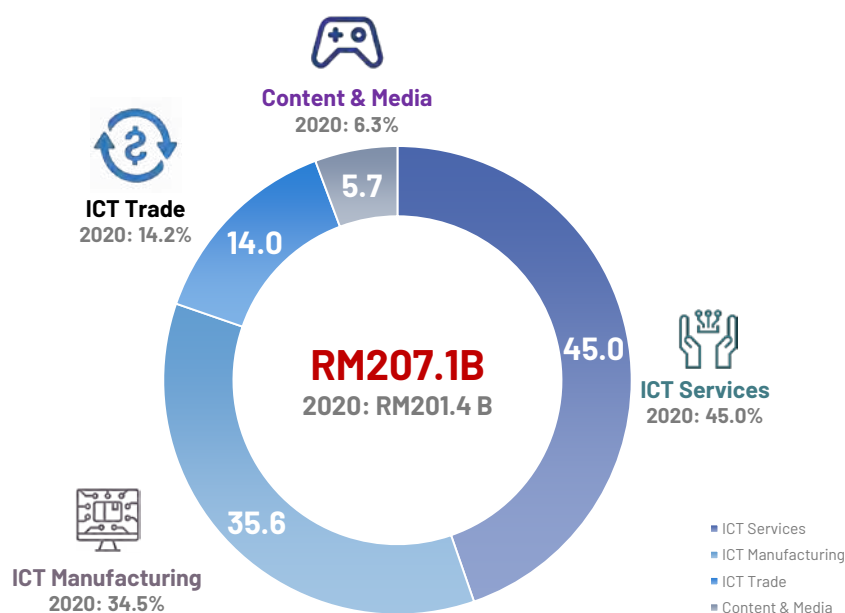
ECOMMERCE

Under its accounting practices, DOSM quantifies eCommerce via two types of activities: eCommerce of

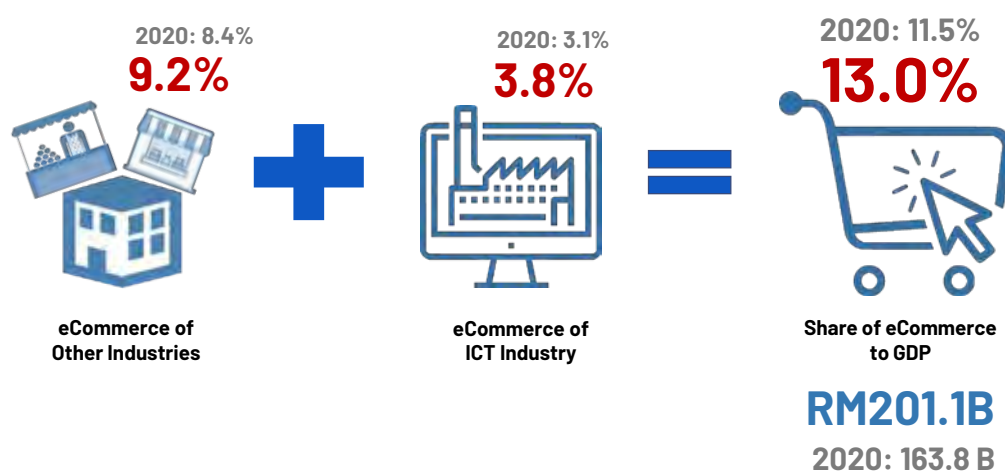
Other Industries and eCommerce of the ICT Industry, with output from the latter already accounted for under ICT GVA.

This being the case, the actual share of eCommerce to national GDP takes into consideration both activities. In 2021, this combined contribution amounted to RM201.1 billion or 13.0% of the national economy (See Infographic 2).

A comparison of 2021 against 2020 indicates that eCommerce in the ICT industry as well as other industries increased across the board as economic activities ramped up in the second year of the pandemic.

Chart 4: Share of Sub-sectors to ICT GVA (%) 2021

Source: DOSM

Infographic 2: Share of eCommerce to GDP (%) 2021

Source: DOSM

DIGITAL EXPORTS & IMPORTS

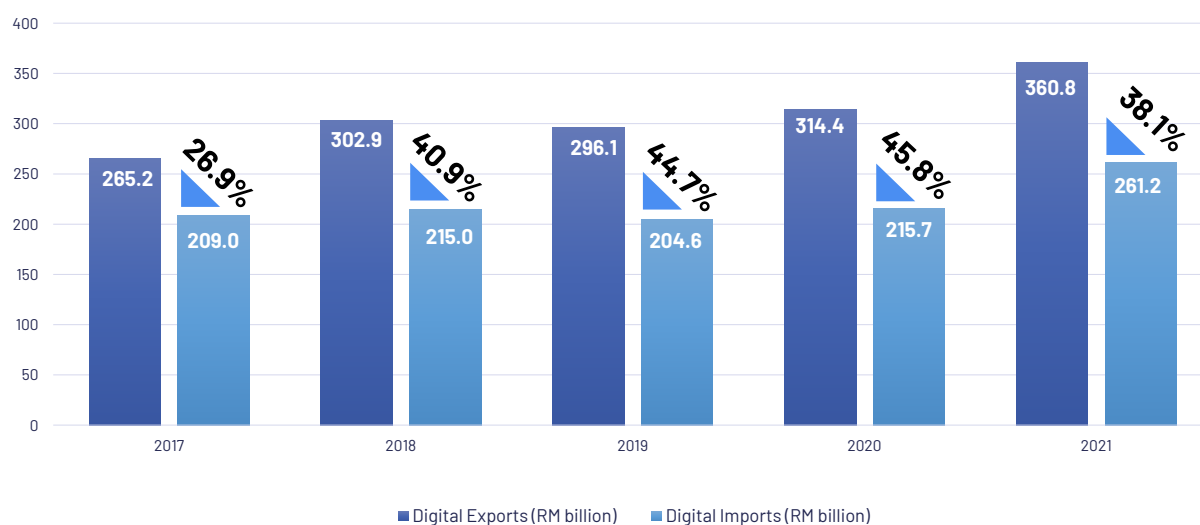
Malaysia remains a net exporter of digital products and services although the gap between digital exports and imports shrunk to 38.1% in 2021 as compared with 45.8% the year before (**See Chart 5**).

One reason for the increase in digital imports versus exports was the abrupt application and adoption of technologies not yet available in Malaysia to support economic and socioeconomic activities at the height of Covid-19.

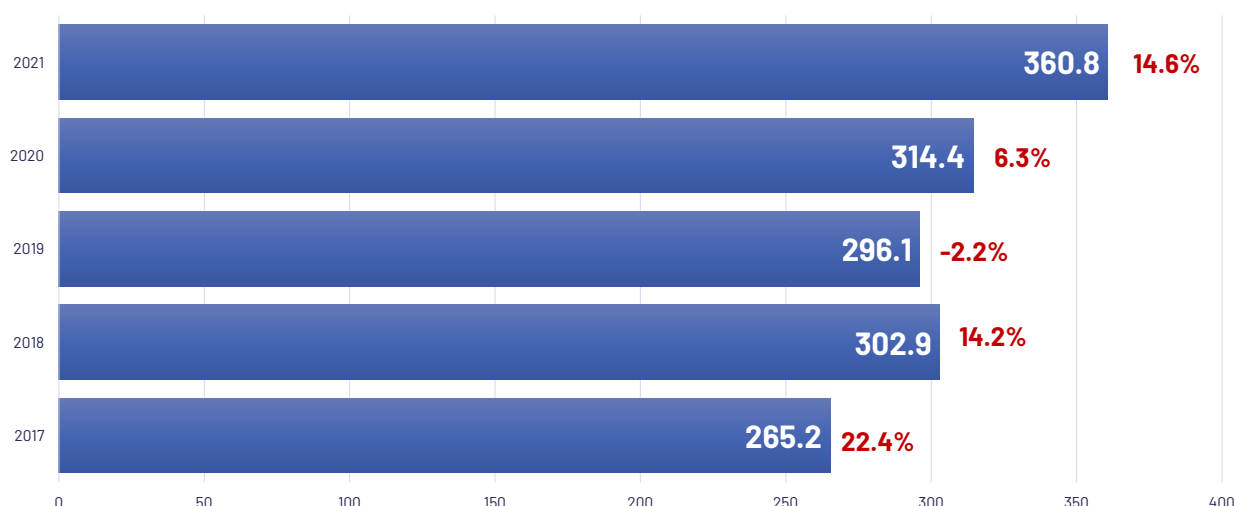
Separately, the value of both digital exports and digital imports increased significantly in 2021 with digital exports rising by 14.6% to RM360.8 billion for the year (**See Chart 6**) and digital imports growing by an even higher 21.0% to RM261.2 billion (**See Chart 7**).

A similar pattern of aggressive growth can be expected over the next three years (2022 – 2024) in tandem with the growth of the digital economy.

ICT goods accounted for the biggest pie of both digital exports and digital imports at 90.5% and 88.7%

Chart 5: Digital Exports Versus Digital Imports (% difference) 2017 - 2021

Source: DOSM

Chart 6: Growth of Digital Exports (RM Billion) 2017 - 2021

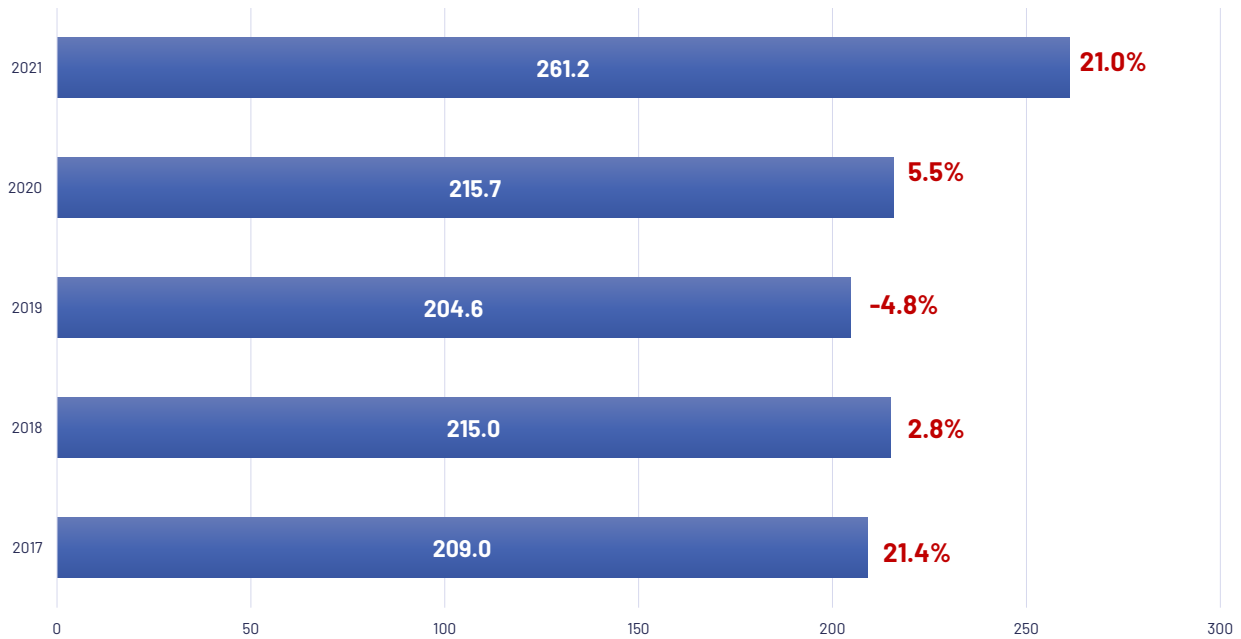
Source: DOSM

respectively (**See Chart 8**). ICT Services followed with digital imports higher at 9.8% as compared to digital exports at 7.9%, suggesting that local companies and residents continue to rely on the provision of digital services from external sources.

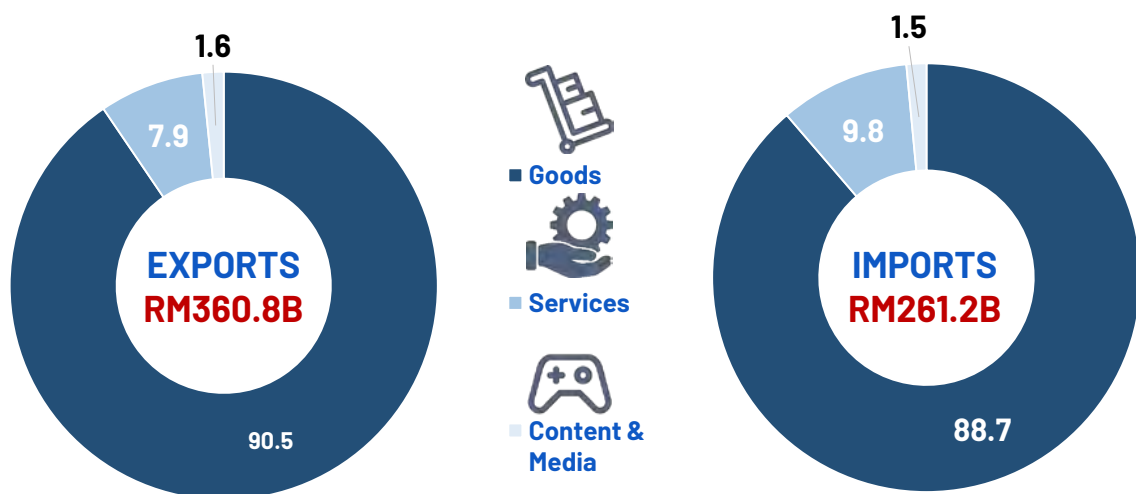
The nation's share of digital exports and imports to national exports and imports dropped marginally in 2021 due to pent-up global demand for merchandise exports as the world began its recovery from Covid-19.

Digital exports accounted for 29.1% of total exports (**See Chart 9**) while digital imports as a proportion of total imports depreciated to 26.6% (**See Chart 10**).

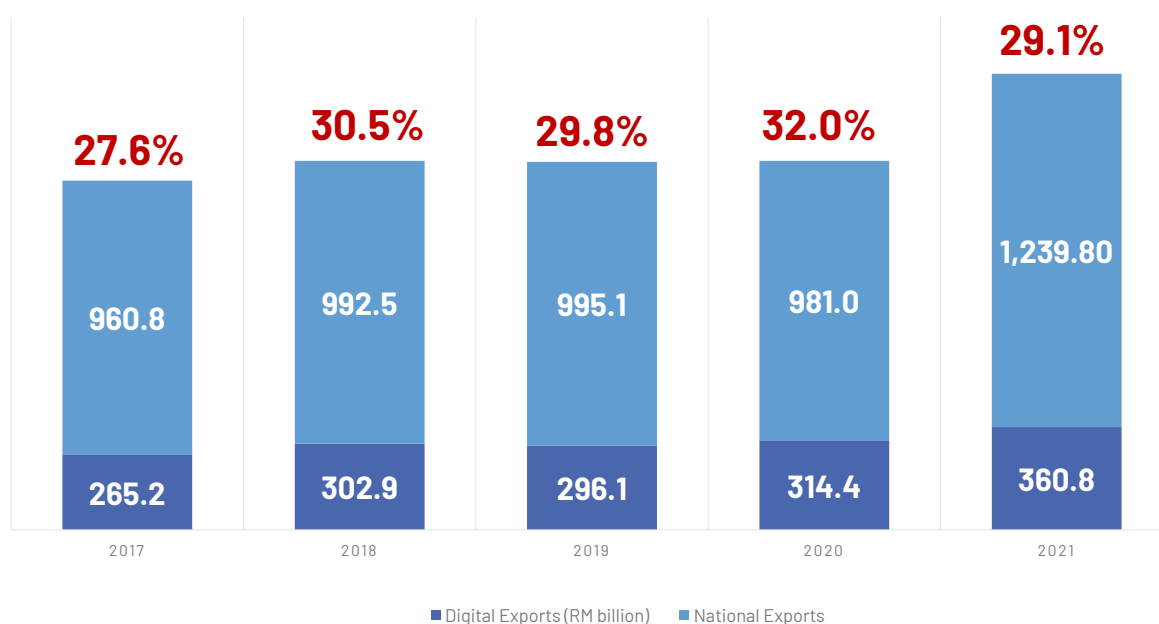
However, 2021 can be regarded as an anomaly due to the unique pandemic circumstances. Digital exports and imports are expected to increase their respective shares of national exports and imports during the period 2022 - 2024.

Chart 7: Growth of Digital Imports (RM Billion) 2017 - 2021

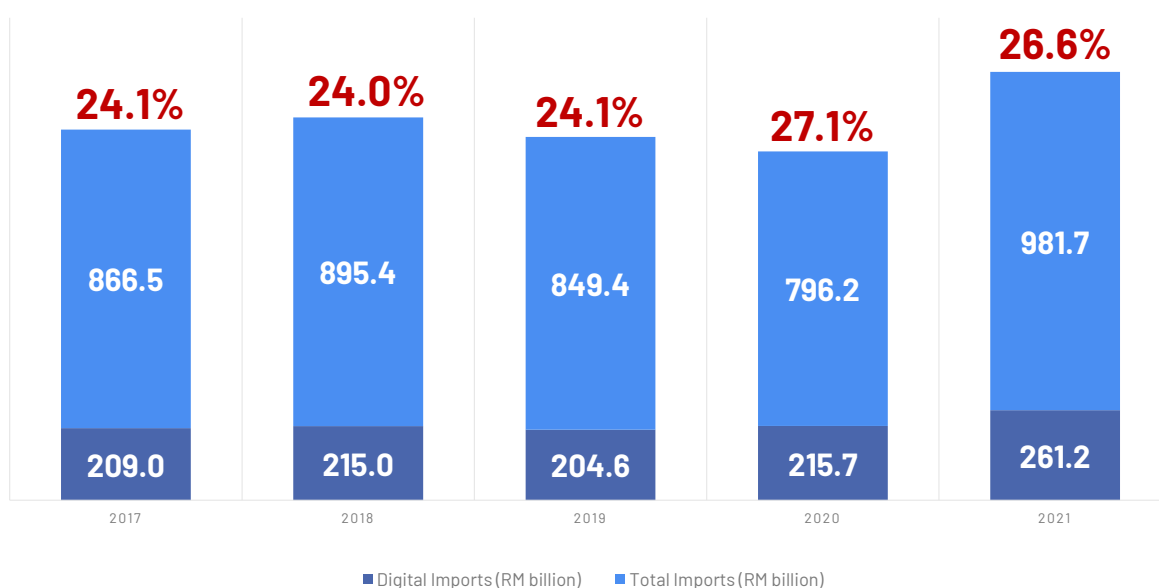
Source: DOSM

Chart 8: Exports and Imports of ICT Products by Type (%) 2021

Source: DOSM

Chart 9: Share of Digital Exports to National Exports (%) 2017 - 2021

Source: DOSM

Chart 10: Share of Digital Imports to National Imports (%) 2017 - 2021

Source: DOSM

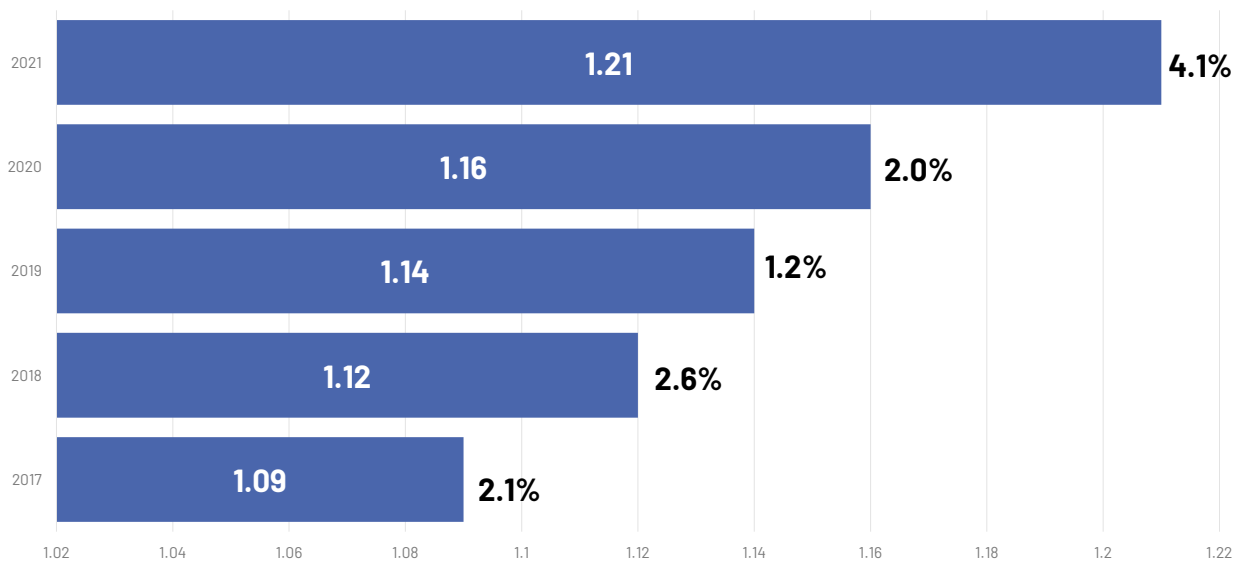
EMPLOYMENT IN THE DIGITAL INDUSTRY

In line with the growth of the industry, digital employment increased by 4.1% to 1.21 million talents in 2021 (**See Chart 11**).

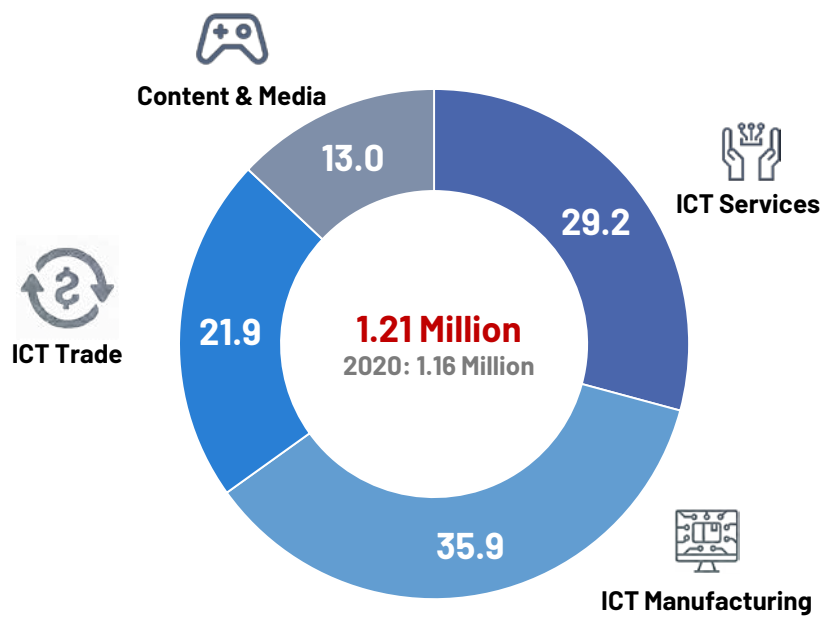
ICT Manufacturing remains the largest employer of digital talents with more than one third of employees,

ahead of ICT Services at 29.2% and ICT Trade at 21.9% (**See Chart 12**).

Employment in ICT Services and ICT Trade, however, is expected to progressively grow and ICT Manufacturing decline as Malaysia shifts towards digital services over digital products, particularly hardware.

Chart 11: Growth of Employment in ICT Industry (million persons) 2017 – 2021

Source: DOSM

Chart 12: Share of Employment by Sub-Sectors (%) 2021

Source: DOSM

KEY DEVELOPMENTS IN 2022 - 2023

Malaysia's digital economy is fast evolving into a hub of technology from hyperscale data centres to artificial intelligence, robotics, cloud, blockchain, cybersecurity and the internet of things.

Despite less than a year in administration, the Unity Government has been aggressive in stimulating tech development and widespread digital adoption via clear goals, significant investments and strategic partnerships with global digital players.

Communications and Digital Minister Fahmi Fadzil has on several occasions extolled the role of the digital economy within *Ekonomi Madani* as one of the main pillars for inclusive economic growth in the country.

Recent developments have certainly borne this out. As a result, the domestic digital industry as well as local digital talents are eager to capitalise on opportunities for growth, innovation and development.

This optimism is reflected by a Mid-Year Economic and Industry Survey conducted by PIKOM, in which industry respondents were generally positive about the digital outlook in the second half of 2023.

Almost 90% of respondents expected a positive to medium outlook with only 10% offering negative sentiments. However, an equivalent number of respondents (90%) were cautious over the impact of global economic uncertainty on the digital industry.

The commitment is the single largest international tech investment to date for Malaysia and can be expected to unlock opportunities for local businesses to grow on a global scale. At the same time, it will also serve to generate digital talents via job creation and skills development.

In addition, the AWS Region will enable customers from both the private and public sectors to store data securely and access cloud services in order to drive innovation in their activities.

- **DigitalBridge Group**

This global digital infrastructure company is investing RM4 billion by the end of this year to develop data centres, telecommunication towers and fibre-optic networks.

- **NextDC**

This Australian data centre operator is set to build its first overseas data centre here as part of an estimated RM3 billion investment over the next five to 10 years.

It plans to build a Colocation Data Centre in Petaling Jaya to service cloud platform providers as well as customers from the private and public sectors. The company will also launch a new multi-disciplinary regional operations centre and use Malaysia as a springboard to expand to other markets in Asia.

INVESTMENTS

Some of the biggest global names in cloud and data centres are investing heavily in Malaysia. In 2023, AWS, DigitalBridge Group and NextDC announced investments totalling almost RM33 billion to develop cloud infrastructure and data centres.

- **AWS**

Amazon company AWS will be investing RM25.5 billion over the next 14 years to create an AWS Infrastructure Region here, which will provide digital companies, start-ups and entrepreneurs with a platform to base their applications and serve end-users.

DATA CENTRES

The announced investments by DigitalBridge and NextDC this year are merely the icing in the cake for Malaysia's data centre market, which has been labelled as a 'rising star' with a value expected to rise to RM1.6 billion by 2027.

Demand for hyperscale facilities like those in the country is accelerating to accommodate the massive amounts of data from social media, smartphones, websites, computer data as well as cloud and enterprise applications.

PUBLIC CLOUD

The Government is creating a cloud computing service, MyGovCloud, to catalyse cloud adoption in the public sector. It is upgrading the Public Sector Data Centre (PDSA) to provide this service.

MyGovCloud is a hybrid cloud model that combines the benefits of the Private Cloud at PDSA with the Public Cloud from the government's designated Cloud Service Provider (CSP) hosted by AWS, Google Cloud, Microsoft Azure, and TM Cloud.

The successor to MSC Malaysia, Malaysia Digital was launched last year to encourage and attract companies, talents and investment while enabling local businesses and the people to participate in the global digital economy.

Pemangkin, which is driven by the Malaysia Digital Economy Corporation (MDEC), is intended to attract RM1 billion in investments and generate 49,000 employment opportunities across nine sectors by 2025.

PEMANGKIN

The Malaysia Digital national strategic initiative is set to launch additional Pemangkin (Malaysia Digital Catalytic Programmes) as well as three grants to facilitate growth in nine digital sectors of finance, trade, services, content, tourism, agriculture, cities, health and the Islamic economy.

TECH TRENDS

Several emerging trends are also poised to impact significantly on the local digital landscape. They include cloud computing and web3 technologies, automation across various industries, the 5G revolution and as mentioned earlier, development of data centres.

An article in Section E of this publication explores these trends and opportunities in Malaysia.

SALARY TRACKING PARAMETERS AND METHODOLOGY

Digital Salary Landscape

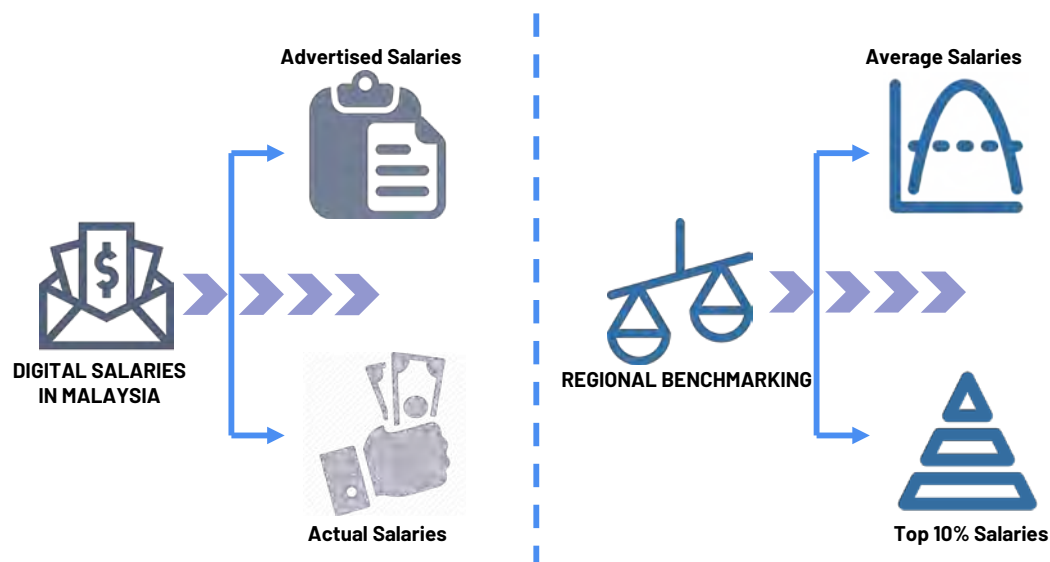


Table A: Job Position Levels According to Salary Ranges

Entry Level	Junior Executive	Senior Executive	Manager	Senior Manager	Overall
RM2,500 – RM3,000	RM3,000 – RM5,000	RM5,000 – RM8,000	RM8,000 – RM20,000	RM20,000 – RM40,000	RM2,500 – RM40,000

Although PIKOM has published this digital salary report for more than 10 years, we continue to evolve and refine our efforts in order to provide the most accurate data and information to our readers.

This year's report explores two aspects of the salary landscape for digital professionals: the first to present the range of salaries in Malaysia, and the second to benchmark local salaries against counterparts in other countries.

In the first case, the salary landscape is examined from two perspectives: salaries offered for digital professionals by job recruitment agencies; and actual earned salaries. For the benchmarking exercise, Malaysian salaries are compared against average salaries as well as top 10% salaries of digital professionals in selected economies.

METHODOLOGY

Our salary landscape was premised on data provided by Jobstreet by SEEK for the estimation of advertised average salaries offered by employers. Payscale and Salary Expert were sourced for data on earned average salaries as reported by employers.





Jobstreet by SEEK published minimum and maximum advertised salaries for 38 jobs for 2023. We then re-categorised these records into Entry, Junior Executive, Senior Executive, Manager and Senior Manager levels (See **Table A**).

Subsequently, we employed the single exponential smoothing technique (See Box F) of past published data to estimate the salaries of digital professionals by the aforementioned job position levels in 22

Table B: 22 Selected Industries

1	Agriculture / Plantation / Aquaculture	12	Hotel / Restaurant / Food Service / Hospitality
2	Automotive / Heavy Industry / Machinery	13	Manufacturing / Production
3	Banking	14	Oil / Gas / Petroleum
4	Call Centre / IT-Enabled Services / BPO	15	Printing / Publishing
5	Computer / Information Technology (Hardware)	16	Property / Real Estate
6	Computer / Information Technology (Software)	17	Science & Technology / Aerospace / BioTechnology
7	Construction / Building / Engineering	18	Semiconductor / Wafer Fabrication
8	Consulting (Business / Technical)	19	Telecommunication
9	Education	20	Transport / Storage / Freight / Shipping
10	Electrical & Electronics	21	Utilities
11	Financial Services / Securities / Insurance	22	Wholesale / Retail / Trading

Box A: Selection of Digital Aspect

Digital Aspect		No. of Jobs	Digital Aspect		No. of Jobs
	Analytics	5		Programming	5
	System Architecture	2		Quality Assurance	6
	Data	6		Security	2
	Database	2		Systems	2
	Engineering	11		Technical Support	9
	Managerial	11			

industries (See **Table B**). This exercise also yielded information to the top-five paying industries in 2023 along with forecasts for 2024.

Payscale and Salary Expert published earned salaries provided by employees or via surveys and management records.

Data from Salary Expert is used in present average salaries of nine job specifications in Cybersecurity and Artificial Intelligence / Data Science. These salaries are highlighted separately in a section after

the presentation of salaries according to job position levels and according to the 22 industries.

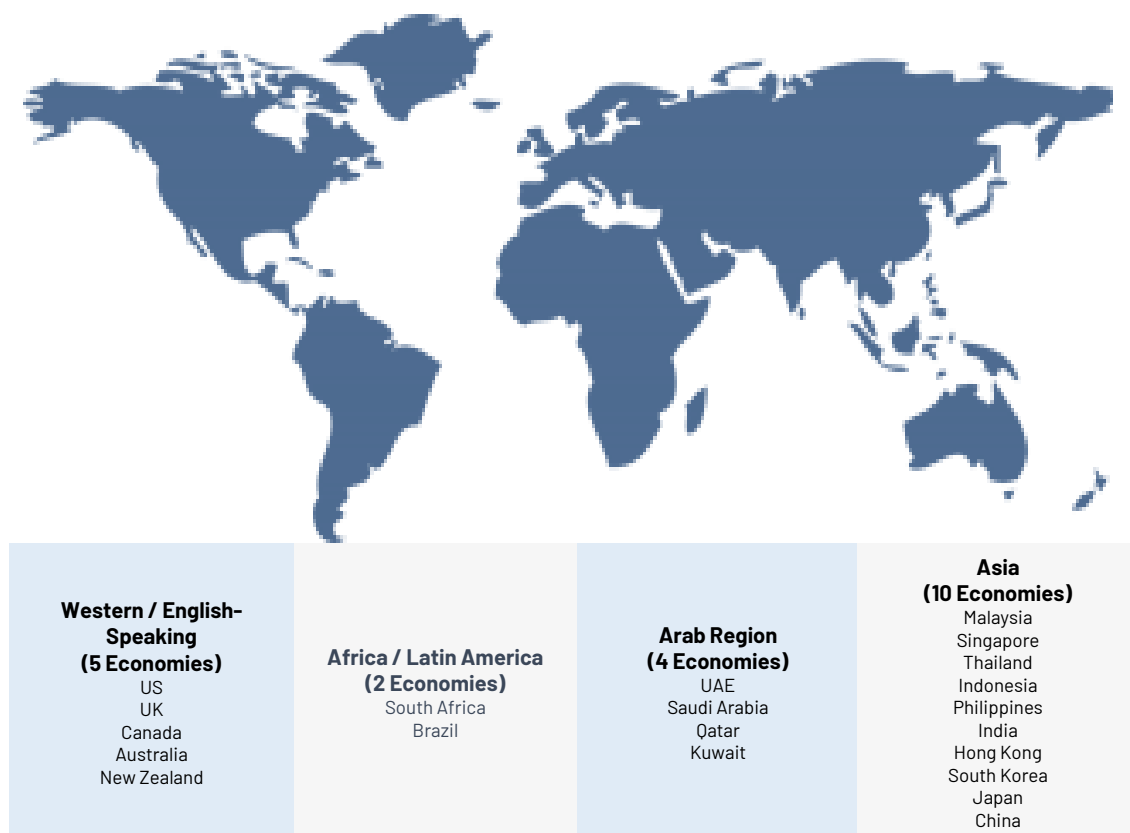
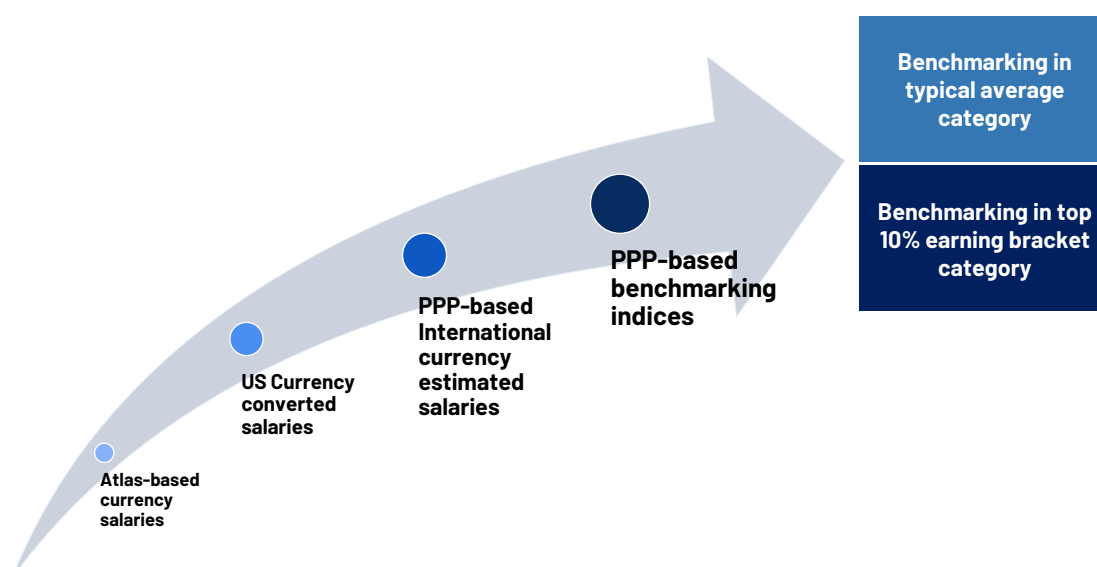
With the Payscale data, we curated salaries from 11 digital areas (See **Box A**), 61 digital jobs (**Box B**), by three position levels (**Box C**) and 21 economies (**Box D**).

The **Box C** provides the segmentation of 61 selected jobs into 34 are technical jobs, 18 managerial positions and 9 C-Level positions. **Box E** provides overview of analytic framework.

Box B: Selected Digital Jobs

TECHNOLOGY / OPERATIONAL POSITIONS		
.NET Software Developer / Programmer	Junior Software Engineer	Systems Administrator, Windows Server
Applications Engineer	Network Administrator	Systems Analyst
Business Analyst, IT	Network Engineer	Systems Engineer, IT
Business Intelligence (BI) Analyst	Network Technician	Technical Support Analyst IT
Support Technician Computer / Network / IT	Quality Assurance (QA) Engineer	Technical Support Specialist
Cybersecurity Analyst	Network Security Engineer	Test QA Engineer (Computer Software)
Data Engineer	Software Developer	Data Analyst
Data Scientist	Software Engineer	QA Analyst
Database Administrator (DBA)	Software Engineer / Developer / Programmer	QA Analyst Software
Development Operations (DevOps) Engineer	Solutions Architect	Web Developer
Help Desk Technician	Support Technician, IT	
Java Developer	Systems Administrator, Computer / Network	
MANAGERIAL / TACTICAL POSITIONS		
IT Consultant	Senior Business Analyst	Senior Systems Administrator
IT Manager	Senior Data Scientist	Senior Systems Analyst
Project Manager, IT	Senior DBA	Senior Systems Engineer
QA Manager	Senior Project Manager, IT	Senior Web Developer
Data Manager	Senior Software Engineer	Senior Software Engineer/Developer/Programmer
eCommerce Manager	Senior Solutions Architect	Software QA Manager
C-LEVEL / STRATEGIC POSITIONS		
Director of Analytics	Chief Technology Officer	Chief Executive Officer
IT Director	Chief Information Officer	Chief Information Security Officer
Vice President, IT	Chief Operating Officer	Chief Financial Officer

Box C: Three Levels of Positions

Box D: Selected 21 Economies**Box E: Overview of Analytics Framework**

Payscale publishes salary data in Atlas currencies, which are in turn converted to US dollars (\$USD) and international currency (\$PPP) to take into account purchasing power parity (PPP). For meaningful comparisons or benchmarking across economies, the \$PPP currency is preferred.

DATA CHALLENGES

To overcome data gaps and limitations in scope and coverage, we carried out our own estimation procedures. Specifically, we used the single exponential smoothing model to produce forecasts on advertised salaries in Malaysia for 2023 and 2024. Similarly, we relied on earned salary imputation techniques based on known ratios to estimate any missing data for 61 jobs in all job position levels for Malaysia.

SINGLE EXPONENTIAL TIME SERIES MODEL

The single exponential time series forecast of an observation at time period t is given by:

$$\hat{Z}_t = \alpha(Y_{t-1} - \hat{Z}_{t-1}) + \hat{Z}_{t-1}$$

where α is a smoothing constant [$0 \leq \alpha \leq 1$]; \hat{Z}_t refers to the estimate in period t ; \hat{Z}_{t-1} refers to the estimate in previous period ($t-1$); and Y_{t-1} refers to the actual value in the period ($t-1$). We determined the value of best fit for α using Excel.

PEARSON PRODUCT MOMENT CORRELATION

Before imputing values for the missing data in the 22 industries, we made an attempt to examine the correlation values between average salaries in the software industry against other known industries using the Pearson Product Moment Correlation as shown in the formula below:

$$r_{xy} = \frac{N \sum XY - \sum X \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

N	= number of pairs of scores
Exy	= sum of the products of paired scores
Ex	= sum of x scores
Ey	= sum of y scores
Ex ²	= sum of squared x scores
Ey ²	= sum of squared y scores

The correlation matrix that was generated for the 22 industries using the salary data for the period 2010 – 2022 is shown in **Table C**.

Table C: Correlation Matrix

Industry	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19	V20	V21
Agriculture / Plantation / Aquaculture	V1																				
Automotive / Heavy Industry / Machinery	V2	0.919																			
Banking	V3	0.944	0.953																		
Call Center / IT-Enabled Services / BPO	V4	0.964	0.937	0.988																	
Computer / Information Technology (Hardware)	V5	0.930	0.981	0.947	0.953																
Computer / Information Technology (Software)	V6	0.775	0.914	0.798	0.805	0.940															
Construction / Building / Engineering	V7	0.931	0.992	0.971	0.965	0.899	0.973														
Consulting (Business/ Technical)	V8	0.880	0.976	0.913	0.914	0.989	0.974	0.990													
Education	V9	0.935	0.982	0.940	0.948	0.999	0.944	0.990	0.772												
Electrical & Electronics	V10	0.854	0.822	0.940	0.910	0.785	0.554	0.852	0.726	0.930											
Financial Services/ Securities/Insurance	V11	0.954	0.945	0.997	0.994	0.948	0.795	0.910	0.942	0.708	0.907										
Hotel/Restaurant/Food Service/Hospitality	V12	0.886	0.965	0.902	0.913	0.991	0.971	0.993	0.991	0.708	0.907	0.988									
Manufacturing / Production	V13	0.921	0.965	0.925	0.935	0.993	0.948	0.983	0.993	0.746	0.926	0.988	0.955								
Oil / Gas / Petroleum	V14	0.912	0.958	0.979	0.966	0.961	0.854	0.939	0.952	0.886	0.966	0.927	0.937	0.982							
Printing / Publishing	V15	0.709	0.905	0.826	0.811	0.910	0.950	0.949	0.903	0.643	0.811	0.932	0.899	0.882	0.926						
Property / Real Estate	V16	0.859	0.951	0.965	0.945	0.951	0.866	0.942	0.939	0.868	0.951	0.927	0.937	0.988	0.926	0.886					
Science & Technology / Aerospace / Bio Technology	V17	0.953	0.879	0.972	0.969	0.876	0.668	0.814	0.870	0.958	0.978	0.815	0.854	0.922	0.678	0.927	0.703				
Semiconductor / Wafer Fabrication	V18	0.759	0.934	0.841	0.827	0.939	0.978	0.973	0.936	0.642	0.827	0.959	0.937	0.901	0.989	0.927					
Telecommunication	V19	0.855	0.947	0.969	0.949	0.938	0.840	0.929	0.926	0.893	0.957	0.910	0.911	0.974	0.917	0.993	0.894	0.907			
Transport/Storage/ Freight/Shipping	V20	0.901	0.978	0.908	0.917	0.991	0.965	0.993	0.993	0.724	0.908	0.994	0.986	0.933	0.927	0.928	0.821	0.956	0.913		
Utilities	V21	0.722	0.904	0.788	0.778	0.920	0.988	0.959	0.919	0.556	0.778	0.955	0.925	0.853	0.973	0.881	0.644	0.991	0.854	0.945	
Wholesale/Retail/ Trading	V22	0.740	0.916	0.827	0.815	0.930	0.975	0.964	0.925	0.621	0.812	0.952	0.934	0.895	0.988	0.923	0.686	0.997	0.898	0.946	0.991

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SECTION C

DIGITAL EMPLOYMENT AND SALARY TRENDS IN MALAYSIA



The sustained growth of Malaysia's digital economy continues to generate job opportunities in existing digital disciplines and perhaps more excitingly in emerging areas such as artificial intelligence and robotics as well as technologies related to virtual / augmented reality (VR / AR) and many others.

The Government's implementation of the *Ekonomi Madani* framework of digitalisation is expected to spur job creation particularly in sectors requiring programming, eCommerce and cybersecurity.

Indeed, Communications and Multimedia Minister Fahmi Fadzil has been quoted as floating a figure of 500,000 new jobs from the development and integration of various technologies across the country's economic sectors.

Further, the current rollout of 5G is anticipated to add jobs to the mix. According to some estimates, it will progressively generate as many as 40,000 high-value employment opportunities.

Naturally, the demand for digital talents can only lead to positive repercussions to salary trends of digital jobs in Malaysia. For this reason, PIKOM collects and collates related salary data to provide insights for employers as well as employees on an annual basis.

This year, we are expanding our scope to cover both salary offers advertised by employers and actual earned salaries provided by employees. Advertised salaries are sourced from PIKOM's traditional partner in Jobstreet by SEEK while earned salaries are collated from other sources including Payscale, Salary Expert and the Economic Research Institute.

We have also included a new section on remuneration for chief executive officers (CEOs) in this section. In addition, we have continued to feature salaries of digital talents in cybersecurity and AI and data science, given the growing prominence of such disciplines in the digital economy.

ADVERTISED SALARIES OF DIGITAL JOBS IN MALAYSIA

PIKOM has adjusted the salary ranges for job position levels to reflect the higher salaries being offered to digital talents today. Accordingly, the salary ranges are RM2,500 – RM4,000 for entry level professionals, RM4,000 – 6,000 for junior executives, RM6,000 – RM8,500 for senior executives, RM8,500 – RM20,000 for manager, and RM20,000 – RM40,000 for senior managers.

Table 1: Average Monthly Advertised Salaries of Digital Professionals by Overall and Position Level (RM) 2013 – 2024

Year	RM2500- RM4000	RM4000- RM6000	RM6000- RM8500	RM8500- RM20000	RM20000- RM40000	RM2500- RM40000
	Entry Level	Junior Executive	Senior Executive	Manager	Senior Manager	Overall
2013	2,438	3,459	5,744	8,986	14,661	7,142
2014	2,581	3,719	6,157	9,591	16,057	7,706
2015	2,718	3,894	6,483	10,195	17,053	8,114
2016	2,817	4,052	6,727	10,646	18,132	8,484
2017	2,958	4,259	7,057	11,168	19,147	8,908
2018	3,080	4,458	7,469	11,888	20,521	9,262
2019	3,210	4,663	7,865	12,589	21,916	9,614
2020	3,282	4,716	7,841	12,994	22,497	9,825
2021	3,398	4,816	8,020	13,152	22,558	10,064
2022	3,560	5,020	8,289	13,882	23,057	10,321
2023	4,098	6,230	10,096	16,173	25,662	11,756
2024*	4,315	6,603	10,635	17,082	26,619	12,242
Y-o-Y: 2023-2022 (%)	15.11	24.10	21.80	16.50	11.30	13.90
AAGR: 2013-2023 (%)	6.81	8.01	7.58	8.00	7.50	6.46
Forecast Rate: Y-o-Y 2024-2023 (%)	5.30	5.99	5.34	5.62	3.73	4.13

* Forecast

Sources: Jobstreet & PIKOM estimates

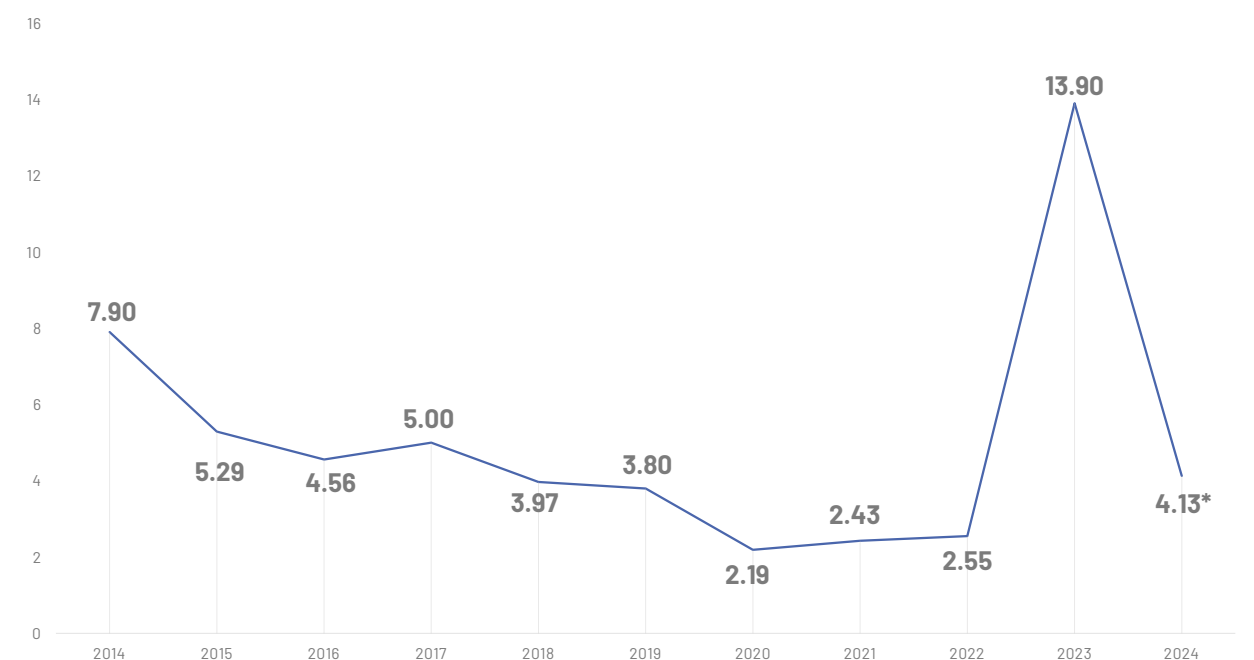
Salaries of digital professionals are skyrocketing in 2023 following three years of marginal increments in what was essentially an employers' market during the pandemic-related period of economic uncertainty.

Average salaries grew at an elevated 13.90% at double digit rates not seen for more than 10 years in response to what must surely be the significant shift towards digital platforms and applications as a result of the Covid-19 pandemic (See **Table 1** and **Chart 1**).

According to advertised salaries by employers provided by Jobstreet by SEEK and PIKOM estimates,

the overall average salary was RM12,242 in 2023 and ranged from RM4,315 in average remuneration for an entry level professional to RM26,619 in average wage for a senior manager.

The quantum of increase for the year is consistent with the growing demand for digital professionals given the current acceleration of digital adoption and deployment by the private as well as public sectors. However, the overall rate of salary hike for 2024 is expected to be less pronounced at 4.13% owing to the expected correction from such a high base effect this year.

Chart 1: Growth Rates of Overall Average Monthly Advertised Salaries of Digital Professionals (%) 2014 - 2024

* Forecast

Sources: Jobstreet & PIKOM estimates

Table 2 and **Charts 2 – 6** present the growth rates of advertised salaries according to their respective position levels: entry level, junior executive, senior executive, manager and senior manager.

Salaries of digital professionals at the junior executive level recorded the highest quantum of increase at 24.10% in 2023, followed by remuneration for senior executives (21.80%). In fact, the salaries for all position levels jumped by double-digit rates with the lowest being senior managers at 11.30%.

PIKOM's estimates for 2024 indicate the highest growth rates in salary would be for junior executives, managers and senior executives in that order.

In 2023, advertised salaries for entry level digital professionals grew at a healthy pace of 15.11% in comparison to 4.77% the previous year (See **Chart 2**).

Again, the more than three-fold increase in growth rate reflects the demand for digital talents at a time when most companies are leveraging tech to maintain recovery from the pandemic and capitalise on new market opportunities. Salaries for this position level is projected to grow by a less aggressive 5.30% in 2024, consistent with the forecast for the overall level.

Average salaries for junior executives recorded the highest growth rate of all position levels at 24.10% in 2023 (See **Chart 3**), most likely indicating that

companies are sourcing for talents with at least several years of experience who can immediately boost their digital capabilities. This range of salaries is expected to climb down to a more moderate 5.99% in 2024.

Similar to junior executives, salaries of senior executives grew considerably by 21.80% in 2023 (See **Chart 4**), probably for the same reasons proffered earlier. Likewise, the growth rate in 2024 will be subject to a natural correction down to 5.34%.

Previously, the senior executive position level was the only one in the past 10 years in which advertised salaries posted a drop (2020), suggesting that employers were hiring talents with lower experience and paying them less to undertake the responsibilities of a senior executive in the immediate aftermath of the pandemic. The leap in 2023 would indicate this is no longer the case.

A similar situation had developed with salaries for manager-level digital professionals. Advertised salaries for this position level had increased by a substantially higher quantum than the senior manager level over the previous three years.

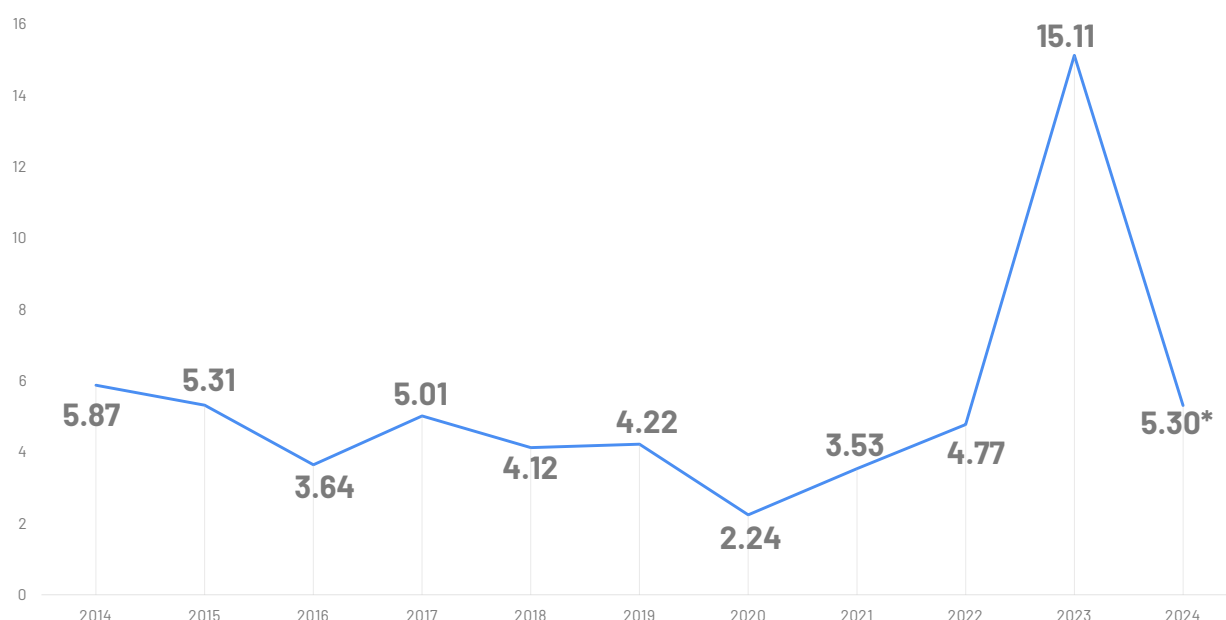
This trend continued in 2023 with salary growth for managers reaching a buoyant 16.50% before its expected drop to 5.62% in 2024 (See **Chart 5**).

Table 2: Growth Rates of Advertised Salaries of Digital Professionals By Position Level (%) 2014 - 2024

Year	RM2500- RM4000	RM4000- RM6000	RM6000- RM8500	RM8500- RM20000	RM20000- RM40000	RM2500- RM40000
	Entry Level	Junior Executive	Senior Executive	Manager	Senior Manager	Overall
2014	5.87	7.52	7.19	6.73	9.52	7.90
2015	5.31	4.71	5.29	6.30	6.20	5.29
2016	3.64	4.06	3.76	4.42	6.33	4.56
2017	5.01	5.11	4.91	4.90	5.60	5.00
2018	4.12	4.67	5.84	6.45	7.18	3.97
2019	4.22	4.60	5.30	5.90	6.80	3.80
2020	2.24	1.14	(0.31)	3.22	2.65	2.19
2021	3.53	2.12	2.28	1.22	0.27	2.43
2022	4.77	4.24	3.35	5.55	2.21	2.55
2023	15.11	24.10	21.80	16.50	11.30	13.90
2024*	5.30	5.99	5.34	5.62	3.73	4.13

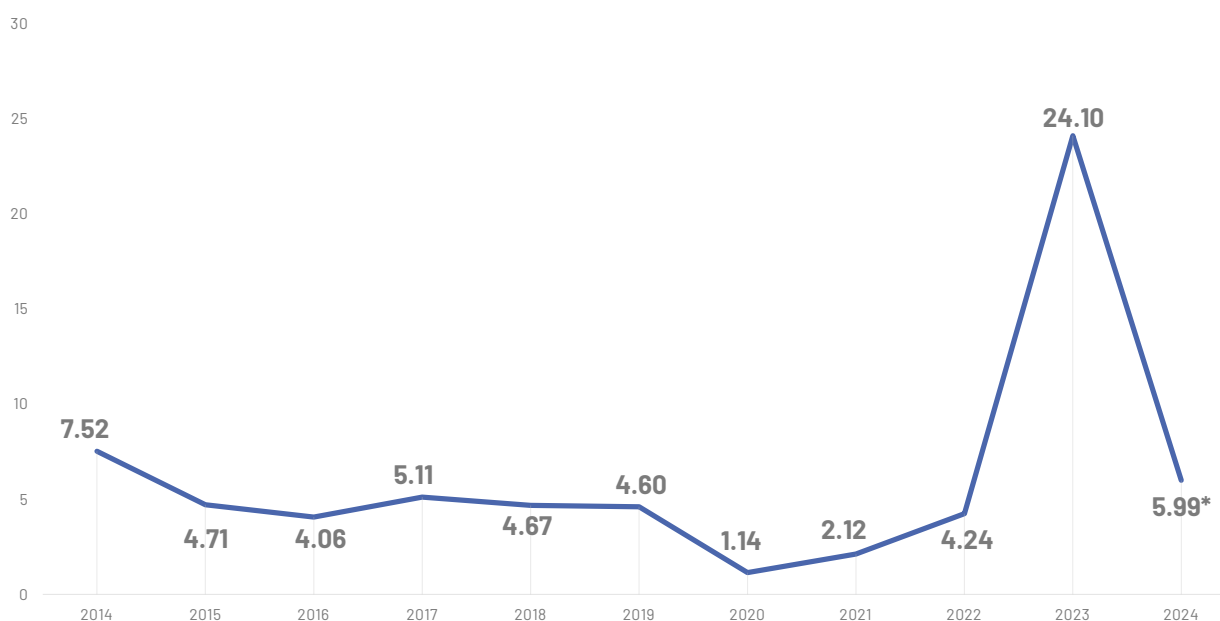
* Forecast

Sources: Jobstreet & PIKOM estimates

Chart 2: Growth Rates of Average Monthly Advertised Salaries of Entry Level Digital Professionals (%) 2014 - 2024

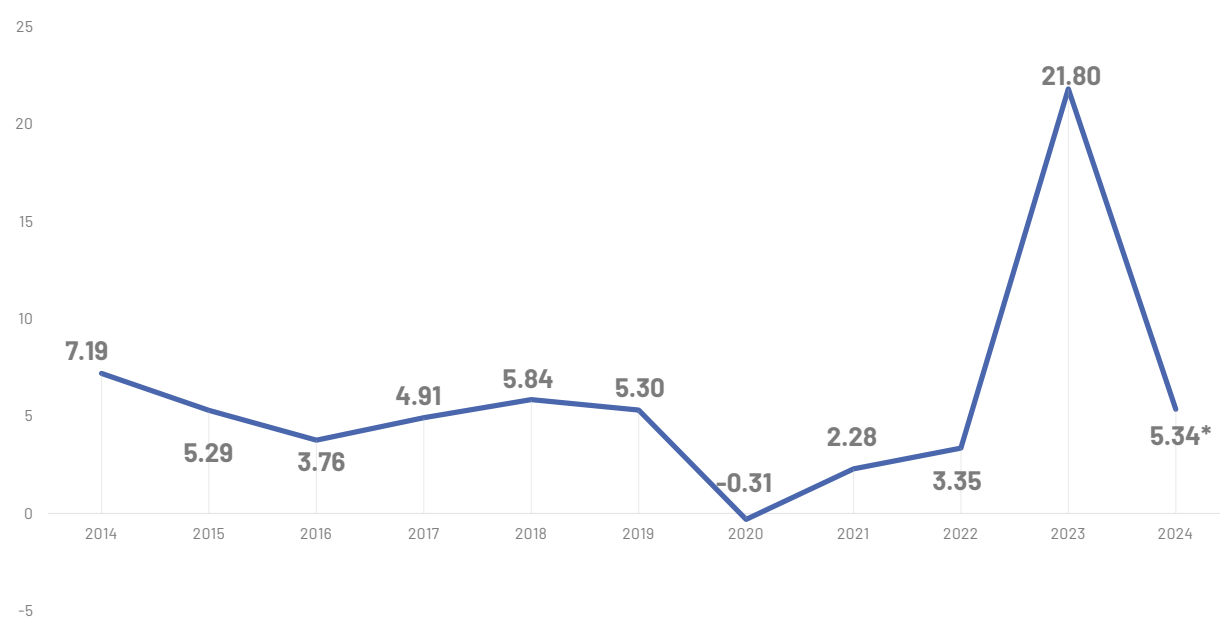
* Forecast

Sources: Jobstreet & PIKOM estimates

Chart 3: Growth Rates of Average Monthly Advertised Salaries of Junior Executive Digital Professionals (%) 2014 - 2024

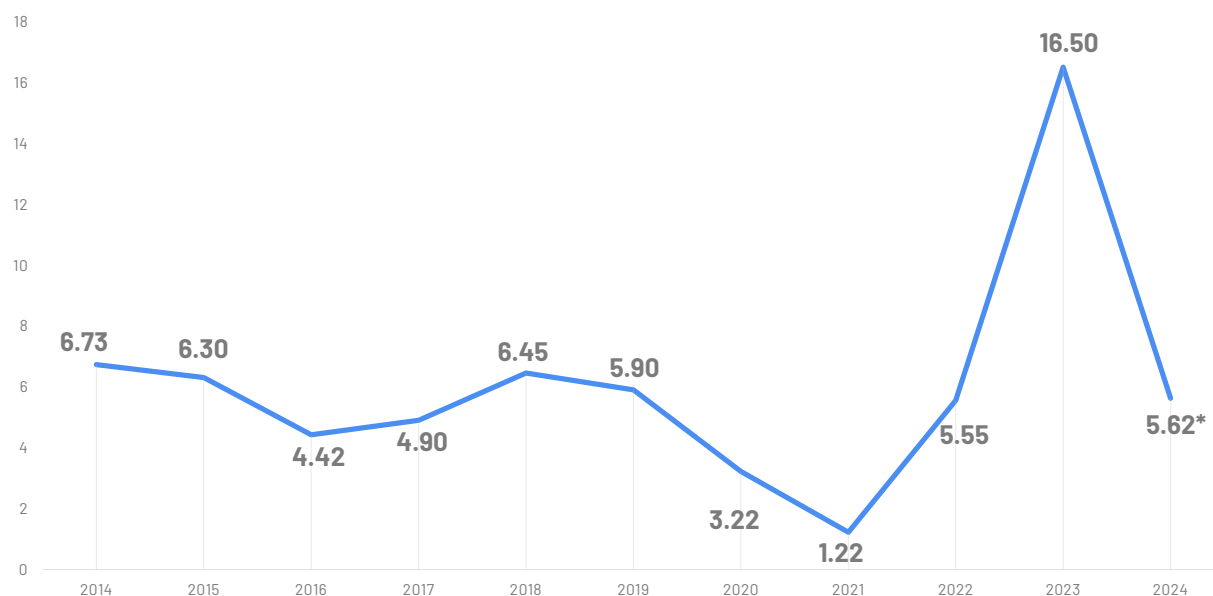
* Forecast

Sources: Jobstreet & PIKOM estimates

Chart 4: Growth Rates of Average Monthly Advertised Salaries of Senior Executive Digital Professionals (%) 2014 - 2024

* Forecast

Sources: Jobstreet & PIKOM estimates

Chart 5: Growth Rates of Average Monthly Advertised Salaries of Manager Level Digital Professionals (%) 2014 – 2024

*Forecast

Sources: Jobstreet & PIKOM estimates

Meanwhile salary growth for senior managers has recovered after a three-year period in which salaries increased by less than 3% due to prudent cost management by businesses during the pandemic as well as influx of retrenched talents in the job market (See **Chart 6**).

Prior to 2020, salary growth for senior managers were consistently the highest among the position levels since 2014 except for 2015 when the rate of increase was marginally below that of digital professionals at manager level.

The gap between advertised salaries for other position levels compared to entry level wages has remained fairly consistent over the years, as shown in **Table 3**. Overall advertised salaries are marginally below three times that of their entry level counterparts.

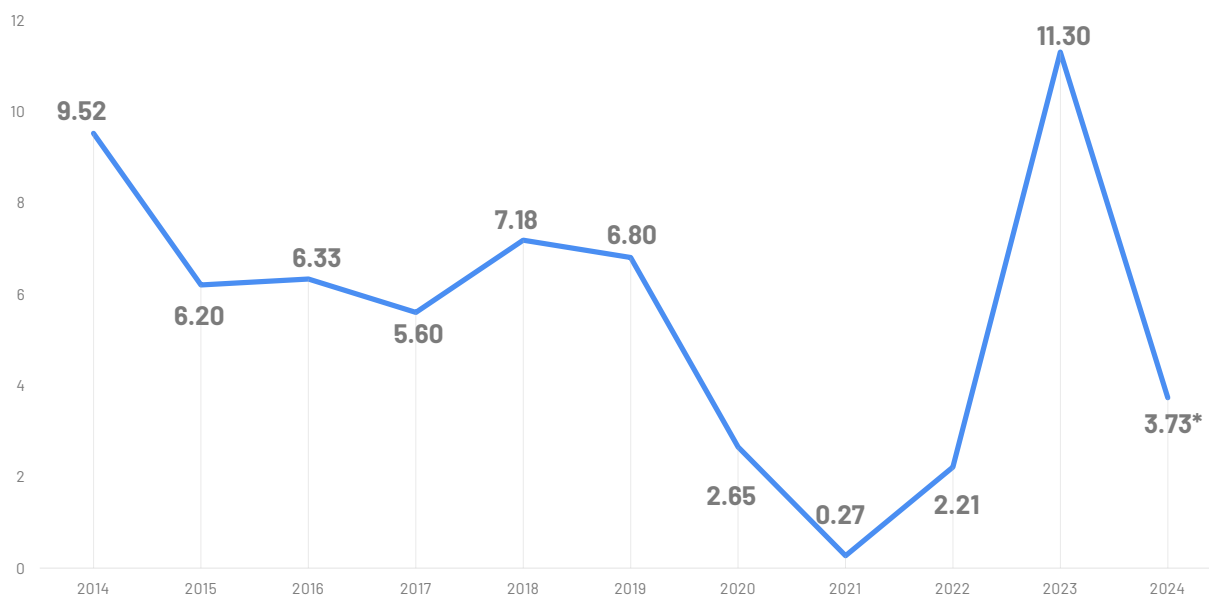
Naturally, the widest gap is between senior managers and those starting out, with the difference between the two position levels at 6.17 times in 2023. In the past 10 years, the ratio has stayed in the 6.00 – 7.00 range.

ADVERTISED SALARIES OF DIGITAL JOBS BY INDUSTRY

Table 4 presents the average monthly advertised salaries of digital professionals working in 22 different industries in 2023. On an overall basis, employers in every industry are advertising salaries above the RM10,000 mark.

The industries with the widest gap between other position levels and fresh graduates, as shown in **Table 5**, are electrical & electronics, software and telecommunication with ratios well above three times. At the other end of the scale, the narrowest difference is found in agro businesses, heavy industries and hospitality.

The top-paying industries for digital professionals according to advertised rates in 2023 are IT software, electrical & electronics, contact centres and business processing, hardware and oil & gas (See **Infographic 1**). On an overall basis, software companies are offering digital talents monthly salaries around the range of RM14,500.

Chart 6: Growth Rates of Average Monthly Advertised Salaries of Senior Manager Digital Professionals (%) 2014 - 2024

* Forecast

Sources: Jobstreet & PIKOM estimates

Table 3: Average Monthly Advertised Salaries Benchmarked Against Entry Level Salaries (Ratio) 2013 - 2024

Year	RM2500- RM4000	RM4000- RM6000	RM6000- RM8500	RM8500- RM20000	RM20000- RM40000	RM2500- RM40000
	Entry Level	Junior Executive	Senior Executive	Manager	Senior Manager	Overall
2013	1.00	1.42	2.36	3.69	6.01	2.93
2014	1.00	1.44	2.39	3.72	6.22	2.99
2015	1.00	1.43	2.39	3.75	6.27	2.99
2016	1.00	1.44	2.39	3.78	6.44	3.01
2017	1.00	1.44	2.39	3.78	6.47	3.01
2018	1.00	1.45	2.43	3.86	6.66	3.01
2019	1.00	1.45	2.45	3.92	6.83	3.00
2020	1.00	1.44	2.39	3.96	6.85	2.99
2021	1.00	1.42	2.36	3.87	6.64	2.96
2022	1.00	1.41	2.33	3.90	6.48	2.90
2023	1.00	1.52	2.46	3.95	6.26	2.87
2024	1.00	1.53	2.46	3.96	6.17	2.84

* Forecast

Sources: Jobstreet & PIKOM estimates

Table 4: Average Monthly Advertised Salaries of Digital Professionals by Industry and Position Level (RM) 2023

Industry	Entry Level	Junior Executive	Senior Executive	Manager	Senior Manager	Overall
	2023	2023	2023	2023	2023	2023
Agriculture / Plantation / Aquaculture	4,932	7,002	9,317	13,534	26,130	11,859
Automotive / Heavy Industry / Machinery	4,462	6,879	8,907	14,384	23,853	11,451
Banking	4,268	6,819	9,023	13,532	30,860	12,851
Call Center / IT-Enabled Services / BPO	4,128	6,814	8,569	13,734	35,938	13,619
Computer / Information Technology (Hardware)	4,098	6,714	8,984	14,150	33,390	13,377
Computer / Information Technology (Software)	4,091	6,686	9,045	18,410	21,369	14,463
Construction / Building / Engineering	4,084	6,532	8,936	13,549	25,653	11,667
Consulting (Business/Technical)	3,962	6,529	9,094	14,331	25,911	11,714
Education	3,941	6,519	8,758	15,029	21,130	11,017
Electrical & Electronics	3,920	6,451	8,728	13,655	38,669	14,310
Financial Services/Securities/Insurance	3,901	6,422	9,233	13,025	30,884	12,780
Hotel/Restaurant/Food Service/Hospitality	3,879	6,406	8,790	13,954	21,975	10,585
Manufacturing / Production	3,860	6,395	8,950	13,813	26,647	11,913
Oil / Gas / Petroleum	3,847	6,351	8,998	15,469	30,221	12,928
Printing / Publishing	3,836	6,348	7,950	17,425	20,508	11,165
Property / Real Estate	3,827	6,343	9,189	14,447	28,963	12,590
Science & Technology / Aerospace / Bio Technology	3,804	6,336	8,554	13,328	29,549	12,438
Semiconductor / Wafer Fabrication	3,800	6,313	9,227	13,602	21,314	11,083
Telecommunication	3,786	6,159	9,197	14,938	28,895	12,785
Transport/Storage/Freight/Shipping	3,775	6,108	8,767	16,373	23,055	11,691
Utilities	3,774	6,007	9,255	13,774	18,852	10,428
Wholesale/Retail/Trading	3,666	5,957	8,569	12,662	19,471	10,127






Sources: Jobstreet & PIKOM estimates

Table 5: Benchmarking Advertised Salaries of Digital Professionals Against Entry Level Position by Industry 2023



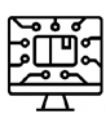


Industry	Entry Level	Junior Executive	Senior Executive	Manager	Senior Manager
	2023	2023	2023	2023	2023
Agriculture / Plantation / Aquaculture	1.00	1.42	1.89	2.74	5.30
Automotive / Heavy Industry / Machinery	1.00	1.54	2.00	3.22	5.35
Banking	1.00	1.60	2.11	3.17	7.23
Call Center / IT-Enabled Services / BPO	1.00	1.65	2.08	3.33	8.71
Computer / Information Technology (Hardware)	1.00	1.64	2.19	3.45	8.15
Computer / Information Technology (Software)	1.00	1.63	2.21	4.50	5.22
Construction / Building / Engineering	1.00	1.60	2.19	3.32	6.28
Consulting (Business/Technical)	1.00	1.65	2.30	3.62	6.54
Education	1.00	1.65	2.22	3.81	5.36
Electrical & Electronics	1.00	1.65	2.23	3.48	9.87
Financial Services/Securities/ Insurance	1.00	1.65	2.37	3.34	7.92
Hotel/Restaurant/Food Service/ Hospitality	1.00	1.65	2.27	3.60	5.66
Manufacturing / Production	1.00	1.66	2.32	3.58	6.90
Oil / Gas / Petroleum	1.00	1.65	2.34	4.02	7.86
Printing / Publishing	1.00	1.65	2.07	4.54	5.35
Property / Real Estate	1.00	1.66	2.40	3.78	7.57
Science & Technology / Aerospace / Bio Technology	1.00	1.67	2.25	3.50	7.77
Semiconductor / Wafer Fabrication	1.00	1.66	2.43	3.58	5.61
Telecommunication	1.00	1.63	2.43	3.95	7.63
Transport/Storage/Freight/Shipping	1.00	1.62	2.32	4.34	6.11
Utilities	1.00	1.59	2.45	3.65	5.00

Sources: Jobstreet & PIKOM estimates

Infographic 1: Top Paying Industries for Digital Professionals (Overall) 2023 – Advertised Rates

	Computer / Information Technology (Software)	RM14,463
	Electrical & Electronics	RM14,310
	Contact Centre / IT-enabled Services / BPO	RM13,619
	Computer / Information Technology (Hardware)	RM13,377
	Oil / Gas / Petroleum	RM12,928

*Sources: Jobstreet & PIKOM estimates***Infographic 2: Top Paying Industries for Digital Professionals (Senior Manager) 2023 – Advertised Rates**






	Electrical & Electronics	RM38,669
	Contact Centre / IT-enabled Services / BPO	RM35,938
	Computer / Information Technology (Hardware)	RM33,390
	Financial Services / Securities / Insurance	RM30,884
	Banking	RM30,860

** Forecast**Sources: Jobstreet & PIKOM estimates*

The industry with the highest advertised salaries for senior managers is electrical & electronics at almost RM38,700 (See **Infographic 2**). Other high-paying industries for senior managers include business processing services, IT hardware, financial services and banking.




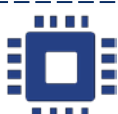

The software industry heads the list for manager level digital talents at advertised rates of marginally above RM18,400 followed by printing & publishing, freight & logistics, oil & gas and surprise entry, education (See **Infographic 3**). This probably reflects a greater shift towards online learning, particularly since the pandemic.

Infographic 3: Top Paying Industries for Digital Professionals (Manager) 2023 – – Advertised Rates

	Computer / Information Technology (Software)	RM18,410
	Printing / Publishing	RM17,425
	Transport / Storage / Freight / Shipping	RM16,373
	Oil / Gas / Petroleum	RM15,469
	Education	RM15,029

Sources: Jobstreet & PIKOM estimates

Infographic 4: Top Paying Industries for Digital Professionals (Senior Executive) 2023 – – Advertised Rates

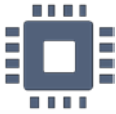




	Agriculture / Plantation / Aquaculture	RM9,317
	Utilities	RM9,255
	Financial Services / Securities / Insurance	RM9,233
	Semiconductor / Wafer Fabrication	RM9,227
	Telecommunication	RM9,197

Sources: Jobstreet & PIKOM estimates

Likewise, agro businesses were the unexpectedly highest paymaster in 2023 for senior executives at above RM9,300. Surprisingly, the previously most lucrative industry for this position level, software, did not even make this list (See **Infographic 4**).






Moving one tier down to junior executive positions, the highest offers come from semiconductor manufacturers at just over RM7,000. Next are financial services, science-based industries, telecommunication and the banking sector (See **Infographic 5**).

Infographic 5: Top Paying Industries for Digital Professionals (Junior Executive) 2023 – Advertised Rates

	Semiconductor / Wafer Fabrication	RM7,002
	Financial Services / Securities / Insurance	RM6,879
	Science & Technology / Aerospace / Biotechnology	RM6,819
	Telecommunication	RM6,814
	Banking	RM6,714

Sources: Jobstreet & PIKOM estimates

Infographic 6: Top Paying Industries for Digital Professionals (Entry Level) 2023 – Advertised Rates

	Printing / Publishing	RM4,932
	Utilities	RM4,462
	Semiconductor / Wafer Fabrication	RM4,268
	Banking	RM4,128
	Computer / Information Technology (Software)	RM4,098

Sources: Jobstreet & PIKOM estimates

At the lowest end of the spectrum, entry level digital professionals can find the highest offers from the printing & publishing industry. Other attractive advertised salaries are from employers in utilities, semiconductors, banking and software companies (See **Infographic 6**).

Table 6 presents the overall average monthly advertised salaries by industry. In 2023, salaries registered relatively healthy growth of between 0.76% at the lowest end (consulting) and 34.87% at the highest (electrical & electronics).

Apart from electrical & electronics, other sectors that recorded the most aggressive growth rates were in business processing services, science-based technology and aerospace industries and financial services while the lowest after consulting were the industries of utilities, retail and hospitality.

In contrast, salary growth in three industries were comparatively low: consulting at 0.76%, most likely due to companies hiring talents directly instead of depending on third parties; utilities at 0.94%, perhaps due to the comparatively stable nature of digital jobs in the industry; and retail at 1.21%, on account of the largely standard digital skills required for backend jobs in this industry.

Tables 7 – 11 present the average monthly advertised salaries according to the five position levels in each of the 22 industries.

At entry level, salary offers by employers in 2023 increased the most in the printing & publishing (22.2%), semiconductor manufacturing (19.0%) and oil & gas industries (17.3%) (See **Table 7**).

Moving up the list, the highest growth in advertised salaries for junior executives this year was recorded in the agro industries (32.0%), printing & publishing (31.9%) and the science & aerospace businesses (30.7%) (See **Table 8**).

In the case of senior executives, industries with the highest growth rates of advertised salaries were utilities (19.5%), agro industries (19.4%) and realty (16.9%) (See **Table 9**).

Printing & publishing (33.9%), freight & logistics (17.1%) and the heavy industries (16.6%) were the industries with the highest growth rate in salaries for manager-level digital professionals (See **Table 10**).

For senior managers, industries that offered the highest growth in salaries were semiconductor (18.5%), utilities (16.9%) and heavy industries (15.7%) (See **Table 11**).

Table 6: Overall Average Monthly Advertised Salaries of Digital Professionals by Industry (RM) 2010 - 2023*

Industry: Overall	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	2020	2021	2022	2023	Y-o-Y : 2022-2023
Agriculture / Plantation / Aquaculture	4,645	5,426	5,788	6,664	7,797	8,231	8,740	9,471	10,269	9,744	9,895	9,576	10,343	11,859	14.66
Automotive / Heavy Industry / Machinery	6,184	6,339	6,507	7,009	7,409	7,527	7,781	8,092	8,399	9,352	8,641	9,449	9,844	11,451	16.33
Banking	5,577	6,175	6,781	6,903	7,453	7,857	8,256	8,696	9,193	10,338	10,610	9,700	10,282	12,851	24.99
Call Center / IT-Enabled Services / BPO	6,379	6,834	7,251	7,573	8,230	8,467	8,817	9,247	9,699	9,871	10,904	9,982	10,465	13,619	30.14
Computer / Information Technology (Hardware)	5,798	6,227	6,577	7,135	7,473	7,841	8,392	8,876	9,376	9,492	9,802	10,763	11,370	13,377	17.65
Computer / Information Technology (Software)	5,079	5,485	5,721	5,998	6,750	7,126	7,316	7,697	8,121	8,191	8,176	11,911	12,549	14,463	15.25
Construction / Building / Engineering	4,743	4,989	5,029	6,196	6,528	6,814	7,262	7,759	8,250	9,372	9,295	9,705	10,414	11,667	12.03
Consulting (Business/Technical)	5,830	6,092	6,436	6,745	7,430	7,842	8,016	8,392	8,811	9,348	9,413	11,055	11,626	11,714	0.76
Education	3,781	4,180	4,578	5,156	5,707	6,172	6,569	7,062	7,614	7,712	7,832	9,040	9,748	11,017	13.02
Electrical & Electronics	7,354	7,936	8,275	8,657	9,057	9,194	9,746	10,179	10,623	12,679	12,775	10,093	10,610	14,310	34.87
Financial Services/Securities/Insurance	5,547	5,803	6,744	6,872	7,348	7,826	8,209	8,654	9,172	9,876	10,505	9,512	10,081	12,780	26.77
Hotel/Restaurant/Food Service/Hospitality	5,293	5,390	5,967	6,411	6,603	6,770	7,199	7,579	7,949	7,899	8,191	9,547	9,987	10,585	5.99
Manufacturing / Production	5,600	6,523	6,691	6,913	7,220	7,546	7,980	8,356	8,759	8,609	8,830	9,876	10,314	11,913	15.50
Oil / Gas / Petroleum	6,864	8,208	8,011	8,082	8,512	8,560	9,145	9,527	9,889	10,742	10,977	10,773	11,217	12,928	15.26
Printing / Publishing	4,588	4,832	4,768	5,175	5,438	5,366	5,523	5,717	5,877	7,595	8,035	9,807	10,245	11,165	8.98
Property / Real Estate	4,829	6,258	6,334	6,527	6,782	6,823	7,490	7,926	8,347	10,180	10,830	10,477	11,120	12,590	13.22
Science & Technology / Aerospace / Bio Technology	5,038	5,697	6,932	6,951	7,656	7,911	8,530	9,140	9,803	10,455	10,943	9,035	9,652	12,438	28.86
Semiconductor / Wafer Fabrication	6,158	6,542	6,508	6,552	6,938	6,865	7,117	7,315	7,489	8,326	8,169	9,704	9,993	11,083	10.90
Telecommunication	5,846	6,367	6,564	6,943	7,246	7,412	7,750	8,075	8,405	10,360	11,005	10,278	10,818	12,785	18.18
Transport/Storage/Freight/Shipping	5,786	6,068	6,102	6,911	7,327	7,353	7,689	8,083	8,435	8,606	8,587	9,953	10,391	11,691	12.50
Utilities	5,090	5,429	5,780	5,814	5,974	6,023	6,310	6,652	6,862	7,539	7,274	9,960	10,331	10,428	0.94
Wholesale/Retail/Trading	4,555	5,449	5,366	5,381	5,656	5,689	6,056	6,228	6,463	7,478	7,539	9,608	10,006	10,127	1.21

*January - June

Sources: Jobstreet & PIKOM estimates

Table 7: Average Monthly Advertised Salaries of Entry Level Digital Professionals by Industry (RM) 2010 - 2023*

Industry: Entry Level	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	2020	2021	2022	2023	Y-o-Y : 2022-2023
Agriculture / Plantation / Aquaculture	2,293	2,536	2,735	2,828	2,658	2,876	2,989	3,078	3,184	3,094	3,104	3,503	3,606	3,786	4.99
Automotive / Heavy Industry / Machinery	1,731	2,175	2,175	2,763	3,063	3,387	3,615	3,955	4,324	3,812	3,742	3,290	3,576	3,800	6.29
Banking	2,000	2,225	2,425	2,425	2,875	3,008	3,130	3,335	3,566	3,651	3,756	3,526	3,755	4,128	9.92
Call Center / IT-Enabled Services / BPO	2,125	2,275	2,275	2,375	2,575	2,660	2,714	2,819	2,928	2,839	3,122	3,377	3,504	3,847	9.79
Computer / Information Technology (Hardware)	2,155	2,213	2,368	2,385	2,485	2,541	2,607	2,697	2,784	2,823	2,841	3,455	3,561	3,827	7.47
Computer / Information Technology (Software)	2,244	2,400	2,450	2,553	2,763	2,861	2,934	3,059	3,189	3,054	3,031	3,545	3,679	4,098	11.37
Construction / Building / Engineering	1,546	1,800	2,023	2,394	2,494	2,722	2,934	3,200	3,472	3,417	3,492	3,305	3,574	3,860	8.02
Consulting (Business/Technical)	2,125	2,275	2,325	2,525	2,625	2,742	2,832	2,965	3,094	3,038	3,072	3,395	3,534	3,920	10.91
Education	1,750	1,975	1,983	2,305	2,433	2,602	2,721	2,900	3,081	2,995	3,016	3,168	3,356	3,774	12.46
Electrical & Electronics	1,769	2,063	2,343	2,343	2,931	3,110	3,279	3,552	3,870	3,893	4,040	3,554	3,855	4,091	6.13
Financial Services/Securities/Insurance	2,521	2,557	2,584	2,569	2,747	2,806	2,869	2,946	3,026	3,285	3,402	3,709	3,831	3,879	1.25
Hotel/Restaurant/Food Service/Hospitality	2,199	2,225	2,288	2,288	2,340	2,362	2,388	2,425	2,461	2,514	2,529	3,318	3,377	3,666	8.57
Manufacturing / Production	2,434	2,508	2,508	2,558	2,655	2,698	2,724	2,776	2,828	2,823	2,811	3,384	3,454	3,804	10.14
Oil / Gas / Petroleum	2,705	2,764	2,767	2,738	2,558	2,681	2,786	2,803	2,828	3,035	3,092	3,320	3,377	3,962	17.32
Printing / Publishing	2,131	2,225	2,300	2,300	2,300	2,310	2,391	2,452	2,497	3,006	3,209	3,917	4,037	4,932	22.17
Property / Real Estate	1,961	2,937	2,388	2,339	2,261	2,358	2,539	2,580	2,626	3,188	3,378	3,415	3,525	3,901	10.66
Science & Technology / Aerospace / Bio Technology	2,162	2,350	2,500	2,500	2,500	2,521	2,683	2,806	2,899	3,087	3,178	3,511	3,633	3,941	8.48
Semiconductor / Wafer Fabrication	2,442	2,783	2,787	2,721	2,616	2,759	2,863	2,908	2,968	3,024	3,033	3,513	3,586	4,268	19.00
Telecommunication	2,008	2,120	2,150	2,280	2,375	2,457	2,518	2,613	2,706	3,137	3,332	3,859	4,031	4,084	1.31
Transport/Storage/Freight/Shipping	2,290	2,330	2,302	2,638	2,484	2,617	2,642	2,704	2,762	2,749	2,742	3,285	3,361	3,836	14.14
Utilities	2,113	2,325	2,396	2,437	2,271	2,428	2,516	2,807	2,858	2,740	2,749	3,880	4,012	4,462	11.20
Wholesale/Retail/Trading	1,725	1,800	1,925	2,000	2,075	2,145	2,218	2,315	2,408	2,554	2,597	3,320	3,455	3,775	9.25

*January - June

Sources: Jobstreet & PIKOM estimates

Table 8: Average Monthly Advertised Salaries of Junior Executive Digital Professionals by Industry (RM) 2010 – 2023*

Industry: Junior Executive	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	2020	2021	2022	2023	Y-o-Y: 2022-2023
Agriculture / Plantation / Aquaculture	2,968	3,372	3,683	3,900	4,025	4,268	4,485	4,741	5,008	4,693	4,694	4,517	4,729	6,529	32.0
Automotive / Heavy Industry / Machinery	3,075	3,100	3,563	3,663	3,878	3,994	4,063	4,247	4,434	4,587	4,223	4,530	4,703	6,313	28.8
Banking	3,262	3,400	3,475	3,543	4,160	4,165	4,305	4,537	4,759	5,178	5,170	5,125	5,391	6,714	20.6
Call Center / IT-Enabled Services / BPO	2,925	3,225	3,225	3,400	3,874	3,913	4,027	4,244	4,451	4,268	4,653	4,773	4,988	6,007	17.2
Computer / Information Technology (Hardware)	2,963	3,002	3,100	3,213	3,350	3,421	3,529	3,649	3,762	3,852	3,847	5,034	5,198	6,532	21.6
Computer / Information Technology (Software)	2,750	3,025	3,063	3,275	3,900	3,947	4,074	4,343	4,606	4,303	4,242	5,150	5,424	6,519	17.0
Construction / Building / Engineering	2,675	2,900	2,950	3,152	3,352	3,424	3,494	3,644	3,785	4,369	4,186	4,579	4,780	6,336	27.4
Consulting (Business/Technical)	3,025	3,150	3,283	3,350	4,041	4,067	4,246	4,518	4,786	4,631	4,626	5,089	5,369	6,686	20.7
Education	2,175	2,523	2,575	2,888	3,150	3,288	3,434	3,664	3,891	3,857	3,819	4,724	4,998	6,395	23.5
Electrical & Electronics	2,725	3,113	3,228	3,229	3,513	3,582	3,675	3,831	3,989	4,556	4,524	4,950	5,167	6,406	20.2
Financial Services/Securities/Insurance	3,262	3,400	3,479	3,543	4,160	4,165	4,306	4,538	4,760	4,983	5,144	5,456	5,730	6,879	16.9
Hotel/Restaurant/Food Service/Hospitality	2,525	2,575	3,045	3,258	3,355	3,594	3,810	4,054	4,310	3,856	4,047	4,436	4,670	5,957	23.2
Manufacturing / Production	3,025	3,095	3,157	3,292	3,392	3,464	3,565	3,676	3,778	3,683	3,679	4,652	4,780	6,351	27.7
Oil / Gas / Petroleum	3,500	3,675	3,725	3,775	3,875	3,979	4,182	4,319	4,449	4,604	4,675	5,005	5,174	6,343	19.0
Printing / Publishing	2,699	2,790	2,950	3,215	3,215	3,375	3,521	3,678	3,829	4,389	4,753	4,220	4,431	6,108	31.9
Property / Real Estate	2,538	3,905	3,215	3,225	3,425	3,500	3,810	3,975	4,130	4,836	5,108	4,914	5,161	6,451	21.1
Science & Technology / Aerospace / Bio Technology	2,585	2,925	3,069	3,171	3,888	3,907	4,023	4,305	4,588	4,790	4,867	4,703	4,997	6,819	30.7
Semiconductor / Wafer Fabrication	3,160	3,700	3,753	3,753	3,963	4,094	4,297	4,481	4,668	4,586	4,586	5,176	5,371	7,002	25.6
Telecommunication	3,025	3,250	3,388	3,538	3,913	3,984	4,094	4,300	4,501	5,176	5,447	4,865	5,120	6,814	27.8
Transport/Storage/Freight/Shipping	2,964	3,098	3,100	3,638	3,763	3,884	3,965	4,166	4,344	4,170	4,146	4,761	4,951	6,422	25.0
Utilities	2,734	3,092	3,226	3,360	3,440	3,603	3,775	4,324	4,495	4,156	4,156	4,563	4,802	6,348	27.1
Wholesale/Retail/Trading	2,483	3,300	3,425	3,425	3,513	3,764	4,086	3,949	4,207	4,554	4,602	4,638	4,840	6,159	23.0

*January – June

Sources: Jobstreet & PIKOM estimates

Table 9: Average Monthly Advertised Salaries of Senior Executive Digital Professionals by Industry (RM) 2010 – 2023*

Industry: Senior Executive	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	2020	2021	2022	2023	Y-o-Y : 2022-2023
Agriculture / Plantation / Aquaculture	3,967	4,600	5,033	5,943	7,154	7,803	8,173	8,909	9,754	8,531	8,502	7,181	7,806	9,317	19.4
Automotive / Heavy Industry / Machinery	4,814	4,989	5,050	5,189	5,400	5,550	5,644	5,786	5,933	6,408	5,729	7,510	7,728	8,907	15.3
Banking	4,749	5,395	5,575	5,825	6,319	6,840	7,009	7,344	7,740	8,299	8,279	8,035	8,482	9,023	6.4
Call Center / IT-Enabled Services / BPO	4,428	4,556	4,750	5,054	6,125	6,160	6,423	6,850	7,280	6,790	7,290	7,546	7,985	8,569	7.3
Computer / Information Technology (Hardware)	4,577	4,769	4,835	5,110	5,410	6,038	6,056	6,269	6,544	6,575	6,550	8,095	8,468	8,984	6.1
Computer / Information Technology (Software)	4,505	4,769	5,160	5,400	5,999	6,612	6,672	7,004	7,416	6,989	6,842	8,588	9,041	9,045	0.1
Construction / Building / Engineering	4,250	4,500	4,575	4,700	5,322	5,364	5,553	5,813	6,071	6,941	6,511	7,442	7,812	8,936	14.4
Consulting (Business/Technical)	5,150	5,525	5,879	6,000	6,375	6,543	6,751	7,020	7,303	7,407	7,199	8,397	8,707	9,094	4.4
Education	3,225	4,100	4,100	4,165	4,475	4,913	5,127	5,383	5,696	5,692	5,573	7,644	8,061	8,758	8.6
Electrical & Electronics	3,915	4,750	5,119	5,233	5,800	6,095	6,490	6,910	7,375	7,804	7,804	8,101	8,626	8,728	1.2
Financial Services/Securities/Insurance	4,749	5,261	5,450	5,825	6,319	6,938	7,046	7,387	7,798	8,044	8,305	7,665	8,099	9,233	14.0
Hotel/Restaurant/Food Service/Hospitality	4,801	4,801	5,475	5,925	6,050	6,399	6,723	7,079	7,454	6,905	7,011	7,998	8,362	8,790	5.1
Manufacturing / Production	4,525	5,175	5,298	5,822	6,207	6,446	6,702	7,063	7,432	6,872	6,822	7,865	8,214	8,950	9.0
Oil / Gas / Petroleum	6,209	7,500	7,500	7,575	8,000	8,291	8,744	9,128	9,532	9,620	9,630	7,911	8,240	8,998	9.2
Printing / Publishing	4,000	4,150	4,154	4,550	4,800	4,851	4,896	5,060	5,212	6,348	6,542	6,600	6,877	7,950	15.6
Property / Real Estate	4,339	5,300	5,825	6,050	6,250	6,483	7,017	7,452	7,906	8,938	9,317	7,399	7,858	9,189	16.9
Science & Technology / Aerospace / Bio Technology	4,515	5,031	6,500	6,500	7,063	7,600	8,110	8,696	9,388	9,266	9,533	7,921	8,467	8,554	1.0
Semiconductor / Wafer Fabrication	5,563	5,685	5,810	5,875	6,225	6,303	6,414	6,576	6,738	7,070	6,757	8,437	8,667	9,227	6.5
Telecommunication	5,225	6,193	6,675	6,675	7,000	7,361	7,794	8,183	8,616	9,604	10,088	8,390	8,846	9,197	4.0
Transport/Storage/Freight/Shipping	5,229	5,400	5,610	6,320	6,730	6,943	7,183	7,559	7,927	7,524	7,352	7,774	8,117	8,767	8.0
Utilities	4,550	4,710	5,201	5,201	5,350	5,525	5,699	5,888	6,093	6,401	5,991	7,497	7,744	9,255	19.5
Wholesale/Retail/Trading	4,100	4,800	4,800	4,800	5,025	5,170	5,409	5,605	5,809	6,290	6,199	7,130	7,404	8,569	15.7

*January – June

Sources: Jobstreet & PIKOM estimates

Table 10: Average Monthly Advertised Salaries of Manager Level Digital Professionals by Industry (RM) 2010 – 2023*

Industry: Manager	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	2020	2021	2022	2023	Y-o-Y : 2022-2023
Agriculture / Plantation / Aquaculture	5,851	6,976	7,372	8,440	10,317	10,893	11,523	12,533	13,627	12,714	13,099	11,381	12,349	13,534	9.60
Automotive / Heavy Industry / Machinery	8,903	8,995	9,166	9,578	10,133	10,267	10,510	10,832	11,140	12,568	11,696	11,917	12,338	14,384	16.58
Banking	7,673	7,967	8,468	8,759	9,213	9,450	9,741	10,096	10,465	12,310	12,553	11,786	12,313	13,532	9.90
Call Center / IT-Enabled Services / BPO	7,280	8,394	8,993	9,023	9,744	10,078	10,506	10,988	11,524	11,583	12,997	12,013	12,561	13,734	9.34
Computer / Information Technology (Hardware)	6,544	6,621	6,791	8,201	8,556	8,962	9,401	9,954	10,495	10,643	11,074	11,695	12,375	14,150	14.35
Computer / Information Technology (Software)	6,644	7,232	7,558	7,669	8,651	9,230	9,407	9,853	10,360	10,412	10,540	15,109	15,876	18,410	15.96
Construction / Building / Engineering	6,372	6,565	6,574	8,475	8,807	9,376	9,994	10,696	11,393	12,647	12,819	12,092	13,028	13,549	4.00
Consulting (Business/Technical)	7,655	7,995	8,594	8,908	10,064	10,444	10,820	11,398	12,016	12,415	12,695	13,385	14,115	14,331	1.53
Education	4,913	5,162	5,999	6,712	7,579	8,335	8,858	9,560	10,366	10,221	10,597	11,913	12,929	15,029	16.24
Electrical & Electronics	11,856	12,488	12,833	13,275	13,554	13,790	14,495	14,977	15,455	18,708	19,018	12,392	12,922	13,655	5.67
Financial Services/Securities/Insurance	6,999	7,546	8,248	8,464	8,814	9,272	9,658	10,075	10,540	11,571	12,363	11,593	12,164	13,025	7.07
Hotel/Restaurant/Food Service/Hospitality	7,081	7,281	8,019	8,415	8,725	8,933	9,479	9,959	10,413	10,287	10,801	12,482	13,027	13,954	7.12
Manufacturing / Production	7,264	8,286	8,342	8,701	9,009	9,384	9,944	10,380	10,836	10,589	11,001	12,246	12,759	13,813	8.26
Oil / Gas / Petroleum	9,157	11,373	10,985	10,758	11,537	11,574	12,328	12,841	13,317	14,337	14,835	14,649	15,231	15,469	1.56
Printing / Publishing	5,899	6,293	6,084	6,462	6,922	6,772	6,903	7,118	7,282	9,460	10,078	12,500	13,009	17,425	33.94
Property / Real Estate	6,399	8,037	8,532	8,592	9,013	9,050	9,893	10,484	11,045	13,322	14,354	11,964	12,689	14,447	13.86
Science & Technology / Aerospace / Bio Technology	6,659	7,629	9,521	9,231	10,185	10,609	11,434	12,233	13,114	13,804	14,686	11,667	12,451	13,328	7.05
Semiconductor / Wafer Fabrication	8,204	8,621	8,510	8,344	8,977	8,799	9,042	9,251	9,413	10,540	10,409	12,279	12,592	13,602	8.02
Telecommunication	7,931	8,507	8,684	9,082	9,410	9,667	10,001	10,344	10,692	13,273	14,238	13,293	13,924	14,938	7.28
Transport/Storage/Freight/Shipping	7,712	8,189	8,217	8,976	9,705	9,692	10,127	10,634	11,074	11,214	11,327	13,421	13,988	16,373	17.05
Utilities	6,710	7,143	7,618	7,386	7,715	7,713	8,035	8,283	8,512	9,542	9,228	12,110	12,488	13,774	10.30
Wholesale/Retail/Trading	6,047	7,279	7,031	6,817	7,246	7,217	7,626	7,885	8,115	9,374	9,549	12,134	12,579	12,662	0.66

*January – June

Sources: Jobstreet & PIKOM estimates

Table 11: Average Monthly Advertised Salaries of Senior Manager Digital Professionals by Industry (RM) 2010 - 2023*

Industry: Senior Manager	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	2020	2021	2022	2023	Y-o-Y : 2022-2023
Agriculture / Plantation / Aquaculture	8,145	9,646	10,120	12,209	14,834	15,317	16,528	18,096	19,771	20,716	21,081	23,150	25,423	26,130	2.78
Automotive / Heavy Industry / Machinery	12,395	12,438	12,582	13,855	14,570	14,437	15,076	15,640	16,163	20,479	18,811	19,690	20,610	23,853	15.73
Banking	10,203	11,887	13,961	13,961	14,700	15,820	17,095	18,169	19,436	23,544	24,639	26,526	28,558	30,860	8.06
Call Center / IT-Enabled Services / BPO	15,136	15,722	17,013	18,014	18,832	19,523	20,416	21,335	22,312	25,642	28,417	29,944	31,553	35,938	13.90
Computer / Information Technology (Hardware)	12,751	14,528	15,789	16,767	17,566	18,242	20,369	21,813	23,294	25,362	26,604	28,519	30,573	33,390	9.22
Computer / Information Technology (Software)	9,250	10,000	10,375	11,094	12,439	12,979	13,493	14,226	15,031	16,962	16,958	18,019	19,147	21,369	11.60
Construction / Building / Engineering	8,871	9,078	9,024	12,260	12,663	13,184	14,335	15,443	16,530	20,606	20,622	22,499	24,547	25,653	4.51
Consulting (Business/Technical)	11,196	11,516	12,098	12,942	14,047	15,415	15,429	16,061	16,855	20,317	20,550	21,808	23,143	25,911	11.96
Education	6,840	7,138	8,235	9,709	10,898	11,720	12,706	13,803	15,039	16,652	17,053	18,738	20,589	21,130	2.63
Electrical & Electronics	16,506	17,268	17,753	19,203	19,489	19,391	20,792	21,624	22,424	30,483	30,594	32,282	34,062	38,669	13.52
Financial Services/Securities/Insurance	10,203	10,250	13,961	13,961	14,700	15,950	17,167	18,323	19,732	22,771	24,691	26,654	28,773	30,884	7.34
Hotel/Restaurant/Food Service/Hospitality	9,858	10,067	11,008	12,172	12,545	12,561	13,596	14,380	15,108	16,761	17,385	18,342	19,352	21,975	13.55
Manufacturing / Production	10,750	13,550	14,150	14,195	14,838	15,737	16,966	17,887	18,919	20,292	21,103	22,319	23,606	26,647	12.88
Oil / Gas / Petroleum	12,749	15,727	15,080	15,562	16,588	16,275	17,683	18,541	19,321	23,363	23,876	25,106	26,399	30,221	14.48
Printing / Publishing	8,213	8,702	8,352	9,348	9,953	9,522	9,902	10,277	10,565	15,414	16,214	17,080	17,992	20,508	13.98
Property / Real Estate	8,903	11,113	11,712	12,429	12,959	12,726	14,190	15,137	16,025	21,707	23,100	24,815	26,658	28,963	8.65
Science & Technology / Aerospace / Bio Technology	9,271	10,549	13,069	13,354	14,645	14,918	16,401	17,662	19,028	22,488	23,633	25,532	27,584	29,549	7.12
Semiconductor / Wafer Fabrication	11,422	11,921	11,682	12,070	12,908	12,372	12,970	13,357	13,658	17,176	16,747	17,358	17,992	21,314	18.46
Telecommunication	11,042	11,763	11,921	13,138	13,530	13,593	14,345	14,935	15,512	21,626	22,909	24,291	25,757	28,895	12.18
Transport/Storage/Freight/Shipping	10,737	11,323	11,280	12,984	13,955	13,629	14,527	15,354	16,067	18,275	18,229	19,206	20,234	23,055	13.94
Utilities	9,342	9,876	10,457	10,685	11,093	10,845	11,525	11,959	12,350	15,550	14,844	15,475	16,134	18,852	16.85
Wholesaler/Retail/Trading	8,418	10,065	9,651	9,861	10,419	10,148	10,939	11,385	11,774	15,275	15,366	16,113	16,896	19,471	15.24

* January - June

Sources: Jobstreet & PIKOM estimates

EARNED SALARIES OF DIGITAL PROFESSIONALS IN MALAYSIA

This new section reviews actual earned salaries provided by employees to Payscale, which will be used to juxtapose against advertised salaries sourced from Jobstreet by SEEK in subsequent editions of this report.

At this stage, we merely extract and present insights from the data on a standalone basis without direct comparison except that earned salaries are in general 20 – 30% lower than advertised offers.

Our analysis of Payscale salaries is divided into three categories: Technology jobs, Managerial positions and C-Level employment. Further, salaries are clustered into four position levels differentiated by years of experience: entry level, early career, mid career and late career

These are presented in **Tables 12 – 14** and include ratios from benchmarking salaries of other position levels against entry level jobs.

Among technology jobs, overall average monthly salaries for solutions architects (RM11,599) are streets ahead of the other 34 and is almost double the remuneration of the next highest earned by development operations (devops) engineers (RM5,945) (See **Table 12**).

Interestingly, data scientists take home a monthly average of RM4,821 while at the other end of the spectrum, the lowest paid digital talents are support and network technicians.

The salary gap between solutions architects and devops engineers is less pronounced for experienced professionals. Late career talents in solutions architecture earn only marginally higher than engineers at monthly averages of RM15,306 against RM15,000.

It is also noteworthy that apart from these two jobs, eight others are paid more than data scientists at the late career stage. This would suggest that data scientists in Malaysia have yet to reach the desired levels of competency.

At the highest position level, four other jobs aside from solutions architect and devops engineer exceed the RM10,000 ceiling in monthly salaries: software engineer (RM10,993), network engineer (RM10,983),

network administrator (RM10,938) and data engineer (RM10,174).

In terms of the salary gap between the other (overall) position levels and entry level, the widest difference in ratio are for solutions architects (1.88), network administrators (1.65) and database administrators (1.64).

Solutions architects are also the highest overall earners for managerial positions in 2023. In this case, a senior solutions architect draws an average monthly salary of RM16,735 with wage ranges of RM10,209 for entry level talents to RM21,863 for late career professionals (See **Table 13**).

Other top earners on this list include senior project managers for IT with an overall average of RM16,254 and senior data scientists at RM9,970. Again, the overall averages of the top two in managerial positions are considerably higher than the other 16 jobs.

At the late career stage, database administrators are the second highest earners after senior solutions architects at RM18,633, eclipsing senior project managers for IT (RM16,930) and data scientists (RM14,124).

The three jobs in this category with the highest jump in salaries through the years are database administrators with an overall ratio of 2.92 against entry level, senior software engineer, developer or programmer (2.35) and project manager for IT (2.14).

If average salaries were only compared between late career and entry level, the gap is more than six times (6.46) for database administrators. The next highest difference is for senior systems engineer (3.94) and eCommerce manager (3.41).

On the flip side, managerial jobs with the lowest potential for pay rises through the years are IT managers (ratio of 1.39 between late career and entry level), senior project managers of IT (1.71) and senior data scientists (1.78).

A plausible interpretation would suggest that the scope of work and capabilities for these jobs essentially stay the same no matter the experience level.

Table 12: Average Salaries Earned by Digital Professionals by Technology Positions (RM & Ratio) 2023

IT Jobs	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average
TECHNOLOGY POSITIONS	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	BENCHMARKED RATIO AGAINST ENTRY LEVEL UNDER TECHNOLOGY CATEGORY				
Solutions Architect	11,599	6,156	7,742	11,667	15,306	1.88	1.00	1.26	1.90	2.49
Development Operations (DevOps) Engineer	5,945	4,042	5,083	9,698	15,000	1.47	1.00	1.26	2.40	3.71
Data Scientist	4,821	3,830	4,808	7,450	9,554	1.26	1.00	1.26	1.95	2.49
Network Administrator	4,716	2,849	3,583	6,629	10,938	1.65	1.00	1.26	2.33	3.84
Business Analyst, IT	4,690	3,395	4,065	6,587	9,230	1.38	1.00	1.20	1.94	2.72
Business Intelligence (BI) Analyst	4,545	3,584	4,200	6,400	9,779	1.27	1.00	1.17	1.79	2.73
Technical Support Specialist	4,506	3,038	3,820	4,464	7,250	1.48	1.00	1.26	1.47	2.39
Database Administrator (DBA)	4,347	2,650	3,006	6,000	9,900	1.64	1.00	1.13	2.26	3.74
Data Engineer	4,294	3,302	4,056	7,733	10,174	1.30	1.00	1.23	2.34	3.08
Java Developer	4,142	3,052	4,090	6,333	5,633	1.36	1.00	1.34	2.08	1.85
Software Engineer	4,074	3,107	4,015	5,959	10,993	1.31	1.00	1.29	1.92	3.54
Quality Assurance (QA) Analyst Software	4,067	2,651	3,333	5,833	9,625	1.53	1.00	1.26	2.20	3.63
System Administrator, Computer / Network	4,051	2,800	3,875	5,833	4,898	1.45	1.00	1.38	2.08	1.75
Systems Analyst	4,044	2,529	3,512	5,151	7,899	1.60	1.00	1.39	2.04	3.12
Help Desk Technician	3,994	2,982	3,750	4,000	5,432	1.34	1.00	1.26	1.34	1.82
Technical Support Analyst IT	3,949	3,000	3,876	5,087	8,393	1.32	1.00	1.29	1.70	2.80
Network Engineer	3,852	2,948	5,222	6,656	10,983	1.31	1.00	1.77	2.26	3.73
.NET Software Developer / Programmer	3,800	3,000	3,665	5,300	8,000	1.27	1.00	1.22	1.77	2.67
Applications Engineer	3,747	3,025	3,678	5,535	7,355	1.24	1.00	1.22	1.83	2.43

IT Jobs	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average
TECHNOLOGY POSITIONS	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	BENCHMARKED RATIO AGAINST ENTRY LEVEL UNDER TECHNOLOGY CATEGORY				
Network Security Engineer	3,733	2,344	2,948	6,582	9,975	1.59	1.00	1.26	2.81	4.26
Test / Quality Assurance (QA) Engineer (Computer Software)	3,733	2,691	3,499	5,391	7,686	1.39	1.00	1.30	2.00	2.86
Software Developer	3,692	2,926	3,627	5,466	7,167	1.26	1.00	1.24	1.87	2.45
Data Analyst	3,668	3,166	3,641	5,048	7,632	1.16	1.00	1.15	1.59	2.41
Software Engineer / Developer / Programmer	3,636	3,406	3,469	6,158	7,861	1.07	1.00	1.02	1.81	2.31
Cyber Security Analyst	3,626	3,389	3,965	6,269	9,333	1.07	1.00	1.17	1.85	2.75
System Administrator, Windows Server	3,537	2,481	3,120	3,594	5,930	1.43	1.00	1.26	1.45	2.39
Quality Assurance (QA) Analyst	3,359	2,673	3,362	4,300	7,095	1.26	1.00	1.26	1.61	2.65
Systems Engineer, IT	3,306	2,732	3,219	4,204	5,990	1.21	1.00	1.18	1.54	2.19
Quality Assurance (QA) Engineer	3,289	2,758	3,048	4,103	5,995	1.19	1.00	1.11	1.49	2.17
Web Developer	3,208	2,755	3,282	4,861	5,953	1.16	1.00	1.19	1.76	2.16
Junior Software Engineer	2,989	3,003	3,513	5,094	8,405	1.00	1.00	1.17	1.70	2.80
Network Technician	2,704	2,000	2,340	5,622	9,276	1.35	1.00	1.17	2.81	4.64
Support Technician Computer / Network / IT	2,607	2,000	2,260	5,622	5,072	1.30	1.00	1.13	2.81	2.54
Support Technician, Information Technology (IT)	2,607	2,000	2,525	2,933	4,012	1.30	1.00	1.26	1.47	2.01

Sources: Payscale & PIKOM estimates

Table 13: Average Salaries Earned by Digital Professionals by Managerial Positions (RM & Ratio) 2023

Digital Jobs	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average
MANAGERIAL POSITIONS	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	BENCHMARKED RATIO AGAINST ENTRY LEVEL UNDER MANAGERIAL CATEGORY				
Senior Solutions Architect	16,735	10,209	12,719	13,737	21,863	1.64	1.00	1.25	1.35	2.14
Senior Project Manager, IT	16,254	9,915	12,353	15,000	16,930	1.64	1.00	1.25	1.51	1.71
Senior Data Scientist	9,970	7,915	9,954	10,000	14,124	1.26	1.00	1.26	1.26	1.78
Data Manager	9,156	5,585	6,959	7,792	12,500	1.64	1.00	1.25	1.40	2.24
Senior Database Administrator (DBA)	8,414	2,883	3,625	11,293	18,633	2.92	1.00	1.26	3.92	6.46
Sr. Software Engineer / Developer / Programmer	7,996	3,400	6,706	8,180	10,000	2.35	1.00	1.97	2.41	2.94
Information Technology (IT) Manager	7,721	6,324	7,399	6,975	8,801	1.22	1.00	1.17	1.10	1.39
Senior Software Engineer	7,674	4,712	5,925	7,739	9,228	1.63	1.00	1.26	1.64	1.96
Project Manager, Information Technology (IT)	7,639	3,566	4,400	7,082	11,342	2.14	1.00	1.23	1.99	3.18
Quality Assurance Manager	7,041	4,373	5,500	7,026	7,996	1.61	1.00	1.26	1.61	1.83
Software Quality Assurance (SQA) Manager	7,041	4,373	5,500	7,026	7,996	1.61	1.00	1.26	1.61	1.83
Senior Business	6,925	4,521	5,685	7,681	10,000	1.53	1.00	1.26	1.70	2.21
Senior Systems Analyst	6,508	4,645	5,842	6,796	8,690	1.40	1.00	1.26	1.46	1.87
eCommerce Manager	6,254	3,981	5,006	8,216	13,557	1.57	1.00	1.26	2.06	3.41
Senior Systems Engineer	6,006	3,338	4,198	6,247	13,167	1.80	1.00	1.26	1.87	3.94
Senior Web Developer	5,596	3,976	5,000	6,419	8,000	1.41	1.00	1.26	1.61	2.01
Senior Systems Administrator	5,417	3,304	4,117	4,583	7,935	1.64	1.00	1.25	1.39	2.40
Information Technology (IT) Consultant	5,362	3,230	3,887	6,901	9,264	1.66	1.00	1.20	2.14	2.87

Sources: Payscale & PIKOM estimates

Table 14: Average Salaries Earned by Digital Professionals by C-Level Positions (RM & Ratio) 2023

Digital Jobs	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average	Overall Average	Entry Average	Early Career Average	Mid Career Average	Late Career Average
C-LEVEL POSITIONS	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	MONTHLY RM	BENCHMARKED RATIO AGAINST ENTRY LEVEL UNDER C-LEVEL CATEGORY				
Chief Information Officer	25,434	15,515	19,330	30,775	32,669	1.64	1.00	1.25	1.98	2.11
Information Technology (IT) Director	24,398	14,883	18,542	29,521	38,695	1.64	1.00	1.25	1.98	2.60
Chief Executive Officer	24,267	20,000	23,400	31,837	41,273	1.21	1.00	1.17	1.59	2.06
Director of Analytics	23,500	14,335	17,860	28,435	37,271	1.64	1.00	1.25	1.98	2.60
Chief Financial Officer	23,176	7,861	9,886	12,982	20,439	2.95	1.00	1.26	1.65	2.60
Vice President (VP), Information Technology (IT)	19,653	11,988	14,936	23,780	31,169	1.64	1.00	1.25	1.98	2.60
Chief Operating Officer	18,309	11,927	15,000	20,408	31,011	1.54	1.00	1.26	1.71	2.60
Chief Technology Officer	16,110	4,771	6,000	8,163	19,750	3.38	1.00	1.26	1.71	4.14
Chief Information Security Officer	15,862	9,676	12,055	19,193	25,157	1.64	1.00	1.25	1.98	2.60

Sources: Payscale & PIKOM estimates

Naturally, the highest paid talent in any company is the chief executive officer (CEO) with a starting salary of RM20,000 and a late career average of RM41,273 (See **Table 14**). It should be noted that the data source from Payscale only indicates basic wages and does not take into account all other financial benefits such as bonuses and other forms of performance-related gratuity.

Entry level average salaries for the chief information officer (CIO) is the next highest at RM15,515 followed by the IT director at RM14,883. However, the latter earns more at the late career stage (RM38,695) in comparison to the CIO (RM32,669).

Another notable difference in salary range is for the director of analytics, who start off earning an average monthly salary of RM14,335 and ends with RM37,271. In other words, the demand for head of analytics is on the rise.

The largest gap between remuneration through the years is for chief technology officers (CTO), with late career talents earning more than four times (4.14) entry-level professionals. The narrowest difference is for the average salaries of CEOs, which only grew at 2.06 times over the years.

Table 15: Benchmarking Ratios of Average Salaries Earned by Job Category (RM & Ratio) 2023

JOB POSITIONS	BENCHMARKED AGAINST ENTRY LEVEL							
	OVERALL		TECHNOLOGY		MANAGERIAL		C-LEVEL	
	RM	Ratio	RM	Ratio	RM	Ratio	RM	Ratio
Entry Level Career	4,975	1.00	3,008	1.00	5,014	1.00	12,328	1.00
Early Level Career	6,213	1.25	3,741	1.24	6,376	1.27	15,223	1.23
Mid Level Career	9,039	1.82	5,811	1.93	8,261	1.65	22,788	1.85
Late Level Career	12,496	2.51	8,083	2.69	11,668	2.33	30,826	2.50

JOB POSITIONS	BENCHMARKED AGAINST TECHNOLOGY POSITION							
	OVERALL		TECHNOLOGY		MANAGERIAL		C-LEVEL	
	RM	Ratio	RM	Ratio	RM	Ratio	RM	Ratio
Entry Level Career		1.65		1.00		1.67		4.10
Early Level Career		1.66		1.00		1.70		4.07
Mid Level Career		1.56		1.00		1.42		3.92
Late Level Career		1.55		1.00		1.44		3.81

Sources: Payscale & PIKOM estimates

Table 15 benchmarks the salaries earned by digital talents at different levels (entry, early career, mid career and late career) in each of the three technology, managerial and C-level job categories.

Benchmarking the overall level against the entry level, the gap or ratio is the highest for the C-level category

(1.72) and lowest for technology positions (1.36). However, the largest gap is in the technology category with a ratio of 2.69.

Table 16 provides a all-in-one view of the top-five paying jobs by the respective categories according to the different experience levels.

Table 16: Top 5 Paying Jobs by Job Category (RM) 2023

ICT TECHNOLOGY POSITIONS	MONTHLY		ICT MANAGERIAL POSITIONS	MONTHLY		ICT C-LEVEL POSITIONS	MONTHLY	
	RM			RM			RM	
	OVERALL			OVERALL			OVERALL	
Solutions Architect	11,599		Senior Solutions Architect	16,735		Chief Information Officer	25,434	
Development Operations (DevOps) Engineer	5,945		Senior Project Manager, IT	16,254		Information Technology (IT) Director	24,398	
Data Scientist	4,821		Senior Data Scientist	9,970		Chief Executive Officer	24,267	
Network Administrator	4,716		Data Manager	9,156		Director of Analytics	23,500	
Business Analyst, IT	4,690		Senior Database Administrator (DBA)	8,414		Chief Financial Officer	23,176	
ENTRY			ENTRY			ENTRY		
Solutions Architect	6,156		Senior Solutions Architect	10,209		Chief Executive Officer	20,000	
Development Operations (DevOps) Engineer	4,042		Senior Project Manager, IT	9,915		Chief Information Officer	15,515	
Data Scientist	3,830		Senior Data Scientist	7,915		Information Technology (IT) Director	14,883	
Business Intelligence (BI) Analyst	3,584		Information Technology (IT) Manager	6,324		Director of Analytics	14,335	
Software Engineer / Developer / Programmer	3,406		Data Manager	5,585		Vice President (VP), Information Technology (IT)	11,988	
EARLY			EARLY			EARLY		
Solutions Architect	7,742		Senior Solutions Architect	12,719		Chief Executive Officer	23,400	
Network Engineer	5,222		Senior Project Manager, IT	12,353		Chief Information Officer	19,330	
Development Operations (DevOps) Engineer	5,083		Senior Data Scientist	9,954		Information Technology (IT) Director	18,542	
Data Scientist	4,808		Information Technology (IT) Manager	7,399		Director of Analytics	17,860	
Business Intelligence (BI) Analyst	4,200		Data Manager	6,959		Chief Operating Officer	15,000	
MID CAREER			MID CAREER			MID CAREER		
Solutions Architect	11,667		Senior Project Manager, IT	15,000		Chief Executive Officer	31,837	
Development Operations (DevOps) Engineer	9,698		Senior Solutions Architect	13,737		Chief Information Officer	30,775	
Data Engineer	7,733		Senior Database Administrator (DBA)	11,293		Information Technology (IT) Director	29,521	
Data Scientist	7,450		Senior Data Scientist	10,000		Director of Analytics	28,435	
Network Engineer	6,656		eCommerce Manager	8,216		Chief Operating Officer	23,780	
LATE CAREER			LATE CAREER			LATE CAREER		
Solutions Architect	15,306		Senior Solutions Architect	21,863		Chief Executive Officer	41,273	
Development Operations (DevOps) Engineer	15,000		Senior Database Administrator (DBA)	18,633		Information Technology (IT) Director	38,695	
Software Engineer	10,993		Senior Project Manager, IT	16,930		Director of Analytics	37,271	
Network Engineer	10,983		Senior Data Scientist	14,124		Chief Information Officer	32,669	
Network Administrator	10,938		eCommerce Manager	13,557		Chief Operating Officer	31,169	

Sources: Payscale & PIKOM estimates

SALARY TRENDS OF CEOS

In another new section for this report, we review the basic remuneration of CEOs in the same 22 industries via data sourced from the Economic Research Institute. Again, the salaries displayed do not take into account other forms of financial benefits.

Table 17 show a range of basic salaries for CEOs from a low of RM30,952 in the utilities industry to a high of RM64,602 in electrical & electronics. Among the

highest-paying industries for CEOs are companies in business processing (RM59,920), IT hardware (RM57,116), financial services (RM53,398) and banking (RM53,135).

At the other end of the scale, industries offering the lowest basic salaries for CEOs are utilities (RM30,952), retail (RM32,236) and printing & publishing (RM34,178).

Table 17: Average Monthly Salaries of CEO by Industry (RM) 2023

Industry	2023 Estimate
Agriculture / Plantation / Aquaculture	46,417
Automotive / Heavy Industry / Machinery	39,389
Banking	53,135
Call Center / IT-Enabled Services / BPO	59,920
Computer / Information Technology (Hardware)	57,116
Computer / Information Technology (Software)	36,073
Construction / Building / Engineering	45,097
Consulting (Business/Technical)	43,655
Education	37,570
Electrical & Electronics	64,602
Financial Services/Securities/Insurance	53,398
Hotel/Restaurant/Food Service/Hospitality	36,706
Manufacturing / Production	44,671
Oil / Gas / Petroleum	50,234
Printing / Publishing	34,178
Property / Real Estate	49,703
Science & Technology / Aerospace / Bio Technology	51,153
Semiconductor / Wafer Fabrication	34,709
Telecommunication	48,624
Transport/Storage/Freight/Shipping	38,432
Utilities	30,952
Wholesale/Retail/Trading	32,236

Sources: Economic Research Institute (ERI) & PIKOM estimates

SALARY TRENDS IN CYBERSECURITY

Table 18: Average Annual Salaries of Digital Professionals in Cybersecurity (RM) 2022 – 2023

Job Position	Year	Average	1 – 3 Years	>7 Years
CISO	2022	228,187	158,904	286,028
	2023	242,325	168,749	303,749
Director	2022	192,373	133,373	241,529
	2023	213,465	147,996	268,011
Security Engineer	2022	164,853	116,825	205,795
	2023	169,149	119,870	211,158
Security Manager	2022	145,992	103,459	182,250
	2023	158,241	112,140	197,542
Security Specialist	2022	144,163	102,163	179,967
	2023	154,052	109,171	192,312
Security Analyst	2022	143,304	101,555	178,895
	2023	145,838	103,350	182,058
Intelligence Analyst	2022	131,863	93,176	164,747
	2023	140,549	99,314	175,599
Incident Handler	2022	128,049	90,744	159,851
	2023	136,729	96,895	170,687
Security Consultant	2022	108,072	78,800	133,695
	2023	115,783	84,423	143,234

Source: SalaryExpert

Already an essential aspect of the digital economy, cybersecurity became even more pressing during the pandemic years as hacking and breaches increased in scale and frequency. It was during this period that demand for cybersecurity talents increased not only among existing companies but also new businesses that capitalised on considerable migration to the digital realm.

Naturally, the high demand led to a rise in salary packages for digital professionals in cybersecurity. For this reason, we commenced tracking the average annual salaries of nine cybersecurity-related jobs with data sourced from Salary Expert two years ago.

The nine selected jobs cover the strategic, management, operational and infrastructure requirements of cybersecurity, encompassing the bulk of its functions and requirements. For each job, we took into account two levels of salaries as well as their average, with the first being three years of cybersecurity experience and the second of at least seven years.

Table 18 shows that annual salaries have increased across the board, in some cases substantially in the past year. At the highest job position, annual salaries for the chief information security officer (CISO) increased by an estimated 6.2% to an average of RM242,325 with a range of between RM168,749 for talents with one to three years' experience and RM303,749 for those more than seven years in the job.

The largest quantum of increase is an estimated 11.0% from an average of RM192,373 in 2022 to RM213,465 this year for the director position. Lower down the scale, a security specialist now takes home an annual average of RM154,052, representing a hike of 6.9% over the previous year. At the low end, a security consultant is pulling in 7.1% more in annual average salary, increasing his pay to RM115,783 from RM108,072 the year before.

To provide the reader with a more well-rounded benchmark, this section includes the job description of each of the nine cybersecurity positions since nomenclature between the scope and scale of these jobs may vary from company to company, and also country to country.

Description for Selected Cybersecurity Jobs

Job Position	Job Description
CISO	Oversees an organisation's information security and heads the management of the IT security risks of the organisation throughout the lifecycle of the data, utilizing the knowledge of the location of critical or vital data and information, what the organisation's risk threshold is if the data become compromised, and how to protect the data while supporting the organisation's business objectives. Defines, develops, and implements a risk management structure, strategies, and policies to reduce risk and to prevent and defend against information security attacks. Governs, evaluates, and responds to risks involving the organisation's protected data and interests; and assures all information systems concerning security policies are operating correctly and compliantly. Recognises the security challenges in the current and future state of business operations; and provides the organisation with the right tools, skills, resources, relationships, and capabilities to protect against growing information security risks. Determines information security policies and strategies; structures security initiatives with security programmes and business objectives; and oversees the development, implementation, and enforcement of information security standards and procedures.
Director	Oversees a company's Cyber and IT Security management functions and programmes, and directs the systems that keep company data safe from security breaches that can damage company finances and destroy client trust. Expands and coaches cyber and IT security personnel and teams, manages staff assignments and relationships, and directs the progression of the team activities. Collaborates with top management in the risk management decision-making process, providing input to technology, architecture, and strategy.
Security Engineer	Plans, develops, and implements proven high-tech solutions to increase security and defend against hacking, malware and ransomware, insider threats, and other types of cybercrimes. Oversees monitoring of computer networks, identifies security issues, and anticipates security breaches. Executes the installation and maintenance of security programmes, plans, and software, including firewalls and data encryption programmes.
Security Manager	Manages a team of IT security professionals; and plans, designs, manages, and implements programmes, networks, and systems that protect a company's information systems and computer networks from cyber attacks, intrusions, malware, and various types of data breaches; and assures the networks are kept running smoothly in order to protect all sensitive data and prevent loss of time and money. Identifies current security threats, predicts future attacks, and designs a security incident response programme with a documented plan of action to take if a security incident occurs. Remediates security incidents, and works with upper management to prepare for potential business repercussions.
Security Specialist	Identifies and resolves highly complex issues to prevent cyber attacks on information systems and to keep computer information systems secure from interruption of service, intellectual property theft, network viruses, data mining, financial theft, and theft of sensitive customer data, allowing business to continue as normal. Designs, installs, and manages security mechanisms that protect networks and information systems against hackers, breaches, viruses, and spyware. Responds to incidents, investigates violations, and recommends enhancements to plug potential security gaps.
Security Analyst	Plans and implements security measures to protect computer systems, networks, and data from loss and service interruptions. Analyses and documents security risks, breaches, and other cyber security incidents and the damage they cause. Develops and implements a network disaster recovery plan, and oversees the monitoring of the computer networks for security issues. Installs and operates security software and measures to protect systems and information infrastructure, including firewalls and data encryption programmes.
Intelligence Analyst	Maintains the security and integrity of cyber systems and networks. Identifies and acquires raw, primary, and secondary data for predictive and reactive analyses. Evaluates cyber threat operations and system vulnerabilities and develops assessments, threat profiles and custom detection capabilities.
Incident Handler	Solves computer incidents. Analyzes and evaluates network anomalies to ensure they are fixed and prevented from reoccurring. Develops procedures to identify cybersecurity incidents. Determines how to handle identified threats.
Security Consultant	Sets strategy for cyber security implementations and oversees them. Confirms customer support meets company standards. Designs security solutions that are easy to replicate and repeat. Heads IT quality assurance activities.

SALARY TRENDS IN AI AND DATA SCIENCE

Table 19: Average Annual Salaries of Digital Professionals in AI and Data (RM) 2022 – 2023

Job Position	Year	Average	1 – 3 Years	>7 Years
Software Engineer Machine Learning	2022	154,419	108,799	193,087
	2023	166,393	117,235	208,059
Data Scientist	2022	150,533	93,583	188,073
	2023	160,339	113,463	200,325
Engineer AI	2022	138,315	97,594	172,950
	2023	143,534	101,276	179,475
AI Specialist	2022	132,631	133,373	165,842
	2023	139,117	98,160	173,953
Data Analytics Engineer	2022	129,382	92,351	161,250
	2023	137,304	98,006	171,124
Data Analyst	2022	123,670	87,640	154,384
	2023	132,523	93,915	165,437
Analyst Automation	2022	110,791	78,627	138,307
	2023	118,414	84,037	147,823
Data Analytics Developer	2022	101,016	72,104	125,898
	2023	104,749	74,768	130,550

Source: SalaryExpert

The use of artificial intelligence (AI) and data science is accelerating across almost all industries from financial services, retail and hospitality to manufacturing, transportation and logistics and even agriculture.

We reported last year that AI has the potential to double economic growth in the next 15 years by enhancing existing processes via automation and in so doing, driving human work towards higher value-added tasks. According to McKinsey, AI can create six million new jobs in Malaysia by 2030.

For this section, we also sourced data on key AI and data salaries from Salary Expert. We selected eight positions relevant to the development and application of AI and data analytics in planning and processes.

Similar to cybersecurity, our assessment considered two levels of salaries and derived an average salary from these two sets. The first level covers at least three years of AI and data work experience and the

second level is for digital talents with at least seven years' experience.

As with cybersecurity, annual salaries of jobs in AI and data science grew universally, as shown in **Table 19**. The highest growth in salaries is for software engineers in machine learning, increasing on an average by 7.8% from RM154,419 to RM166,393 in 2023. The salary range for this job amounts to RM117,235 at the lowest end to RM208,059 at its top end.

Other jobs showing a high rate of increase include the data analytics engineer whose average annual salary jumped 7.2% to RM137,304 from RM129,382 and automation analyst by 6.9% to RM118,414 from RM110,791.

To provide the reader with a more well-rounded benchmark, this section also includes the job description of each of the eight AI and data positions since nomenclature between the scope and scale of these jobs may vary from company to company, and also country to country.

Description for Selected AI and Data Science Jobs

Job Position	Job Description
Software Engineer Machine Learning	Researches, develops, and implements machine learning algorithms for use in software and hardware applications. Maintains up-to-date knowledge of current technological standards, equipment, and practices. Identifies and suggests optimisations and features to improve hardware/software capabilities.
Data Scientist	Collects and analyses statistics and information from multiple sources to spot trends and to gain maximum insight that can give the company a competitive advantage, and communicates informed conclusions and recommendations across an organisation's leadership structure. Strategises and identifies unique opportunities to locate and collect new data, explores and mines data from many angles, and determines what it means. Communicates data findings to both business and IT leaders to influence how an organisation approaches and meets business challenges of an evolving customer base and changing marketplace, using strong business acumen. Finds and recommends new uses for existing data sources; designs, modifies, and builds new data processes; and builds large, complex data sets.
Engineer AI	Develops and utilises simulations and models. Evaluates tools, technologies, architectures, models, and test results. Heads meetings regarding AI with external parties and internal business-embedded innovation teams. Collaborates with lead engineers to define subsystem requirements and acceptance criteria.
AI Specialist	Develops artificial intelligence, machine learning, deep learning, and natural language processing algorithms. Designs artificial intelligence solutions to solve business problems. Implements complex data systems.
Data Analytics Engineer	Develops the data extraction and preparation processes. Runs data quality audits and identifies issues with data collection. Implements improvements and fixes to data collection processes. Oversees SQL databases that can be large and complex.
Data Analyst	Assesses complex data systems and programmes in support of ad-hoc and standing management or customer requests. Creates programmes, methodologies, and files for analysing and presenting data. Examines data quality, applications, and functions. Produces output and sustains operation. Researches new data sources and analytical tools. Contributes to new product development and improvement in product delivery and presentation. Develops awareness of and familiarity with issues and events affecting organisation, department, and/or customer. Uses and supports database applications and analytical tools. Uses timely and appropriate participation of users/customers in data collection and query systems.
Analyst Automation	Supports the development of a company's automation projects from both a technical perspective and through business intelligence and expertise. Analyses functional specifications and business requirements in an automated environment. Collaborates with the quality assurance staff to perform automation planning and application testing before, during, and after project implementation; and executes timely reporting of planning and testing efforts. Develops automation solutions using software or through traditional development methods, and supports and troubleshoots already-developed solutions.
Data Analytics Developer	Designs and maintains data models and structures. Develops scalable SQL queries that can be used repeatedly. Confirms data meets company data validation standards. Collaborates with management to define key metrics that the data team should aim for.



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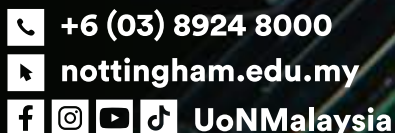
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SECTION D

REGIONAL BENCHMARKING OF SALARIES FOR DIGITAL TALENTS



The long-standing issue of brain drain continues to plague Malaysia's aspirations to become a vibrant innovation-led digital economy and join the ranks of fully-developed high-income economies.

On numerous occasions, voices from both the public and private sectors have expressed concern that the prevailing geoeconomic conditions could hasten the departure of talents, particularly critical human resources in the digital field from our shores.

In March this year, Human Resources Minister V. Sivakumar had pointed out that the country's loss of human capital amounted to 5.5% of the population with some 1.86 million Malaysians migrating overseas as at 2022.

This quantum of brain drain is considerably above the global average of 3.3% and does not account for citizens who are capitalising on prospects abroad and making a living in economies such as Singapore, Australia, the United Kingdom and United States.

The weakening of the Ringgit over the past few years has only compounded the problem as not only does this lead to a hollowing out of Malaysia's talent pool, but also discourages positive brain flow from abroad.

This section benchmark salaries of local digital jobs with those offered by regional economies. At the same time, it also offers a comparison of the salary landscape for digital talents in those selected economies.

As explained under 'Tracking Parameters and Methodology' earlier in this report, we sourced salary data from Payscale on:

- 61 digital jobs in three position levels; and
- from 21 economies including Malaysia.

BENCHMARKING OF AVERAGE SALARIES

For this exercise, we sourced data on salaries in the respective currency denomination before converting to US Dollar and finally adjusting them according to purchasing power parity (PPP) (**See Table 1**).

The table features the average annual salaries of jobs segmented into the three categories of Technology, Managerial and C-Level to derive the Overall average and presents the data in Atlas currency (national currency), USD denomination and \$PPP equivalent.

These salary figures were then benchmarked against the corresponding \$PPP amounts in Malaysia and displayed as a ratio greater than, equal or less than the nominal 1.00 used for Malaysian salaries (**See Table 2**).

Malaysia is ranked 17th out of the 21 economies in terms of the overall average annual \$PPP salaries earned by digital professionals, ahead of only Japan, India, the Philippines and Indonesia. In coming below Malaysia, Japan is an outlier largely due to the high cost of living in the land of the rising sun.

Among Southeast Asian economies, Malaysian salaries for digital talents are expectedly behind Singapore and as of lately, Thailand. Digital professionals in the lion city earn almost double that of their Malaysian counterparts at 1.88 while those in Thailand enjoy 50% more pay at 1.50.

Economies in the Middle East dominate the top positions with salaries in Saudi Arabia (2.12x Malaysian salaries), the United Arab Emirates (UAE – 1.94) and Qatar (1.83) increasingly attracting talents from all over the world.

The US and South Korea, which count as among the world's leading digital innovators, come in next at 1.75 and 1.64 respectively.

Table 1: Average Annual Salaries of Digital Professionals by Job Category by Country (Atlas, USD & \$PPP Currencies) 2023

COUNTRY	ATLAS CURRENCY	JOB CATEGORY				USD CURRENCY	JOB CATEGORY				INTERNATIONAL CURRENCY	JOB CATEGORY			
		Overall	Technology	Managerial	C-Level		Overall	Technology	Managerial	C-Level		Overall	Technology	Managerial	C-Level
Saudi Arabia	SA Riyal	183,879	110,404	177,074	475,061	USD	49,034	29,441	47,220	126,683	\$\$\$	113,753	68,299	109,543	293,888
UAE	AED	207,928	113,724	210,898	557,869	USD	56,656	30,987	57,465	152,008	\$\$\$	104,080	56,926	105,567	279,246
Singapore	SGD	82,538	50,038	85,158	200,080	USD	61,140	37,065	63,080	148,207	\$\$\$	100,743	61,074	103,941	244,209
Qatar	Qatar Riyal	198,402	93,452	198,643	594,394	USD	54,506	25,674	54,572	163,295	\$\$\$	97,744	46,040	97,863	292,832
USA	USD	93,790	74,545	100,364	153,349	USD	93,790	74,545	100,364	153,349	\$\$\$	93,790	74,545	100,364	153,349
South Korea	SK Won	81,568,255	54,865,225	77,887,889	201,807,100	USD	61,848	41,600	54,508	153,016	\$\$\$	87,619	58,935	77,220	216,776
Kuwait	KWD	14,055	7,247	13,603	40,678	USD	45,339	23,378	43,880	131,219	\$\$\$	85,379	44,024	82,633	247,104
Hong Kong	HKD	524,149	301,986	513,283	1,385,166	USD	66,941	38,568	65,553	176,905	\$\$\$	85,220	49,099	83,453	225,209
China	Renminbi	353,231	228,816	285,414	958,875	USD	50,104	32,456	40,484	136,011	\$\$\$	82,161	53,222	66,387	223,033
Thailand	Bhat	1,091,615	540,327	1,055,888	3,245,715	USD	31,595	15,639	30,561	93,943	\$\$\$	80,133	39,664	77,510	238,259
Canada	CAD	85,434	66,832	92,158	142,263	USD	63,285	49,505	68,265	105,380	\$\$\$	71,243	55,730	76,849	118,632
South Africa	Rand	529,214	305,522	575,549	1,281,605	USD	27,492	15,871	29,899	66,577	\$\$\$	65,281	37,688	70,997	158,093
Australia	ASD	100,605	76,486	111,104	170,720	USD	66,187	50,320	73,095	112,315	\$\$\$	64,753	49,230	71,511	109,882
Brazil	Reals	146,157	70,141	131,987	461,667	USD	29,408	14,113	26,557	92,891	\$\$\$	64,670	31,035	58,400	204,272
United Kingdom	UK Pound	45,615	32,111	47,657	92,546	USD	56,315	39,643	58,836	114,254	\$\$\$	61,486	43,284	64,239	124,746
New Zealand	NZD	89,994	69,354	98,500	150,959	USD	55,211	42,548	60,429	92,613	\$\$\$	56,407	43,470	61,738	94,619
Malaysia	RM	92,118	48,543	96,882	247,205	USD	20,069	10,576	21,107	53,857	\$\$\$	53,549	28,218	56,319	143,703
Japan	Yen	6,775,583	4,889,617	7,005,428	13,440,654	USD	48,932	35,312	50,592	97,065	\$\$\$	51,494	37,161	53,240	102,147
India	Rupees	1,216,705	559,553	1,304,907	3,522,872	USD	14,716	6,768	15,783	42,609	\$\$\$	48,389	22,254	51,897	140,108
Philippines	Peso	859,164	433,923	975,784	2,232,386	USD	15,408	7,782	17,500	40,036	\$\$\$	39,106	19,751	44,414	101,610
Indonesia	Rupiahs	149,218,452	91,722,182	178,963,817	306,935,854	USD	10,013	6,155	12,009	20,597	\$\$\$	31,207	19,182	37,428	64,191

Sources: Payscale & PIKOM estimates

Why Benchmark?

Benchmarking technology salaries at all levels is a valuable tool for nations to remain competitive, foster innovation and make informed policy decisions in a rapidly-evolving digital landscape.

The following points elaborate on the reasons for benchmarking:

- Understanding salary trends and patterns place a nation in a better position to attract and retain top tech talent. Competitive salaries are often a key factor for professionals when choosing where to work.
- A nation's ability to compete in the global tech industry depends on its cost-effectiveness. Benchmarking salaries also helps assess how competitive a country is in terms of labour costs compared to other tech hubs.
- Governments can use this data to formulate policies that are conducive and support their technology sectors. For example, they can offer tax incentives or grants to companies to bridge salary gaps.
- Knowing the salary levels can influence educational and training programmes, governments can invest in areas where there is a shortage of skilled workers to meet industry demands.
- Salary data can help and support broader economic planning. High-tech salaries can stimulate local economies and drive innovation, making them an essential part of economic development strategies.
- By understanding how their tech salaries compare globally, nations can strategically position themselves to attract international tech companies and investors including in attracting foreign direct investments (FDI).

Table 2: Benchmarking Average Annual Salaries of Digital Professionals in Malaysia Against Selected Economies Based on \$PPP Currency (Ratio) 2023

COUNTRY	Overall	Technology Positions	Managerial Positions	C-Level Positions
Saudi Arabia	2.12	2.42	1.95	2.05
UAE	1.94	2.02	1.87	1.94
Singapore	1.88	2.16	1.85	1.70
Qatar	1.83	1.63	1.74	2.04
USA	1.75	2.64	1.78	1.07
South Korea	1.64	2.09	1.37	1.51
Kuwait	1.59	1.56	1.47	1.72
Hong Kong	1.59	1.74	1.48	1.57
China	1.53	1.89	1.18	1.55
Thailand	1.50	1.41	1.38	1.66
Canada	1.33	1.97	1.36	0.83
South Africa	1.22	1.34	1.26	1.10
Australia	1.21	1.74	1.27	0.76
Brazil	1.21	1.10	1.04	1.42
United Kingdom	1.15	1.53	1.14	0.87
New Zealand	1.05	1.54	1.10	0.66
Malaysia	1.00	1.00	1.00	1.00
Japan	0.96	1.32	0.95	0.71
India	0.90	0.79	0.92	0.97
Philippines	0.73	0.70	0.79	0.71
Indonesia	0.58	0.68	0.66	0.45

Sources: Payscale & PIKOM estimates

Surprisingly, salaries adjusted for PPP in popular English-speaking destinations for Malaysian migrants and talents such as Canada (1.33), Australia (1.21), the UK (1.15) and New Zealand (1.02) are ahead by what can only be considered minor gaps.

At the other end of the scale, Malaysia continues to have the salary edge over India, the Philippines and Indonesia where digital professionals take home less wages by an average of 0.90, 0.73 and 0.58 times.

Table 3 offers a direct juxtaposition of \$PPP salaries in the three job categories and benchmark ratios between Malaysia and the other 20 economies.

For Technology positions, Malaysian salaries are only ahead of India (0.79), the Philippines (0.70) and Indonesia (0.68). Japanese salaries, below Malaysia on an overall basis, are much higher by 1.32 times in this case.

Digital talents in Technology jobs in the United States are the highest earners at 2.64 times compared to their Malaysian counterparts, followed by Saudi Arabia (2.42) and Singapore (2.16). In fact, the difference in salaries between Malaysia and higher-paying economies are more pronounced for Technology jobs than the overall average.

This would suggest there is a larger gap between the competency levels of Malaysian digital professionals

in the higher-end C-Level and Managerial positions against those working in lower-end Technology jobs.

Moving on to the Managerial positions, the benchmark ratios revert to comparative figures closer to the overall average and justifies the analysis proffered in the previous paragraph.

For example, the gap between Singapore salaries in Managerial jobs fall to 1.85 times Malaysian salaries from 2.16 times for Technology jobs. Similarly, salaries in Thailand for Managerial positions drop to 1.38 times against 1.41 times for Technology.

Further supporting our hypothesis is the comparison of salaries in C-Level positions. In this case, Malaysia moves up four ranks to 13th (from 17th in Overall) with our C-Level professionals earning more than the UK (0.87), Canada (0.83), Australia (0.76) and New Zealand (0.66).

In other words, Malaysia should have less difficulty in attracting digital talents for top-tier positions than for the other two Technology and Managerial categories.

Tables 4a, 4b and 4c in Section E: Salaries of Digital Talents in Selected Economies showcase the \$PPP salaries of all 61 jobs clustered into the three job categories (Technology, Managerial, C-Level) in all 22 economies.

Table 3: Benchmarking Average Annual Salaries of Digital Professionals in Malaysia Against Selected Economies by Job Category (\$PPP Currency and Ratio) 2023

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
Technology Average	56,926	44,024	46,040	68,299	61,074	43,470	49,230	55,730	43,284	74,545	49,099
Benchmark Ratio	2.02	1.56	1.63	2.42	2.16	1.54	1.74	1.97	1.53	2.64	1.74
Managerial Average	105,567	82,633	97,863	109,543	103,941	61,738	71,511	76,849	64,239	100,364	83,453
Benchmark Ratio	1.87	1.47	1.74	1.95	1.85	1.10	1.27	1.36	1.14	1.78	1.48
C-Level Average	279,246	247,104	292,832	293,888	244,209	94,619	109,882	118,632	124,746	153,349	225,209
Benchmark Ratio	1.94	1.72	2.04	2.05	1.70	0.66	0.76	0.83	0.87	1.07	1.57
Overall Average	104,080	85,379	97,744	113,753	100,743	56,407	64,753	71,243	61,486	93,790	85,220
Benchmark Ratio	1.94	1.59	1.83	2.12	1.88	1.05	1.21	1.33	1.15	1.75	1.59
Malaysia											
		Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa	
Technology Average	28,218	39,664	19,182	19,751	37,161	58,935	22,254	53,222	31,035	37,688	
Benchmark Ratio	1.00	1.41	0.68	0.70	1.32	2.09	0.79	1.89	1.10	1.34	
Managerial Average	56,319	77,510	37,428	44,414	53,240	77,220	51,897	66,387	58,400	70,997	
Benchmark Ratio	1.00	1.38	0.66	0.79	0.95	1.37	0.92	1.18	1.04	1.26	
C-Level Average	143,703	238,259	64,191	101,610	102,147	216,776	140,108	223,033	204,272	158,093	
Benchmark Ratio	1.00	1.66	0.45	0.71	0.71	1.51	0.97	1.55	1.42	1.10	
Overall Average	53,549	80,133	31,207	39,106	51,494	87,619	48,389	82,161	64,670	65,281	
Benchmark Ratio	1.00	1.50	0.58	0.73	0.96	1.64	0.90	1.53	1.21	1.22	

Sources: Payscale & PIKOM estimates

BENCHMARKING OF TOP 10% SALARIES

Apart from the benchmarking of average salaries, we also made a comparison of digital talents in the top 10% salary bracket in Malaysia against the 21 other selected economies. As with **Table 1**, **Table 5** displays salaries in national currencies, USD denomination and PPP equivalent while **Table 6** benchmarks PPP-adjusted salaries in Malaysia against the others.

Under this approach, Malaysia improved its ranking to 12th on an overall basis. The highest-earning digital talents in all three job categories earn more than advanced economies such as Canada (0.93), the UK (0.90), Australia (0.90), Japan (0.84) and New Zealand (0.75).

In Southeast Asia, Singapore (1.81) and Thailand (1.63) remain more lucrative for digital talents in the top 10% salary bracket.

Once again, Saudi Arabia and the UAE offer the highest remuneration for experienced talents at 2.45 and 2.05 times respectively more than in Malaysia. At the other end, top 10% salaries for digital professionals in Indonesia are less by 0.72 times.

As with the benchmarking of average salaries, Malaysian salaries compare less favourably in Technology jobs than Managerial and C-Level positions. We are ranked 16th for Technology, 15th for Managerial and 12th for C-Level jobs.

Tables 7a, 7b and 7c in Section E present salaries in the top-10% bracket of all 61 jobs clustered into the three job categories in all 22 economies. **Table 8** provides a comparison of \$PPP salaries in the three job categories and benchmark ratios between Malaysia and the other 20 economies.

Table 9 benchmarks the top-10% bracket against average salaries in each of the economies. As expected and as mentioned earlier in this report, there is a much larger gap between the top earners and average salaries in Malaysia as compared to more developed economies, perhaps indicating a bigger difference in capability.

However, the gap is even greater for Indonesia (2.40), the Philippines (2.32), Saudi Arabia (2.23), India (2.13), Thailand (2.11) and the UAE (2.04). Conversely, economies with much less disparity in salaries are Canada (1.36), New Zealand (1.38) and the US (1.43).

AN OBSERVATION

It is worth noting that more developed economies tend to have smaller gaps between salaries across the Technical, Managerial and C-Level positions. This observation reflects a more balanced distribution of income across various job categories, contributing to a more equitable workforce.

In contrast, in some emerging economies or regions such as Malaysia, there may be larger disparities in salary levels between these categories, highlighting potential areas for improvement in terms of income equality and workforce development strategies.

This can also be attributed to the level of expertise at each level of the scale wherein in developed economies, the base technology knowledge and expertise are more established. This further points towards the education curriculum and employability challenges of emerging economies.

Table 5: Average Annual Salaries of Top 10% Bracket by Job Category (Atlas, USD & \$PPP Currencies) 2023

Country	Atlas Currency	Job Category				USD Currency	Job Category				International Currency	Job Category			
		Overall	Technology	Managerial	C-Level		Overall	Technology	Managerial	C-Level		Overall	Technology	Managerial	C-Level
Saudi Arabia	SA Riyal	409,932	248,260	367,500	1,105,556	USD	109,315	66,203	98,000	294,815	\$PPP	253,596	153,581	227,347	683,931
UAE	AED	424,139	261,026	412,143	1,064,333	USD	115,569	71,124	112,301	290,009	\$PPP	212,306	130,659	206,302	532,762
Singapore	SGD	154,030	88,468	189,050	331,667	USD	114,096	65,532	140,037	245,679	\$PPP	188,002	107,980	230,747	404,819
Qatar	Qatar Riyal	351,624	206,940	347,412	906,631	USD	96,600	56,852	95,443	249,074	\$PPP	173,230	101,950	171,155	446,658
Thailand	Bhat	2,298,630	1,103,185	1,886,570	7,638,873	USD	66,531	31,930	54,604	221,096	\$PPP	168,736	80,982	138,488	560,749
China	Renminbi	666,374	392,410	487,322	2,059,454	USD	94,521	55,661	69,124	292,121	\$PPP	154,998	91,274	113,350	479,027
Hong Kong	HKD	929,047	586,762	762,334	2,555,556	USD	118,652	74,938	97,361	326,380	\$PPP	151,051	95,400	123,945	415,499
Kuwait	KWD	23,944	15,931	23,855	54,396	USD	77,240	51,391	76,950	175,472	\$PPP	145,454	96,777	144,908	330,439
South Korea	SK Won	130,884	83,274	104,246	364,017	USD	99,200	63,116	79,011	275,898	\$PPP	140,535	89,415	111,933	390,861
USA	USD	134,543	106,004	138,667	234,111	USD	134,543	106,004	138,667	234,111	\$PPP	134,543	106,004	138,667	234,111
South Africa	Rand	941,410	574,176	939,111	2,333,333	USD	48,904	29,827	48,785	121,212	\$PPP	116,128	70,828	115,844	287,829
Malaysia	RM	178,347	101,735	171,027	482,409	USD	38,856	22,165	37,261	105,100	\$PPP	103,675	59,140	99,420	280,430
India	Rupees	2,596,230	1,216,765	2,500,000	8,000,000	USD	31,401	14,717	30,237	96,759	\$PPP	103,254	48,392	99,427	318,167
Brazil	Reals	232,169	129,484	229,052	626,323	USD	46,714	26,053	46,087	126,021	\$PPP	102,727	57,292	101,348	277,127
Canada	CAD	116,115	89,912	120,111	207,111	USD	86,011	66,601	88,971	153,416	\$PPP	96,827	74,976	100,159	172,708
United Kingdom	UK Pound	69,650	48,754	70,444	147,000	USD	85,859	59,961	86,968	181,481	\$PPP	93,744	65,467	94,955	198,147
Australia	ASD	144,410	107,441	148,611	275,667	USD	95,006	70,685	97,770	181,360	\$PPP	92,948	69,154	95,652	177,430
Philippines	Peso	1,989,996	988,169	1,988,667	5,777,333	USD	35,689	17,722	35,665	103,611	\$PPP	90,577	44,978	90,517	262,963
Japan	Yen	11,453,450	8,200,020	11,682,960	23,285,166	USD	82,714	59,219	84,372	168,160	\$PPP	87,045	62,319	88,789	176,965
New Zealand	NZD	123,787	94,706	129,500	222,222	USD	75,943	58,102	79,448	136,333	\$PPP	77,588	59,360	81,169	139,286
Indonesia	Rupiahs	358,103,626	240,487,380	412,661,282	693,316,353	USD	24,031	16,138	27,692	46,525	\$PPP	74,892	50,294	86,302	144,997

Sources: Payscale & PIKOM estimates

Table 6: Benchmarking Average Annual Salaries of Top 10% Bracket in Malaysia Against Selected Economies Based on \$PPP Currency (Ratio) 2023

COUNTRY	Overall	Technology Positions	Managerial Positions	C-Level Positions
Saudi Arabia	2.45	2.60	2.29	2.44
UAE	2.05	2.21	2.08	1.90
Singapore	1.81	1.83	2.32	1.44
Qatar	1.67	1.72	1.72	1.59
Thailand	1.63	1.37	0.99	2.00
China	1.50	1.54	1.28	1.71
Hong Kong	1.46	1.61	1.25	1.48
Kuwait	1.40	1.64	1.46	1.18
South Korea	1.36	1.51	1.62	1.39
USA	1.30	1.79	1.39	0.83
South Africa	1.12	1.20	1.60	1.03
Malaysia	1.00	1.00	1.00	1.00
India	1.00	0.82	1.12	1.13
Brazil	0.99	0.97	1.40	0.99
Canada	0.93	1.27	1.01	0.62
United Kingdom	0.90	1.11	0.96	0.71
Australia	0.90	1.17	0.96	0.63
Philippines	0.87	0.76	1.28	0.94
Japan	0.84	1.05	0.97	0.63
New Zealand	0.75	1.00	0.82	0.50
Indonesia	0.72	0.85	0.76	0.52

Sources: Payscale & PIKOM estimates

Table 8: Benchmarking Average Annual Salaries of Top 10% Bracket in Malaysia Against Selected Economies by Job Category (\$PPP Currency and Ratio) 2023

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
Technology Average	130,659	96,777	101,950	153,581	107,980	59,360	69,154	74,976	65,467	106,004	95,400
Benchmark Ratio	2.21	1.64	1.72	2.60	1.83	1.00	1.17	1.27	1.11	1.79	1.61
Managerial Average	206,302	144,908	171,155	227,347	230,747	81,169	95,652	100,159	94,955	138,667	123,945
Benchmark Ratio	2.08	1.46	1.72	2.29	2.32	0.82	0.96	1.01	0.96	1.39	1.25
C-Level Average	532,762	330,439	446,658	683,931	404,819	= 139,286	177,430	172,708	198,147	234,111	415,499
Benchmark Ratio	1.90	1.18	1.59	2.44	1.44	0.50	0.63	0.62	0.71	0.83	1.48
Overall Average	212,306	145,454	173,230	253,596	188,002	77,588	92,948	96,827	93,744	134,543	151,051
Benchmark Ratio	2.05	1.40	1.67	2.45	1.81	0.75	0.90	0.93	0.90	1.30	1.46
Malaysia											
		Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa	
Technology Average	59,140	80,982	50,294	44,978	62,319	89,415	48,392	91,274	57,292	70,828	
Benchmark Ratio	1.00	1.37	0.85	0.76	1.05	1.51	0.82	1.54	0.97	1.20	
Managerial Average	99,420	138,488	86,302	90,517	88,789	111,933	99,427	113,350	101,348	115,844	
Benchmark Ratio	1.00	1.39	0.87	0.91	0.89	1.13	1.00	1.14	1.02	1.17	
C-Level Average	280,430	560,749	144,997	262,963	176,965	390,861	318,167	479,027	277,127	287,829	
Benchmark Ratio	1.00	2.00	0.52	0.94	0.63	1.39	1.13	1.71	0.99	1.03	
Overall Average	103,675	168,736	74,892	90,577	87,045	140,535	103,254	154,998	102,727	116,128	
Benchmark Ratio	1.00	1.63	0.72	0.87	0.84	1.36	1.00	1.50	0.99	1.12	

Sources: Payscale & PIKOM estimates

Table 9: Benchmarking Top 10% Bracket to Average Salaries by Job Category by Country (\$PPP Currency and Ratio) 2023

COUNTRY	JOB CATEGORY			
	Overall	Technology	Managerial	C-Level
Indonesia	2.40	2.62	2.31	2.26
Philippines	2.32	2.28	2.04	2.59
Saudi Arabia	2.23	2.25	2.08	2.33
India	2.13	2.17	1.92	2.27
Thailand	2.11	2.04	1.79	2.35
UAE	2.04	2.30	1.95	1.91
Malaysia	1.94	2.10	1.77	1.95
China	1.89	1.71	1.71	2.15
Singapore	1.87	1.77	2.22	1.66
South Africa	1.78	1.88	1.63	1.82
Qatar	1.77	2.21	1.75	1.53
Hong Kong	1.77	1.94	1.49	1.84
Kuwait	1.70	2.20	1.75	1.34
Japan	1.69	1.68	1.67	1.73
South Korea	1.60	1.52	1.45	1.80
Brazil	1.59	1.85	1.74	1.36
United Kingdom	1.52	1.51	1.48	1.59
Australia	1.44	1.40	1.34	1.61
USA	1.43	1.42	1.38	1.53
New Zealand	1.38	1.37	1.31	1.47
Canada	1.36	1.35	1.30	1.46

Sources: Payscale & PIKOM estimates

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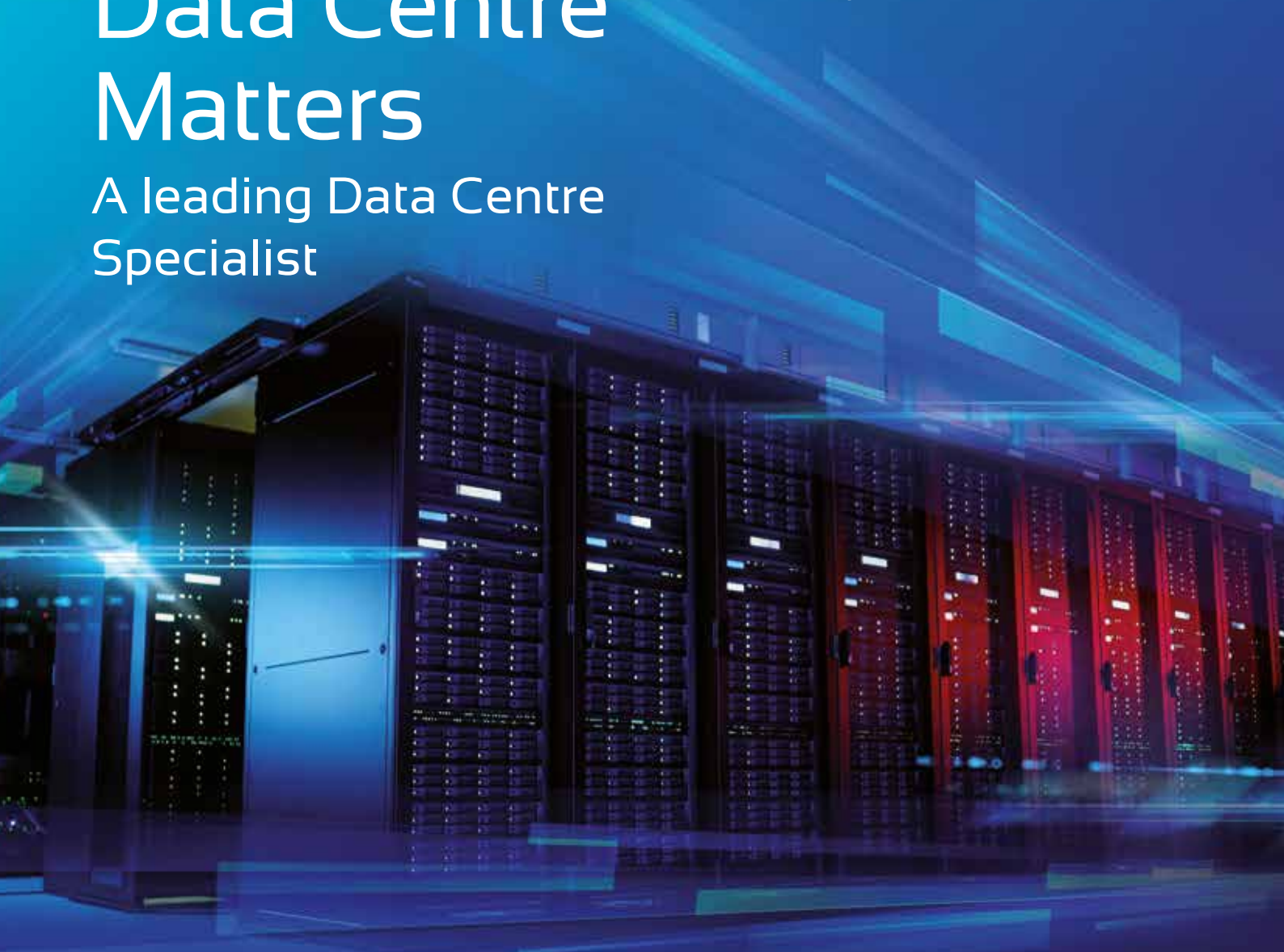


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SECTION E

SALARIES OF DIGITAL TALENTS IN SELECTED ECONOMIES



In this new section, we present and review the salaries of digital talents in 22 selected economies. The approach, data and some of the tables featured in this section are similar to Section D: Regional Benchmarking of Salaries for Digital Talents, where the narrative is tailored towards comparing Malaysia against others. For this reason, the numbering of tables does not necessarily follow a sequential order.

As with the previous section, we sourced data on salaries in the respective currency denomination, following which we converted to US Dollar before adjusting the salaries according to purchasing power parity (PPP).

Table 1 features the average annual salaries of jobs in the three categories of Technology, Managerial and C-Level as well as the Overall average derivative in Atlas currency (national currency), USD denomination and \$PPP equivalent. The table is arranged from top down according to the highest overall average annual salaries in \$PPP currency.

Economies in the Middle East dominate the top positions with salaries in Saudi Arabia, the United Arab Emirates and Qatar among the top four with Singapore in third place. Digital talents in Saudi Arabia earn more than 3.5 times their counterparts in Indonesia, the lowest-paying economy on this list.

The US and South Korea, home of many of the world's digital innovations, are only ranked 5th and 6th respectively while the Philippines and India make up the bottom three.

Tables 4a, 4b and 4c showcase the \$PPP salaries of all 61 jobs clustered into the three job categories (Technology, Managerial, C-Level) in all 22 economies.

Similar to Section D, we also compare the salaries of digital talents in the top-10% salary bracket in all 22 other selected economies. Like **Table 1**, **Table 5** depicts salaries in national currencies, USD denomination and PPP equivalent.

Saudi Arabia, the UAE and Singapore offer the highest remuneration for digital talents in the top-10% salary bracket based on the comparison according to \$PPP currency. The gap between Saudi Arabia as the top-10% highest-paying economy and Indonesia as the lowest on this list is less than 3.5 times, indicating that salary gaps in the highest bracket tend to be narrower than overall salaries.

A surprisingly high entry is Thailand at 5th position, followed by four other Asian economies ahead of the US at 10th position. Indonesia, New Zealand and Japan occupy the bottom three positions.

Tables 7a, 7b and 7c present salaries in the top-10% bracket of all 61 jobs clustered into the three job categories in all 22 economies.

As mentioned in Section D, the salary gaps in developed economies is narrower across the Technical, Managerial and C-Level positions, indicating a more balanced distribution of income across various job categories.

On the other hand, emerging economies show a wider disparity in salary levels between these categories, suggesting there is room for improvement to achieve greater income equality.

We expect to provide greater insights into the comparison of salaries for digital talents in subsequent editions of this report.

FAST FACTS

POPULATION IN SOUTHEAST ASIA

Southeast Asia has a total population of more than 675 million, about 8.5% of the world's population. It is the third most populous geographical region in Asia after South Asia and East Asia. The region is culturally and ethnically diverse, with hundreds of languages spoken by different ethnic groups.

Which Country in Asia Has the Most Technology?

Singapore can be considered the most technologically advanced country in Asia, ranking third globally. The city-state has a strong track record of investing in technology and innovation, which has helped it become a hub for startups and a leader in the field of fintech.

Table 1: Average Annual Salaries of Digital Professionals by Job Category by Country (Atlas, USD & \$PPP Currencies) 2023

COUNTRY	ATLAS CURRENCY	JOB CATEGORY				USD CURRENCY	JOB CATEGORY				INTERNATIONAL CURRENCY	JOB CATEGORY			
		Overall	Technology	Managerial	C-Level		Overall	Technology	Managerial	C-Level		Overall	Technology	Managerial	C-Level
Saudi Arabia	SA Riyal	183,879	110,404	177,074	475,061	USD	49,034	29,441	47,220	126,683	\$\$\$	113,753	68,299	109,543	293,888
UAE	AED	207,928	113,724	210,898	557,869	USD	56,656	30,987	57,465	152,008	\$\$\$	104,080	56,926	105,567	279,246
Singapore	SGD	82,538	50,038	85,158	200,080	USD	61,140	37,065	63,080	148,207	\$\$\$	100,743	61,074	103,941	244,209
Qatar	Qatar Riyal	198,402	93,452	198,643	594,394	USD	54,506	25,674	54,572	163,295	\$\$\$	97,744	46,040	97,863	292,832
USA	USD	93,790	74,545	100,364	153,349	USD	93,790	74,545	100,364	153,349	\$\$\$	93,790	74,545	100,364	153,349
South Korea	SK Won	81,568,255	54,865,225	77,887,889	201,807,100	USD	61,848	41,600	54,508	153,016	\$\$\$	87,619	58,935	77,220	216,776
Kuwait	KWD	14,055	7,247	13,603	40,678	USD	45,339	23,378	43,880	131,219	\$\$\$	85,379	44,024	82,633	247,104
Hong Kong	HKD	524,149	301,986	513,283	1,385,166	USD	66,941	38,568	65,553	176,905	\$\$\$	85,220	49,099	83,453	225,209
China	Renminbi	353,231	228,816	285,414	958,875	USD	50,104	32,456	40,484	136,011	\$\$\$	82,161	53,222	66,387	223,033
Thailand	Bhat	1,091,615	540,327	1,055,888	3,245,715	USD	31,595	15,639	30,561	93,943	\$\$\$	80,133	39,664	77,510	238,259
Canada	CAD	85,434	66,832	92,158	142,263	USD	63,285	49,505	68,265	105,380	\$\$\$	71,243	55,730	76,849	118,632
South Africa	Rand	529,214	305,522	575,549	1,281,605	USD	27,492	15,871	29,899	66,577	\$\$\$	65,281	37,688	70,997	158,093
Australia	ASD	100,605	76,486	111,104	170,720	USD	66,187	50,320	73,095	112,315	\$\$\$	64,753	49,230	71,511	109,882
Brazil	Reals	146,157	70,141	131,987	461,667	USD	29,408	14,113	26,557	92,891	\$\$\$	64,670	31,035	58,400	204,272
United Kingdom	UK Pound	45,615	32,111	47,657	92,546	USD	56,315	39,643	58,836	114,254	\$\$\$	61,486	43,284	64,239	124,746
New Zealand	NZD	89,994	69,354	98,500	150,959	USD	55,211	42,548	60,429	92,613	\$\$\$	56,407	43,470	61,738	94,619
Malaysia	RM	92,118	48,543	96,882	247,205	USD	20,069	10,576	21,107	53,857	\$\$\$	53,549	28,218	56,319	143,703
Japan	Yen	6,775,583	4,889,617	7,005,428	13,440,654	USD	48,932	35,312	50,592	97,065	\$\$\$	51,494	37,161	53,240	102,147
India	Rupees	1,216,705	559,553	1,304,907	3,522,872	USD	14,716	6,768	15,783	42,609	\$\$\$	48,389	22,254	51,897	140,108
Philippines	Peso	859,164	433,923	975,784	2,232,386	USD	15,408	7,782	17,500	40,036	\$\$\$	39,106	19,751	44,414	101,610
Indonesia	Rupiahs	149,218,452	91,722,182	178,963,817	306,935,854	USD	10,013	6,155	12,009	20,597	\$\$\$	31,207	19,182	37,428	64,191

Sources: Payscale & PIKOM estimates

Table 5: Average Annual Salaries of Top 10% Bracket by Job Category (Atlas, USD & \$PPP Currencies) 2023

Country	Atlas Currency	Job Category			USD Currency	Job Category			International Currency	Job Category					
		Overall	Technology	Managerial		C-Level	Overall	Technology		Managerial	C-Level	Overall	Technology	Managerial	C-Level
Saudi Arabia	SA Riyal	409,932	248,260	367,500	1,105,556	USD	109,315	66,203	98,000	294,815	\$PPP	253,596	153,581	227,347	683,931
UAE	AED	424,139	261,026	412,143	1,064,333	USD	115,569	71,124	112,301	290,009	\$PPP	212,306	130,659	206,302	532,762
Singapore	SGD	154,030	88,468	189,050	331,667	USD	114,096	65,532	140,037	245,679	\$PPP	188,002	107,980	230,747	404,819
Qatar	Qatar Riyal	351,624	206,940	347,412	906,631	USD	96,600	56,852	95,443	249,074	\$PPP	173,230	101,950	171,155	446,658
Thailand	Bhat	2,298,630	1,103,185	1,886,570	7,638,873	USD	66,531	31,930	54,604	221,096	\$PPP	188,736	80,982	138,488	560,749
China	Renminbi	666,374	392,410	487,322	2,059,454	USD	94,521	55,661	69,124	292,121	\$PPP	154,998	91,274	113,350	479,027
Hong Kong	HKD	929,047	586,762	762,334	2,555,556	USD	118,652	74,938	97,361	326,380	\$PPP	151,051	95,400	123,945	415,499
Kuwait	KWD	23,944	15,931	23,855	54,396	USD	77,240	51,391	76,950	175,472	\$PPP	145,454	96,777	144,908	330,439
South Korea	SK Won	130,884	83,274	104,246	364,017	USD	99,200	63,116	79,011	275,898	\$PPP	140,535	89,415	111,933	390,861
USA	USD	134,543	106,004	138,667	234,111	USD	134,543	106,004	138,667	234,111	\$PPP	134,543	106,004	138,667	234,111
South Africa	Rand	941,410	574,176	939,111	2,333,333	USD	48,904	29,827	48,785	121,212	\$PPP	116,128	70,828	115,844	287,829
Malaysia	RM	178,347	101,735	171,027	482,409	USD	38,856	22,165	37,261	105,100	\$PPP	103,675	59,140	99,420	280,430
India	Rupees	2,596,230	1,216,765	2,500,000	8,000,000	USD	31,401	14,717	30,237	96,759	\$PPP	103,254	48,392	99,427	318,167
Brazil	Reals	232,169	129,484	229,052	626,323	USD	46,714	26,053	46,087	126,021	\$PPP	102,727	57,292	101,348	277,127
Canada	CAD	116,115	89,912	120,111	207,111	USD	86,011	66,601	88,971	153,416	\$PPP	96,827	74,976	100,159	172,708
United Kingdom	UK Pound	69,650	48,754	70,444	147,000	USD	85,859	59,961	86,968	181,481	\$PPP	93,744	65,467	94,955	198,147
Australia	ASD	144,410	107,441	148,611	275,667	USD	95,006	70,685	97,770	181,360	\$PPP	92,948	69,154	95,652	177,430
Philippines	Peso	1,989,996	988,169	1,988,667	5,777,333	USD	35,689	17,722	35,665	103,611	\$PPP	90,577	44,978	90,517	262,963
Japan	Yen	11,453,450	8,200,020	11,682,960	23,285,166	USD	82,714	59,219	84,372	168,160	\$PPP	87,045	62,319	88,789	176,965
New Zealand	NZD	123,787	94,706	129,500	222,222	USD	75,943	58,102	79,448	136,333	\$PPP	77,588	59,360	81,169	139,286
Indonesia	Rupiahs	358,103,626	240,487,380	412,661,282	693,316,353	USD	24,031	16,138	27,692	46,525	\$PPP	74,892	50,294	86,302	144,997

Sources: Payscale & PIKOM estimates

Table 4a: Average Annual Salaries of Digital Professionals by Job by Country (\$PPP Currency) 2023

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
	TECHNOLOGY POSITION										
.NET Software Developer / Programmer	30,947	27,336	27,524	33,406	66,083	46,821	52,103	56,835	46,893	76,034	42,923
Applications Engineer	41,585	36,733	26,603	104,549	60,848	44,972	50,361	56,234	44,442	77,248	43,608
Business Analyst, IT	74,329	52,242	100,009	73,412	75,499	49,148	52,615	57,282	51,014	72,416	50,809
Business Intelligence (BI) Analyst	70,070	30,373	83,189	61,065	71,015	47,325	52,636	54,583	43,873	72,106	43,592
Support Technician Computer / Network / IT	34,251	25,544	15,036	29,849	39,231	32,155	39,527	41,170	30,829	57,964	32,580
Cyber Security Analyst	71,914	36,012	73,899	82,240	61,971	45,597	50,583	56,435	45,087	78,963	71,538
Data Engineer	71,760	35,934	65,031	89,128	74,297	55,446	62,945	69,867	55,929	94,313	50,349
Data Scientist	83,677	41,902	53,271	103,930	86,192	45,419	59,900	68,102	55,731	98,789	67,140
Database Administrator (DBA)	73,816	36,964	83,752	70,524	54,193	41,446	45,429	56,556	42,828	77,070	79,647
Development Operations (DevOps) Engineer	103,165	50,156	47,295	128,451	96,567	55,054	63,877	71,837	61,830	102,066	64,628
Help Desk Technician	7,402	7,940	985	24,498	40,645	31,705	33,086	37,883	26,716	53,202	35,932
Java Developer	45,050	64,495	53,561	74,934	65,872	42,250	53,106	60,453	52,814	82,703	38,045
Junior Software Engineer	39,930	61,864	49,880	44,910	52,922	34,725	39,007	46,312	34,316	65,397	42,923
Network Administrator	38,846	46,471	41,235	51,965	53,370	36,692	48,019	51,189	36,427	63,244	29,266
Network Engineer	35,997	48,597	46,474	58,566	58,887	46,666	51,811	61,573	42,792	78,899	50,409
Network Technician	21,769	21,486	22,662	20,415	32,955	32,279	42,205	45,510	30,473	66,868	32,580
Quality Assurance (QA) Engineer	61,532	46,653	64,492	48,253	60,811	44,845	49,122	55,751	43,398	74,584	49,541
Network Security Engineer	69,063	34,626	70,968	78,659	56,049	51,473	54,710	70,078	44,525	95,589	69,912
Software Developer	42,749	41,551	54,192	55,303	63,866	42,748	46,676	58,245	43,014	76,029	45,754

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
TECHNOLOGY POSITION											
Software Engineer	65,836	61,864	49,880	66,143	73,109	47,759	52,363	67,151	52,815	90,850	52,843
Software Engineer / Developer / Programmer	47,511	51,027	70,943	62,112	66,893	44,366	48,162	60,901	47,904	82,392	43,195
Solutions Architect	149,938	72,896	64,784	162,978	125,833	80,637	88,795	90,594	83,109	123,374	104,298
Support Technician, Information Technology (IT)	29,310	25,544	15,036	29,849	39,231	32,155	36,543	41,170	29,442	58,283	32,580
System Administrator, Computer / Network	39,794	32,803	12,829	37,118	49,414	40,211	45,777	50,756	36,916	64,512	49,623
System Administrator, Windows Server	42,785	85,045	13,793	59,389	44,177	43,735	50,333	55,505	41,409	69,461	38,260
Systems Analyst	49,964	48,883	14,213	61,195	61,860	43,983	49,435	54,335	41,406	69,085	73,227
Systems Engineer, IT	51,262	43,428	36,762	57,473	52,743	44,885	49,225	61,851	41,674	78,567	48,147
Technical Support Analyst IT	34,384	78,740	15,036	62,753	56,035	33,359	41,102	42,136	34,244	53,615	42,923
Technical Support Specialist	53,560	93,550	10,552	44,038	70,792	34,996	44,216	43,783	33,659	54,643	50,797
Test / Quality Assurance (QA) Engineer (Computer Software)	54,060	10,989	75,130	61,926	53,580	40,004	46,136	52,477	38,153	74,765	35,520
Data Analyst	50,132	60,747	65,031	59,310	63,678	41,866	47,344	50,010	39,062	65,112	40,139
Quality Assurance (QA) Analyst	36,040	14,555	19,706	111,354	40,299	40,797	42,805	47,688	33,837	59,732	39,021
Quality Assurance (QA) Analyst Software	137,454	19,760	75,130	174,664	63,211	45,110	43,439	54,203	49,116	64,558	39,021
Web Developer	75,584	50,116	46,474	37,820	44,378	37,344	40,420	46,374	35,963	62,085	38,587
Technology Average	56,926	44,024	46,040	68,299	61,074	43,470	49,230	55,730	43,284	74,545	49,099

Sources: Payscale & PIKOM estimates

(Continuation) Table 4a: Average Annual Salaries of Digital Professionals by Job by Country (\$PPP Currency) 2023

	Malaysia	Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa
	TECHNOLOGY POSITIONS									
.NET Software Developer / Programmer	26,508	40,697	23,005	20,482	32,832	31,151	19,481	63,267	23,893	41,697
Applications Engineer	26,136	49,110	24,051	16,822	38,749	45,115	25,934	47,997	42,365	51,656
Business Analyst, IT	32,719	62,033	24,453	24,471	35,339	107,417	25,347	69,780	20,353	48,529
Business Intelligence (BI) Analyst	31,707	33,474	20,914	26,730	75,999	102,366	24,155	66,498	18,013	48,257
Support Technician Computer / Network / IT	18,182	38,319	12,548	8,432	28,880	77,341	14,689	23,862	12,832	19,220
Cyber Security Analyst	24,040	50,664	31,370	17,842	52,921	53,709	23,619	82,340	41,592	31,125
Data Engineer	28,987	58,710	20,881	27,509	44,807	65,570	35,066	56,963	47,430	56,692
Data Scientist	33,631	35,532	25,902	28,562	40,343	53,762	35,947	88,388	44,433	50,217
Database Administrator (DBA)	30,320	23,255	18,822	26,799	42,559	38,765	20,731	72,571	41,990	27,210
Development Operations (DevOps) Engineer	41,470	52,188	21,541	32,249	30,916	61,541	32,911	74,432	47,786	52,794
Help Desk Technician	27,863	31,850	3,545	12,908	29,830	61,547	11,912	41,700	12,478	14,214
Java Developer	28,891	39,640	14,807	24,414	23,681	48,123	19,942	41,868	28,318	49,710
Junior Software Engineer	20,849	47,179	12,443	14,225	27,050	66,062	12,347	57,178	20,998	29,377
Network Administrator	32,895	46,390	12,234	13,864	28,272	44,041	15,968	53,963	15,929	28,395
Network Engineer	26,871	16,150	17,001	16,012	29,259	60,154	15,015	41,868	42,477	34,891
Network Technician	18,865	25,326	11,037	7,101	41,799	25,161	9,891	27,581	31,858	16,589
Quality Assurance (QA) Engineer	22,944	26,503	27,606	15,374	38,974	65,570	17,306	61,406	36,813	43,156

	Malaysia	Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa
TECHNOLOGY POSITIONS										
Network Security Engineer	26,043	16,150	31,370	30,277	63,079	45,115	23,779	58,150	34,521	33,121
Software Developer	25,753	41,402	19,536	17,287	31,323	45,115	23,156	40,492	26,952	39,209
Software Engineer	28,419	47,179	26,456	21,479	37,501	36,092	25,099	57,178	44,914	47,826
Software Engineer / Developer / Programmer	25,362	22,903	12,548	18,289	34,040	40,869	20,977	25,586	26,087	42,821
Solutions Architect	80,908	74,091	11,973	59,540	75,999	53,709	83,227	129,048	65,779	81,066
Support Technician, Information Technology (IT)	18,182	38,319	12,548	8,432	28,880	21,123	14,689	17,916	12,832	19,220
System Administrator, Computer / Network	28,260	36,337	11,189	12,040	28,272	27,929	13,317	58,150	25,221	25,742
System Administrator, Windows Server	24,671	29,363	20,914	20,715	28,272	91,305	17,795	51,404	25,221	34,528
Systems Analyst	27,547	44,044	18,571	21,282	25,773	130,103	25,356	53,963	32,078	51,804
Systems Engineer, IT	23,059	23,857	24,492	16,891	25,773	130,103	15,588	33,173	38,053	39,822
Technical Support Analyst IT	23,863	38,319	7,738	16,938	28,880	45,727	21,803	58,150	39,380	28,654
Technical Support Specialist	30,754	109,230	37,644	13,630	37,224	51,560	23,060	33,704	55,751	36,226
Test / Quality Assurance (QA) Engineer (Computer Software)	25,356	33,033	12,766	16,763	38,974	46,737	16,986	37,216	17,699	32,861
Data Analyst	25,304	35,771	20,536	14,109	36,794	53,762	19,539	28,397	25,722	36,327
Quality Assurance (QA) Analyst	22,322	26,503	12,548	15,555	38,974	98,824	16,257	61,406	21,238	25,905
Quality Assurance (QA) Analyst Software	28,371	26,427	36,991	20,985	38,974	59,840	21,748	61,406	21,238	40,045
Web Developer	22,375	28,629	12,221	13,509	22,518	18,476	13,997	32,564	12,954	22,474
Technology Average	28,218	39,664	19,182	19,751	37,161	58,935	22,254	53,222	31,035	37,688

Sources: Payscale & PIKOM estimates

Table 4b: Average Annual Salaries of Digital Professionals by Job by Country (\$PPP Currency) 2023

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
MANAGERIAL POSITIONS											
Information Technology (IT) Consultant	87,422	58,232	101,363	105,321	87,183	58,517	55,684	65,588	61,192	82,591	62,507
Information Technology (IT) Manager	96,098	109,107	130,061	92,818	103,622	62,860	69,282	74,504	56,504	90,222	97,197
Project Manager, Information Technology (IT)	108,814	100,530	32,663	119,766	96,710	58,990	71,315	71,581	60,859	90,179	83,140
Quality Assurance Manager	100,990	87,645	90,218	94,614	81,596	53,889	55,311	67,328	52,772	84,963	79,655
Data Manager	76,586	60,747	65,031	63,100	148,094	45,433	67,689	70,746	48,334	68,954	84,769
eCommerce Manager	51,307	67,520	71,928	48,253	97,689	43,347	46,461	52,937	45,502	67,443	66,278
Senior Business Analyst	99,031	71,140	130,061	111,808	102,925	67,529	77,821	70,114	69,133	88,425	78,751
Senior Data Scientist	152,753	49,745	123,502	185,589	115,199	68,089	89,489	93,275	80,767	129,718	82,762
Senior Database Administrator (DBA)	104,003	92,906	75,182	125,636	97,734	61,944	73,923	81,073	67,142	114,119	92,674
Senior Project Manager, IT	162,746	160,371	147,797	182,367	146,627	83,831	95,842	90,886	82,776	118,409	148,661
Senior Software Engineer	91,670	64,695	93,605	114,754	103,193	67,918	78,616	88,239	73,870	124,100	78,670
Senior Solutions Architect	154,690	72,896	161,477	197,962	149,020	93,061	103,079	110,144	106,561	141,771	122,426
Senior Systems Administrator	60,067	70,393	55,508	68,049	87,880	51,527	60,709	67,579	52,346	89,161	76,995
Senior Systems Analyst	105,226	92,882	100,028	122,629	79,369	61,221	72,323	70,384	57,258	91,383	90,749
Senior Systems Engineer	93,026	109,344	39,659	63,835	83,425	56,679	73,252	81,955	63,071	112,238	69,548
Senior Web Developer	181,373	55,960	107,186	87,227	58,587	56,720	59,662	65,268	54,833	89,749	61,073
Sr. Software Engineer / Developer / Programmer	90,101	72,307	93,870	97,151	97,818	66,457	72,376	81,501	68,520	113,700	69,393
Software Quality Assurance (SQA) Manager	84,304	90,974	142,390	90,901	134,261	53,277	64,364	80,186	54,854	109,429	56,905
Managerial Average	105,567	82,633	97,863	109,543	103,941	61,738	71,511	76,849	64,239	100,364	83,453

Sources: Payscale & PIKOM estimates

(Continuation) Table 4b: Average Annual Salaries of Digital Professionals by Job by Country (\$PPP Currency) 2023

	Malaysia	Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa
MANAGERIAL POSITIONS										
Information Technology (IT) Consultant	35,729	34,562	33,765	26,784	42,559	61,228	41,907	51,288	53,000	30,388
Information Technology (IT) Manager	52,587	92,659	51,521	40,160	57,412	80,563	58,940	69,189	83,218	60,252
Project Manager, Information Technology (IT)	49,959	49,168	32,126	45,790	45,599	75,192	66,692	66,007	54,423	56,764
Quality Assurance Manager	48,015	129,894	36,991	33,578	83,599	91,305	53,807	37,216	36,813	47,741
Data Manager	63,872	58,710	20,881	54,753	44,807	53,762	45,689	56,963	47,430	45,701
eCommerce Manager	42,088	73,407	56,148	24,508	44,807	61,765	19,573	49,000	109,190	42,821
Senior Business Analyst	47,522	88,089	41,990	37,576	63,651	107,417	43,113	55,824	45,132	84,637
Senior Data Scientist	69,549	73,479	51,026	34,738	60,799	86,578	79,257	75,595	58,848	87,627
Senior Database Administrator (DBA)	58,697	110,111	82,202	51,825	61,288	52,872	48,401	72,571	61,945	71,028
Senior Project Manager, IT	113,383	109,935	43,918	85,376	59,240	131,049	89,485	58,090	88,493	103,699
Senior Software Engineer	53,531	93,773	50,447	40,080	54,913	63,471	44,684	71,331	67,325	88,548
Senior Solutions Architect	115,671	105,924	16,103	113,609	68,399	75,192	112,819	179,101	70,352	127,281
Senior Systems Administrator	37,785	110,111	30,952	37,939	45,769	58,929	28,060	46,520	55,308	49,582
Senior Systems Analyst	45,398	46,142	30,643	27,001	39,175	85,934	38,583	46,520	37,813	77,565
Senior Systems Engineer	41,894	46,142	24,492	43,190	45,769	76,608	24,805	69,780	55,308	65,673
Senior Web Developer	39,033	60,304	19,429	26,923	30,400	77,341	32,874	76,618	19,431	56,618
Sr. Software Engineer / Developer / Programmer	55,775	77,533	38,298	37,552	49,343	49,783	41,830	47,328	55,078	84,323
Software Quality Assurance (SQA) Manager	43,250	35,236	12,766	38,070	60,799	100,972	63,633	66,028	52,088	97,697
Managerial Average	56,319	77,510	37,428	44,414	53,240	77,220	51,897	66,387	58,400	70,997

Sources: Payscale & PIKOM estimates

Table 4c: Average Annual Salaries of Digital Professionals by Job by Country (\$PPP Currency) 2023

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
C-LEVEL POSITIONS											
Director of Analytics	210,235	167,053	145,826	144,896	206,267	76,062	106,713	106,161	132,726	133,016	150,500
Information Technology (IT) Director	215,764	63,784	295,594	219,053	226,274	94,342	108,118	104,521	117,063	123,654	176,271
Vice President (VP), Information Technology (IT)	314,885	93,088	431,390	199,509	185,104	75,214	108,562	124,664	122,084	154,979	188,602
Chief Technology Officer	247,177	313,149	23,354	246,140	236,462	91,729	105,744	114,794	129,925	171,653	219,492
Chief Information Officer	367,076	465,051	34,683	417,533	263,641	112,906	131,939	133,713	135,979	172,327	308,915
Chief Operating Officer	229,832	586,873	382,933	463,231	249,125	93,934	103,618	113,697	117,184	146,420	246,881
Chief Executive Officer	413,961	190,993	689,720	330,462	298,773	96,297	102,856	122,311	99,266	159,900	285,893
Chief Information Security Officer	250,422	85,209	307,733	411,141	242,707	110,862	118,239	128,155	135,100	173,130	211,363
Chief Financial Officer	263,868	258,732	324,256	213,024	289,531	100,225	103,151	119,668	133,385	145,060	238,969
C-Level Average	279,246	247,104	292,832	93,888	244,209	94,619	109,882	118,632	124,746	153,349	225,209
OVERALL POSITIONS											
OVERALL AVERAGE	104,080	85,379	97,744	113,753	100,743	56,407	64,753	71,243	61,486	93,790	85,220

Sources: Payscale & PIKOM estimates

FAST FACTS

TECHNOLOGY TRENDS

Southeast Asia is undergoing rapid and unprecedented digital transformation, driven by rising consumer classes, a strong start-up sector, cheap and accessible devices, and youthful, tech loving populations who have embraced eCommerce and social media.

Asian companies are prioritising and exploring emerging technologies including artificial intelligence, machine learning, digital ledger technologies, robotics, cryptography and big data that have the potential to reshape the global economy and fundamentally alter the way society functions.

(Continuation) Table 4c: Average Annual Salaries of Digital Professionals by Job by Country (\$PPP Currency) 2023

	Malaysia	Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa
C-LEVEL POSITIONS										
Director of Analytics	163,930	131,406	84,282	130,151	83,599	113,433	154,118	145,342	172,562	256,427
Information Technology (IT) Director	149,445	260,544	125,481	105,972	96,337	130,717	145,451	203,524	185,836	144,820
Vice President (VP), Information Technology (IT)	137,092	176,178	48,409	147,928	113,998	154,681	152,905	213,954	110,617	160,048
Chief Technology Officer	107,458	207,184	104,568	124,655	66,040	376,803	141,171	231,129	131,413	132,012
Chief Information Officer	177,422	367,037	51,521	100,993	87,173	305,279	186,288	304,995	287,604	182,107
Chief Operating Officer	125,434	248,511	52,200	81,929	68,893	262,807	117,555	255,859	353,974	121,525
Chief Executive Officer	166,367	286,456	23,005	88,840	189,997	268,544	120,121	335,549	323,001	146,700
Chief Information Security Officer	110,650	190,521	52,911	26,017	68,891	231,302	103,463	88,388	87,608	135,691
Chief Financial Officer	155,529	276,498	35,344	108,004	144,398	107,417	139,897	228,560	185,836	143,503
C-Level Average	143,703	238,259	64,191	101,610	102,147	216,776	140,108	223,033	204,272	158,093
OVERALL POSITIONS										
OVERALL AVERAGE	53,549	80,133	31,207	39,106	51,494	87,619	48,389	82,161	64,670	65,281

Sources: Payscale & PIKOM estimates

**FIVE FASTEST GROWING
SECTORS IN SOUTHEAST
ASIA 2023**

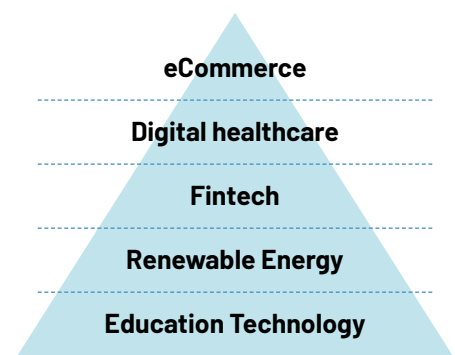


Table 7a: Average Annual Salaries of Top 10% Bracket by Job by Country (\$PPP Currency) 2023

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
TECHNOLOGY POSITION											
.NET Software Developer / Programmer	89,100	42,523	52,019	103,930	136,703	70,827	72,731	79,219	68,745	110,000	126,980
Applications Engineer	131,847	40,038	53,473	125,582	114,732	52,023	66,939	73,382	64,701	111,000	61,019
Business Analyst, IT	165,685	72,896	127,105	181,878	120,835	62,679	72,731	75,050	75,485	102,000	97,064
Business Intelligence (BI) Analyst	129,144	72,896	145,551	168,268	103,747	60,798	74,662	70,881	63,353	98,000	80,480
Support Technician Computer / Network / IT	54,368	48,597	36,949	59,389	82,998	40,741	50,204	53,369	44,482	82,067	58,531
Cyber Security Analyst	185,207	51,497	101,990	143,522	128,159	86,496	74,019	82,555	75,485	118,000	99,015
Data Engineer	172,693	45,277	170,459	140,104	129,379	77,095	85,604	96,731	90,312	134,000	128,281
Data Scientist	178,700	50,183	63,796	275,909	137,923	65,812	81,742	90,060	82,224	137,000	113,811
Database Administrator (DBA)	177,198	41,393	93,791	146,616	92,762	62,679	72,088	80,053	75,485	114,000	123,566
Development Operations (DevOps) Engineer	186,208	55,001	51,863	331,586	141,585	75,214	84,961	101,735	97,052	146,000	162,587
Help Desk Technician	19,540	20,965	1,094	37,118	85,439	38,861	42,480	50,033	36,394	73,467	48,674
Java Developer	95,106	69,798	63,737	118,777	104,968	62,052	80,455	80,887	80,876	121,000	487,760
Junior Software Engineer	112,125	236,912	244,358	129,525	74,454	41,995	48,273	58,372	45,830	84,000	57,556
Network Administrator	86,597	46,645	73,635	92,795	74,454	62,052	61,146	68,379	53,918	87,000	40,890
Network Engineer	115,129	121,493	102,965	120,633	115,953	63,305	75,306	82,555	67,397	113,000	81,131
Network Technician	24,027	24,299	56,312	50,728	56,024	38,234	59,859	60,040	41,786	99,000	58,531
Quality Assurance (QA) Engineer	132,148	85,045	163,711	122,489	89,101	61,425	70,801	73,382	62,005	103,000	73,977
Network Security Engineer	147,164	230,837	154,048	170,742	101,306	69,573	91,397	96,731	70,093	141,000	102,917
Software Developer	98,610	139,717	144,841	133,624	109,850	60,798	66,939	78,386	67,397	111,000	100,479

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
TECHNOLOGY POSITION											
Software Engineer	174,195	236,912	244,358	215,902	119,615	65,186	75,950	90,894	86,268	133,000	98,040
Software Engineer / Developer / Programmer	97,108	91,120	132,032	181,878	113,512	61,425	72,731	80,053	79,528	122,000	77,066
Solutions Architect	254,284	121,493	119,020	299,417	208,715	96,525	114,568	118,412	121,315	166,000	162,587
Support Technician, Information Technology (IT)	53,059	48,597	36,949	59,389	82,998	40,741	46,986	53,369	40,438	82,600	58,531
System Administrator, Computer / Network	75,584	236,912	38,427	70,524	89,101	52,023	63,077	68,379	55,265	92,000	74,790
System Administrator, Windows Server	93,605	90,810	28,735	123,726	79,336	53,904	70,801	74,216	62,005	97,000	53,959
Systems Analyst	123,638	133,642	29,167	125,582	104,968	58,918	70,801	75,884	62,005	98,000	98,040
Systems Engineer, IT	100,612	54,672	88,678	149,709	86,660	57,664	71,444	84,223	64,701	112,000	81,293
Technical Support Analyst IT	55,971	127,568	36,949	89,505	91,542	41,995	59,215	55,037	47,178	79,000	59,481
Technical Support Specialist	147,164	212,613	23,866	99,600	117,174	52,023	64,364	62,542	56,613	82,000	66,010
Test / Quality Assurance (QA) Engineer (Computer Software)	110,624	48,597	186,135	153,421	82,998	55,157	65,651	72,548	59,309	107,000	83,732
Data Analyst	100,612	206,538	170,459	142,285	104,968	56,411	66,295	66,711	57,961	89,000	66,661
Quality Assurance (QA) Analyst	48,054	43,671	59,127	204,172	201,392	60,798	59,859	63,376	56,613	85,000	53,654
Quality Assurance (QA) Analyst Software	570,094	81,957	311,606	543,321	100,086	60,798	62,433	68,379	61,084	84,000	53,654
Web Developer	137,403	59,309	59,119	110,116	87,880	52,023	54,710	63,376	52,570	91,000	52,841
Technology Average	130,659	96,777	101,950	153,581	107,980	59,360	69,154	74,976	65,467	106,004	95,400

Sources: Payscale & PIKOM estimates

(Continuation) Table 7a: Average Annual Salaries of Top 10% Bracket by Job by Country (\$PPP Currency) 2023

	Malaysia	Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa
	TECHNOLOGY POSITIONS									
.NET Software Developer / Programmer	48,830	69,737	34,298	45,516	61,395	42,660	39,771	101,227	49,999	88,569
Applications Engineer	54,643	110,496	115,861	41,329	75,999	67,646	79,542	52,102	58,848	91,776
Business Analyst, IT	73,827	73,407	50,611	45,516	91,199	161,061	39,771	98,157	92,476	78,084
Business Intelligence (BI) Analyst	69,757	73,407	67,342	45,516	83,599	168,835	39,771	86,448	44,247	83,635
Support Technician Computer / Network / IT	31,391	72,967	24,678	23,851	38,121	87,360	36,987	32,213	20,796	36,143
Cyber Security Analyst	62,200	84,609	65,041	28,812	113,998	56,049	39,771	102,925	62,388	71,793
Data Engineer	83,709	146,815	63,577	91,033	75,999	86,517	79,542	91,141	105,307	98,314
Data Scientist	73,827	73,407	79,472	45,516	68,399	75,237	79,542	118,160	106,635	84,992
Database Administrator (DBA)	70,920	44,650	73,197	45,516	98,312	46,500	39,771	101,599	51,228	66,365
Development Operations (DevOps) Engineer	108,705	146,815	112,515	91,033	37,999	94,119	79,542	111,647	93,361	106,456
Help Desk Technician	62,200	38,857	5,317	22,531	52,500	104,588	20,204	54,210	13,850	31,579
Java Developer	58,131	52,853	49,356	45,516	60,799	123,501	39,771	61,639	58,848	85,732
Junior Software Engineer	28,484	73,407	12,966	21,893	30,400	86,973	22,311	139,094	23,451	44,901
Network Administrator	70,339	59,379	18,719	39,417	51,943	81,003	39,771	80,944	50,441	55,386
Network Engineer	54,062	51,018	46,428	43,104	75,999	81,175	38,458	66,988	87,166	70,929
Network Technician	58,712	37,482	19,866	18,343	60,799	36,584	16,545	35,855	35,999	37,377
Quality Assurance (QA) Engineer	43,017	73,407	50,611	40,737	53,199	92,416	39,771	110,484	59,733	75,863
Network Security Engineer	72,083	51,018	65,041	91,033	75,999	54,117	79,542	151,189	67,662	69,079
Software Developer	50,574	73,407	50,193	41,283	60,799	87,534	39,771	227,714	61,060	72,409
Software Engineer	57,550	73,407	63,786	45,516	68,399	51,540	79,542	139,094	80,529	86,349

	Malaysia	Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa
TECHNOLOGY POSITIONS										
Software Engineer / Developer / Programmer	67,432	71,939	38,481	38,006	60,799	72,962	39,771	48,148	78,759	84,128
Solutions Architect	138,933	146,815	25,515	136,549	113,998	80,531	159,083	179,101	99,998	123,355
Support Technician, Information Technology (IT)	31,391	72,967	24,678	23,851	44,475	24,703	36,987	25,083	20,796	36,143
System Administrator, Computer / Network	51,155	81,031	30,210	38,768	44,669	44,109	29,510	79,665	40,353	56,620
System Administrator, Windows Server	41,273	39,053	29,279	45,516	45,235	127,775	39,572	68,368	40,172	62,664
Systems Analyst	62,200	70,911	39,108	45,289	53,199	267,905	39,771	75,548	58,406	79,811
Systems Engineer, IT	45,924	37,364	53,957	45,516	53,199	172,967	29,590	46,443	63,783	75,987
Technical Support Analyst IT	40,111	72,967	12,381	44,879	48,229	80,446	39,771	77,339	52,211	75,987
Technical Support Specialist	74,989	168,214	62,741	26,490	53,199	73,702	79,542	41,403	63,556	82,525
Test / Quality Assurance (QA) Engineer (Computer Software)	51,155	220,222	40,991	34,956	53,199	65,406	38,936	47,218	37,610	58,717
Data Analyst	45,342	72,600	52,075	31,998	60,799	88,802	39,771	189,335	69,467	62,911
Quality Assurance (QA) Analyst	37,204	73,407	28,233	28,448	53,199	134,347	33,845	110,484	33,769	46,011
Quality Assurance (QA) Analyst Software	49,993	73,407	182,575	45,516	53,199	83,743	36,868	110,484	34,512	74,013
Web Developer	40,692	71,939	20,914	30,450	45,599	37,306	32,612	41,868	30,530	53,536
Technology Average	59,140	80,982	50,294	44,978	62,319	89,415	48,392	91,274	57,292	70,828

Sources: Payscale & PIKOM estimates

Table 7b: Average Annual Salaries of Top 10% Bracket by Job by Country (\$PPP Currency) 2023

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
MANAGERIAL POSITIONS											
Information Technology (IT) Consultant	207,732	97,195	274,903	261,681	142,805	85,870	93,328	94,230	106,487	132,000	106,332
Information Technology (IT) Manager	218,744	139,717	485,760	217,140	174,540	87,123	99,121	102,568	91,660	135,000	142,751
Project Manager, Information Technology (IT)	205,730	121,493	66,016	222,707	165,996	78,975	95,903	95,063	98,400	131,000	147,791
Quality Assurance Manager	232,760	154,211	236,475	199,818	153,790	76,468	79,168	90,060	83,572	128,000	124,541
Data Manager	148,166	206,538	170,459	123,108	1,212,014	80,855	99,121	100,901	80,876	122,000	103,242
eCommerce Manager	182,704	166,299	177,156	208,479	161,114	70,200	75,306	71,714	64,701	102,000	118,851
Senior Business Analyst	168,188	78,971	147,807	194,250	161,114	82,736	96,546	90,060	101,095	119,000	130,394
Senior Data Scientist	237,766	56,002	144,466	370,560	186,745	94,645	105,557	115,077	111,879	163,000	106,932
Senior Database Administrator (DBA)	176,197	109,344	197,063	166,412	131,820	79,602	95,259	100,901	102,443	145,000	122,103
Senior Project Manager, IT	266,297	247,814	177,356	609,970	207,495	101,539	114,568	116,745	119,967	153,000	162,587
Senior Software Engineer	163,683	473,823	118,238	197,343	153,790	83,989	98,477	115,077	113,227	164,000	158,685
Senior Solutions Architect	299,334	121,493	209,611	314,883	207,495	120,970	131,303	142,595	148,273	178,000	162,587
Senior Systems Administrator	176,197	91,120	86,801	137,955	289,272	63,932	77,237	83,389	68,745	121,000	100,204
Senior Systems Analyst	164,684	101,271	119,009	257,969	117,174	70,827	90,110	87,558	75,485	123,000	112,673
Senior Systems Engineer	179,200	168,011	72,421	152,802	131,820	72,080	95,259	99,233	86,268	153,000	135,597
Senior Web Developer	340,980	66,153	122,345	131,150	146,467	70,827	82,366	84,223	82,224	126,000	89,748
Sr. Software Engineer / Developer / Programmer	181,703	109,344	105,429	168,886	142,805	82,736	94,615	105,904	107,835	151,000	139,987
Software Quality Assurance (SQA) Manager	163,370	99,551	169,471	157,132	267,180	57,664	98,477	107,572	66,049	150,000	66,010
Managerial Average	206,302	144,908	171,155	227,347	230,747	81,169	95,652	100,159	94,955	138,667	123,945

Sources: Payscale & PIKOM estimates

(Continuation) Table 7b: Average Annual Salaries of Top 10% Bracket by Job by Country (\$PPP Currency) 2023

	Malaysia	Thailand	Indonesia	Philippines	Japan	South Korea	India	China	Brazil	South Africa
MANAGERIAL POSITIONS										
Information Technology (IT) Consultant	80,802	367,037	130,292	91,033	75,999	109,292	79,542	73,342	75,219	81,661
Information Technology (IT) Manager	108,705	146,815	125,481	91,033	98,799	111,132	119,313	117,928	134,952	118,298
Project Manager, Information Technology (IT)	105,217	146,815	81,354	91,033	91,199	120,259	119,313	161,656	105,037	110,773
Quality Assurance Manager	81,384	146,815	182,575	91,033	101,154	110,434	119,313	93,272	59,733	100,041
Data Manager	121,494	146,815	63,577	91,033	75,999	91,359	119,313	82,312	105,307	123,355
eCommerce Manager	70,920	102,770	120,880	36,231	91,199	92,610	39,771	85,596	218,136	82,895
Senior Business Analyst	93,591	146,815	88,883	91,033	258,396	193,274	79,542	96,063	78,317	115,214
Senior Data Scientist	144,747	92,584	77,560	91,033	68,399	96,929	119,313	113,741	76,503	123,355
Senior Database Administrator (DBA)	90,103	151,953	115,025	136,549	75,999	65,535	79,542	78,376	86,281	110,773
Senior Project Manager, IT	172,068	146,815	114,606	136,549	68,399	150,646	159,083	104,562	131,413	123,355
Senior Software Engineer	90,103	146,815	97,666	91,033	91,199	105,370	79,542	175,845	136,280	123,355
Senior Solutions Architect	177,300	154,650	38,481	227,581	88,919	97,711	159,083	232,599	106,192	246,710
Senior Systems Administrator	61,038	134,335	45,500	45,516	61,788	79,522	79,542	87,225	96,237	78,084
Senior Systems Analyst	69,176	101,512	42,900	45,516	55,629	113,387	79,542	87,225	56,193	105,099
Senior Systems Engineer	70,920	70,135	53,957	91,033	68,653	114,866	79,542	90,714	99,555	113,610
Senior Web Developer	74,408	71,058	29,144	45,516	53,199	135,292	79,542	114,927	34,394	82,771
Sr. Software Engineer / Developer / Programmer	104,055	146,815	104,568	91,033	75,999	65,687	79,542	104,669	138,050	122,492
Software Quality Assurance (SQA) Manager	73,524	72,233	40,991	45,516	97,279	161,491	119,313	140,257	86,466	123,355
Managerial Average	99,420	138,488	86,302	90,517	88,789	111,933	99,427	113,350	101,348	115,844

Sources: Payscale & PIKOM estimates

Table 7c: Average Annual Salaries of Top 10% Bracket by Job by Country (\$PPP Currency) 2023

	UAE	Kuwait	Qatar	Saudi Arabia	Singapore	New Zealand	Australia	Canada	United Kingdom	USA	Hong Kong
C-LEVEL POSITIONS											
Director of Analytics	500,559	236,912	238,120	395,924	313,684	129,745	137,096	142,595	198,147	180,000	325,173
Information Technology (IT) Director	383,929	72,896	393,552	526,455	351,521	152,936	148,681	135,924	164,449	178,000	325,173
Vice President (VP) Information Technology (IT)	500,559	93,785	543,277	486,863	272,185	111,568	258,100	158,439	164,449	207,000	325,173
Chief Technology Officer	461,015	337,857	55,092	603,165	429,637	126,611	157,048	170,113	202,191	256,000	487,760
Chief Information Officer	500,559	661,599	47,295	1,237,262	416,210	152,309	201,460	200,133	227,802	258,000	487,760
Chief Operating Officer	500,559	668,212	445,352	618,631	429,637	132,878	163,485	168,446	199,495	247,000	325,173
Chief Executive Officer	1,001,118	217,467	985,314	1,237,262	616,382	169,232	190,518	213,476	212,974	313,000	650,346
Chief Information Security Officer	446,999	120,278	326,605	431,186	364,947	125,357	180,220	187,625	199,495	233,000	325,173
Chief Financial Officer	499,558	564,943	985,314	618,631	449,165	152,936	160,267	177,618	214,322	235,000	487,760
C-Level Average	532,762	330,439	446,658	683,931	404,819	139,286	177,430	172,708	198,147	234,111	415,499
OVERALL POSITIONS											
OVERALL AVERAGE	212,306	145,454	173,230	253,596	188,002	77,588	92,948	96,827	93,744	134,543	151,051
C-LEVEL POSITIONS											
Director of Analytics	285,238	293,629	199,725	182,065	98,799	134,003	238,625	232,599	264,883	264,883	370,066
Information Technology (IT) Director	273,216	440,444	169,400	227,581	136,798	158,104	238,625	232,599	292,471	292,471	246,710
Vice President (VP) Information Technology (IT)	281,936	369,973	87,136	227,581	128,818	174,719	238,625	256,744	149,222	149,222	246,710
Chief Technology Officer	191,833	660,666	150,787	455,163	158,497	677,973	357,938	465,198	137,165	137,165	246,710
Chief Information Officer	287,749	440,444	125,481	227,581	157,784	552,334	397,708	447,427	408,840	408,840	246,710
Chief Operating Officer	301,701	1,247,925	164,381	273,098	167,197	683,025	318,167	1,628,192	361,053	361,053	246,710
Chief Executive Officer	463,887	660,666	168,354	455,163	463,593	644,246	477,250	465,198	442,467	442,467	370,066
Chief Information Security Officer	143,584	419,145	74,076	45,334	98,799	323,693	238,625	118,086	110,178	110,178	370,066
Chief Financial Officer	294,725	513,851	185,635	273,098	182,397	169,651	357,938	465,198	327,868	327,868	46,710
C-Level Average	280,430	560,749	144,997	262,963	176,965	390,861	318,167	479,027	277,127	277,127	287,829
OVERALL POSITIONS											
OVERALL AVERAGE	103,675	168,736	74,892	90,577	87,045	140,535	103,254	154,998	102,727	102,727	116,128

Sources: Payscale & PIKOM estimates



MDX 2023: A CELEBRATION OF MALAYSIA'S DIGITAL ECONOMY

Embark on a captivating journey through the remarkable achievements of Malaysia Digital Economy Corporation (MDEC), as it continues to drive the country's digital economy forward with the ground-breaking and visionary Malaysia Digital (MD) national strategic initiative. Brace yourself for the inaugural prestigious Malaysia Digital Expo 2023 (MDX 2023), where innovations and collaborations take centre stage.

In the rapidly evolving technology landscape, the horizon of possibilities continues to expand, inviting exploration, innovation, and collaboration like never before. MDX 2023 stands at the forefront of this journey – a transformative six-week experience from 25 September to 4 November 2023 into the heart of technology to elevate Malaysia's position as the Digital Hub of ASEAN.

From nationwide auxiliary events to conferences, exhibitions, launches, and industry awards dinners, MDX 2023 encapsulates the entire spectrum of technological evolution. The diverse events enable attendees to gain comprehensive insights into the ever-changing tech landscape and industry trends that shape the world.

The celebration will bring together tech enthusiasts and industry titans to discuss the future of technology with keynote speakers and prominent panellists from prestigious local and global organisations.

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We are an agency under MOHR mandated to drive Malaysia's talent strategy towards becoming a dynamic talent hub.

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SECTION F

FOOD FOR THOUGHT



THE FUTURE OF DIGITAL TALENTS AND CAREERS IN OUR ECONOMY

Almost 15 years since the Global Financial Crisis (GFC), we face an arguably steeper challenge today in the aftermath of the Covid-19 pandemic. As before, we are confronted by similar uncertainties leading to a host of questions surrounding the job and talent landscapes. Will the pandemic devastate the job market? Will it leave a lasting impact on the talent pipeline? What is the effect on salaries and remuneration?

These are but a few pertinent questions that many in the digital industry have been raising. In response, the National Tech Association of Malaysia (PIKOM) takes a look at jobs and salaries in the digital economy with data and insights from the Digital Job Market Outlook 2022, an annual publication produced by PIKOM over the past 13 years (except for 2020).

One aspect is for certain. Knowledge and skills required for the tech industry are evolving rapidly in tandem with related technologies that are constantly in flux. As a net consumer of digital technologies, proficiency in the use of these tech tools is critical in raising productivity and adding value to all our industries, particularly manufacturing and services. In this sense, having updated and industry-skewed education curricula is absolutely vital.

IN-DEMAND CAPABILITIES REQUIRED IN THE DIGITAL ECONOMY

● AI and Data Science

The increasing deployment of artificial intelligence (AI) and machine language (ML) across industries has generated demand for professionals who can develop, implement and manage the use of AI and ML while consistently keeping abreast of technological developments.

Salaries for AI and data science jobs are trending upwards, with annual basic wages in the RM100,000 – RM155,000 range. For example, a data analytics developer earned a monthly salary of RM8,418 and a software engineer in machine learning RM12,868 in 2022.*

**PIKOM Digital Job Market Outlook 2022*

The growing demand has also prompted many institutions of higher learning (IHL) to offer specialisation in data science for future careers as data scientists, data analysts and data engineers who can convert huge amounts of data into business insights.

● Cybersecurity

Another in-demand job is the cybersecurity professional, who are urgently needed to address growing cyber threats threatening the data integrity of even the largest organisations. To protect digital assets cybersecurity professionals today require a deep understanding of security protocols, encryption, coding and operating systems.

Cybersecurity professionals are currently the highest-paid digital talents in Malaysia, with annual salaries from RM108,000 – RM228,000 which translated to a monthly basic package of RM9,006 for a security analyst and RM19,016 for a chief information security officer (CISO).*

**PIKOM Digital Job Market Outlook 2022*

Specialisation in cybersecurity is poised to provide mainstream careers, as reflected by the premium salaries for professionals in this field.

● Cloud Computing

Professionals with expertise in cloud computing are also sought after. As a cost-effective platform, the cloud is revolutionising the way data, apps and digital tools are stored and accessed, requiring businesses to hire cloud developers, architects and security specialists.

Useful Tips for Job Seekers

For job seekers, having the requisite digital skillsets is only half the battle won. Feedback from employers indicate that many talents, however experienced, continue to job hop, struggle to fit in and are unable to find their ideal jobs. Here are some useful tips from PIKOM members who are nominally business owners and employers in the digital industry:

- Never misrepresent your experience, background or interests;
- Always be on the look out for the latest tech roles;
- Don't just rely on your connections;
- Don't accepting a job that doesn't suit your interests or qualifications;
- Never accept more than one offer at the same time;
- Don't leave a company within your probation period; and
- Don't provide half-baked resume with gaps in between the years.

● Consumer Outreach

Another area requiring digital professionals is customer experience (CX), which has become a key market factor for consumer retention. Naturally, this has led to demand for talents who can design user interfaces and experiences that are intuitive, engaging, easy to use, and cost effective.

In tandem with CX, digital marketing is also a popular field. Professionals who can create and implement effective digital marketing strategies and tools including search engine optimisation (SEO), pay-per-click (PPC) and social media platforms are set for bright futures.

● Blockchain

Blockchain technology has the potential to revolutionise various industries including finance, healthcare, and logistics. Professionals who can develop and manage blockchain systems will be in high demand.

These hot jobs represent the golden prospects of the digital economy. Professionals in these areas are the spearheads to drive our businesses forward into a digital future where trends and patterns are constantly shifting.



INTERNSHIP: FOCUS SHOULD BE ON JOB QUALITY

The question of compensation for internship has been a hot button topic since the start of the year with interns, employers and even the Government taking turns to voice their views on this contentious issue.

In mid-June, a young student grabbed attention by protesting with a placard stating 'interns are not free labour' before Prime Minister Dato' Seri Anwar Ibrahim responded several days later to encourage companies to offer interns an allowance, but adding that the Government would not compel employers to do so.

As it stands, paid interns in Malaysia are provided an average compensation of RM1,300 comprising RM1,000 in basic allowance and another RM300 in add-ons*. This falls short of the country's minimum wage of RM1,500, but to be clear, interns are excluded from this statutory requirement.

<https://www.glassdoor.com/Salaries/malaysia-intern-salary>

Amid this situation, it is important that we understand the purpose of interns and benefits of internship at the workplace.

COMPENSATION OR CAREER DEVELOPMENT

An internship offers students the opportunity for career exploration and development while at the same time providing employers with a prospective source of new ideas and energy for the workplace as well as a ready-made pipeline for talent recruitment.

On the one hand, internships play a pivotal role in shaping the career trajectories of students. On the other, it has the potential to strengthen a company's approach to business continuity and succession planning.

In other words, it's a win-win scenario for all sides. This being the case, it is imperative to consider not only the issue of fair compensation, but also the overall job quality for interns in different businesses and industries.

The National Tech Association of Malaysia (PIKOM) strongly believes that job quality should be at the forefront of discussions about internships. Instead of solely focusing on salaries, it is essential to ensure that interns receive meaningful work assignments, gain industry-specific skills, and are provided with a supportive and conducive environment for learning.

By prioritising job quality, internships can become transformative experiences that prepare students for the workforce through the accumulation of valuable experience and access to opportunities for growth.

BEST PRACTICES

Several industries have implemented best practices to enhance internship programmes. In this regard, mentorship initiatives have emerged as an effective way to support and guide interns throughout their internship.

By pairing interns with experienced professionals who provide guidance, feedback and industry insights, interns can benefit from valuable mentor-mentee relationships that contribute to their professional development.

On our part, we have introduced a PIKOM Industry Internship Programme (PIIP) to bridge the skills gap in the digital industry. The PIIP is spearheaded by the PIKOM Research Committee under the ambit of the Academia Talent Gap chaired by Dato' Dr Munirah Looi, founder of Brandt International.

Launched in June 2023, the PIIP offers paid internship to students from Nottingham University, HELP University, Sunway University, University Tunku Abdul Rahman (UTAR) and other interested universities to follow. Under the programme, students have the opportunity to gain hands-on experience with companies in the tech industry.

Beyond the tech industry, the National Structured Internship Programme (MySIP) developed by Talent Corp encourages companies to provide meaningful

practical learning experience through structured internships.

RECOMMENDATIONS

To address challenges faced by interns, it is crucial for the government and industry to collaborate and take proactive measures. Here are some proposals for industry and government assistance:

- The Government can provide tax rebates to companies that offer high-quality internships, with a threshold based on specific criteria such as mentorship programmes, structured learning opportunities and fair compensation. This would incentivise companies to invest in valuable internship experiences for students.
- The industry can establish mentorship programmes for interns with experienced professionals offering guidance, sharing knowledge and helping interns navigate their career paths.
- The Government or related agencies can conduct a nationwide survey on the challenges faced by both interns and the industry to gain deeper insights into the specific issues at hand. This data can influence policy decisions and facilitate targeted interventions to improve internship programmes across sectors.
- Urban and rural areas may present different challenges for interns. The government can assist by implementing initiatives that bridge the urban-rural divide such as establishing internship placement centres in rural areas and providing transportation subsidies or accommodation support for interns in remote locations. This would ensure equal access to internship opportunities for students regardless of their geographical locations.
- Incorporate practical skill development programmes, workshops and hands-on projects related to AI, data analytics, robotics, and machine learning, which can encourage students to work on real-world problems and collaborate with tech industries.
- Invite industry experts to deliver guest lectures and conduct workshops to expose students to industry practices, trends, and fosters networking opportunities.
- Encourage faculty members and students to engage in research collaborations with tech industries to promote innovation and offers opportunities for employment through successful projects.

On our part, PIKOM can act as a bridge between universities and tech industries. Among others, the association can:

- Provide regular updates on job market demands and emerging tech trends to universities, so they can tailor their programmes accordingly.
- Work with member companies to create internship and training opportunities, giving students practical exposure to the industry.
- Encourage PIKOM member companies to sponsor research projects, hackathons, and competitions in universities to support student initiatives.
- Collaborate with universities to develop industry-relevant certification programmes that validate students' skills and increase their employability.

To ensure immediate employment for students in emerging tech fields, universities can consider the following recommendations:

By focusing on job quality, implementing best practices, and fostering collaboration between industry and government, Malaysia can create a favourable ecosystem for internships that not only address the issue of fair compensation, but also provide valuable learning experiences and enhance employability.



IMPACT OF AI ON JOBS: SUBSTITUTION OR DISPLACEMENT?

The launch of natural language processing tool ChatGPT in November last year has intensified the debate over the impact of generative artificial intelligence (AI) on jobs.

A worldwide concern, this issue is beginning to rear its head in Malaysia where the Covid-19 pandemic appears to have accelerated the deployment of chatbots and other AI tools among larger companies, just as it has in the developed world.

On the global front, generative AI is increasingly viewed as a grim reaper of knowledge jobs in the same way as automation has been to manual labour. According to American news portal [axios.com](https://www.axios.com/2023/03/29/robots-jobs-chatgpt-generative-ai), AI tools can already perform the functions of radiologists and potentially the tasks of coders, accountants, paralegals, graphic designers and journalists.

<https://www.axios.com/2023/03/29/robots-jobs-chatgpt-generative-ai>

This perception is echoed by Brookings Institution, which highlighted the prospect that AI could soon displace as many higher-qualified professionals as lower-skilled drivers and retail workers. However, the US think tank has soothed concerns by pointing out that every technology shift tends to create more jobs than it destroys.

According to the World Economic Forum (WEF), AI and autonomous machines could replace 85 million jobs, but create 97 million new positions by 2025 in an evolving division of labour between humans, machines and algorithms.

<https://www.weforum.org/reports/the-future-of-jobs-report-2020/in-full/executive-summary>

In other words, it's a case of job substitution instead of merely job displacement.

THE SCENARIO IN MALAYSIA

Malaysian and Malaysian-based companies, particularly the larger and more prominent ones, have been progressively incorporating AI into their processes and procedures. They include telecommunication entities such as Maxis and Celcom, financial institutions the like of Maybank and CIMB, e-hailing and e-delivery platforms as Grab and e-commerce marketplaces Lazada and Shopee.

Smaller companies are also leveraging AI tools for various functions, initially as a response to pandemic-related restrictions and subsequently to boost productivity and slash overheads in the form of employee wages. The National Tech Association of Malaysia (PIKOM) expects AI to become pervasive across the domestic business landscape over the next five years, especially since both employers and employees seem to be embracing AI.

Microsoft's Work Trend Index 2023 found that while 62% of Malaysian employees were concerned over being replaced, more than 80% were only too happy to delegate tasks to AI to lessen their workloads. And from the global survey results, more managers in Malaysia as compared to elsewhere felt AI could boost productivity without cutting employee headcount.

PIKOM understands that while some companies recognise the value of AI in terms of cost savings and efficiency, there are still many that are either ignorant of the technology or remain skeptical over its implementation. Among the concerns of this latter group are the complexity of AI technology, data privacy and security and ethical considerations. Nevertheless, PIKOM believes that most if not all businesses will eventually integrate AI into their operations once it has demonstrated its uses and value.

JOBS SUBSTITUTED BY AI

Naturally, jobs at risk from AI are the same in Malaysia as elsewhere. While there does not appear to have been any significant job displacement as yet, certain categories of jobs are on track or could be overridden by AI.

They include the obvious ones as jobs in manufacturing, warehousing, data entry, customer service and certain administrative positions. In the longer term, specific jobs in transportation are likely to fall under the hammer, such as delivery and taxi drivers who would make way for autonomous vehicles.

ChatGPT and other AI tools will impact roles in data analysis and data reporting while chatbots and virtual assistants can easily handle basic customer queries and support. Meanwhile algorithms can automate basic financial and accounting tasks such as bookkeeping, transaction processing, and basic financial analysis.

Average Annual Salaries of Digital Professionals in AI and Data (RM) 2022

Job Position	Average	1 – 3 Years	>7 Years
Software Engineer Machine Learning	154,419	108,799	193,087
Data Scientist	150,533	93,583	188,073
Engineer AI	138,315	97,594	172,950
AI Specialist	132,631	133,373	165,842
Data Analytics Engineer	129,382	92,351	161,250
Data Analyst	123,670	87,640	154,384
Analyst Automation	110,791	78,627	138,307
Data Analytics Developer	101,016	72,104	125,898

*As of 9 August, 2022

Source: SalaryExpert

JOBS CREATED BY AI

On the flip side of the coin, AI is creating a host of job opportunities and enhancing existing positions across multiple industries. For now, there are mostly jobs for the development and application of AI and related technology.

In the past few years, companies have been increasingly hiring data scientists, analysts and engineers to curate data sets and derive insights require for better decision-making, particularly in the area of regulatory compliance and risk management at financial institutions. AI-driven software development is also in high demand, with companies seeking AI developers, machine learning engineers and natural language processing experts.

Further, the development and deployment of robotic systems and automation require engineers and technicians with expertise in AI. Many of the call centers are driven by BOT technology as their first line of engagement with their customers while the use of robotic process automation (RPA) is designed to improve repeated processes in many sectors including the service industry.

As AI technology evolves, so do cybersecurity threats. Hence, companies are also hiring cybersecurity specialists who can develop AI-powered security solutions for greater protection. The growing demand for AI-related jobs is also reflected by the rise in salaries for these positions, as reported presented in the table extracted from PIKOM's Digital Job Market Outlook 2022, published in August last year.

WHAT NEEDS TO BE DONE TO CUSHION THE IMPACT OF AI JOB SUBSTITUTIONS?

The burning question is how to reduce the effects on AI integration without disrupting the talent market. PIKOM has mapped out the following courses of action:

- Investment in training programmes is, of course, essential in order to equip our workforce with AI-related skills. This would enable employees to transition into new roles instead of hiring new talents.
- Implementing AI systems in phases to allow a smoother deployment of AI and related technologies in collaboration with talents. AI can automate tasks and augment human capabilities to enable employees to focus on more complex and strategic work.
- It is critical to focus on ethical considerations in developing and deploying AI systems. The workforce must be at the forefront in ensuring transparency, fairness and accountability in all AI algorithms to mitigate any potential negative impacts on the labour market.
- Companies can refocus job functions involving creativity, innovation, critical thinking, and emotional intelligence. Certain automated processes in customer experience may be layered with elements of human interactions.

WHAT CAN GOVERNMENTS DO?

London-based Future Advocacy has outlined steps that governments can take to maximise the opportunities and minimise the risks of automation and AI. It has called for:

- detailed research to assess which jobs are most at risk, targeted strategies to support businesses that retrain employees.
- adapting education systems to prioritise creativity and skillsets deemed less replaceable by automation and lifelong learning; and
- development of alternative income and taxation models to ensure a fairer distribution of wealth.

The introduction of generative AI is bound to escalate and accelerate in the intermediate period. Employers and employees need to confront the relevant issues and work towards a work environment that integrates human and non-human intelligent systems. That is our future and we need to get ready!



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AN EXPANDING GIG ECONOMY: WE HAVE LITTLE CHOICE BUT TO DEAL WITH THE GROWING PAINS

Like any new phenomenon, we have to take the good with the bad in the case of the gig economy.

On the one hand, it offers immediate solutions to businesses and contributes to the economy. On the other hand, it could have adverse consequences on talent development and future economic growth.

First, let's be clear on what the gig economy is and who the gig workers are. Briefly, the gig economy revolves around service provision by independent gig workers who take on one-time or short-term tasks listed online on crowdsourced work platforms by enterprises.

In Malaysia, there is a common misperception that gig workers are exclusively food / parcel delivery riders and e-hailing drivers when in fact they include skilled and semi-skilled talents in sales, consultancy, brokerage, and the creative and digital industries, among others.

WHAT'S GOOD ABOUT THIS GIG?

For enterprises, outsourcing jobs to gig workers on an as-when-needed basis saves cost of paying permanent wages and other worker benefits such as healthcare and training. Further, companies have the flexibility to scale their workforce (permanent, contract or contingent) according to business demand.

In the case of gig workers, they can gain exposure and grow their skillsets by working on assorted projects for multiple companies. In addition, gig workers can choose what, where and when they work, earning or supplementing their incomes without the risk of retrenchments.

WHAT'S BAD ABOUT THIS GIG?

As the gig economy in Malaysia is currently dominated by e-hailing and dispatch services, such low-income

and low-skilled activities do not add real value to the economy.

Further, the appeal of becoming a gig worker for many school leavers is robbing the nation of much-needed talent development necessary to transform into a producing as opposed to consuming economy and escape the middle-income trap to achieve high-income status.

In the case of gig workers, they lack job security and critical factors such as savings, retirement benefits, healthcare coverage, and access to training and education. They are also susceptible to exploitation given the absence of formal labour protection.

THIS GIG IS THE FUTURE

While the growth of the gig economy had its first inflexion point following the Global Financial Crisis (GFC) in 2008, its second was the COVID-19 pandemic which drove retrenched workers and failed business owners to earn a living via contingent gigs.

Today, an estimated third of the world's workforce are considered gig workers according to ADP Research Institute while the gig economy is worth almost half a trillion USD based on a report by Mastercard. According to some estimates, the gig workforce will surpass the employed by 2030.

On the home front, a quarter (3.9 million) of Malaysia's 15.1 million workers* are categorised as gig workers. Many more are clamouring to join their ranks as a 2020 report by the Zurich Insurance Group and Oxford University noted that 38% of employed Malaysians are considering joining the gig economy.

*<https://themalaysianreserve.com/2022/10/18/the-gig-economy-what-monster-are-we-breeding/>

Growing Fast: Gig Workforce and Gig Economy



Sources: ADP Research Institute, The Malaysian Reserve

The pull factors are obvious. Rising inflation is pushing people towards multiple income streams and this trend is supported by new digital-age enterprises that have easy access to freelance or independent workers.

The writing is already on the wall. The gig economy in Malaysia is poised to be the largest employment group within the next decade. The Government, industries and businesses have little choice but to prepare for this and resolve current issues concerning gig workers.

PAVING THE WAY FOR THE FUTURE GIG

Recognising this shift, the Government is already taking steps to protect gig workers. In the recent Budget 2023 announcement, Prime Minister Dato' Seri Anwar Ibrahim disclosed that RM40 million will be set aside for the benefit of 30,000 gig workers.

Beyond Budget 2023, the Government has also introduced initiatives to stimulate the gig economy via the Global Online Workforce programme by the Malaysia Digital Economy Corporation (MDEC).

PIKOM acknowledges the economic and social shortcomings arising from the gig economy. Nevertheless, we are confident that these issues will be overcome in due time even as it becomes a vital component of the digital and national economies.

It is imperative that the Government considers the essential regulations aimed at protecting these workers to provide a safety net against the risks of exploitation. In addition, gig workers should be given access to skills improvement programmes in order to move them higher up the value chain. The key outcome of such a move would be to increase productivity in the economy.

Many countries including the US, Australia and much of western Europe have introduced new regulations requiring companies to among others; classify gig workers as employees, offer minimum wage, allow collective bargaining, provide social security coverage and open access to training.

It should be noted that the regulation of gig workers is still evolving. Different countries and regions will take differing approaches to regulating the gig economy. What is clear is that these regulations will evolve with the gig economy over time.



TECHNOLOGY TRENDS AND OPPORTUNITIES IN MALAYSIA

Malaysia and other economies in the region are actively embracing the digital economy, driven by the ever-evolving and expanding global economy and rapid assimilations of technological advancements.

There is quiet confidence that Malaysia will lead the region with an impressive majority of its population becoming digital consumers even before the pandemic, which merely accelerated this trend.

In tandem with this digital transformation, the Government has launched initiatives such as the Malaysia Digital Economy Blueprint (MyDIGITAL) and the National Fourth Industrial Revolution (4IR) Policy.

These initiatives emphasise the importance of robust cybersecurity practices and the widespread adoption of cutting-edge technologies. It should be noted that technology is the second mission of the recently-launched National Industrial Master Plan (NIMP).

Mission 2: Tech up for digitally-vibrant nations and aims to embrace technology and digitalisation to drive innovation, enhance productivity and create new opportunities for economic growth.

Across various sectors, from banking to logistics and services, technology plays an integral role in the daily lives of both industries and consumers in Malaysia. Companies are consistently investing to enhance the usability and security of technologies to offer superior customer experiences.

This commitment not only benefits existing customers but also opens doors for new players to enter the market, ultimately leading to job creation in the fields of development and enterprise technologies.

That said, the biggest risk is the growth of cybersecurity breaches and intrusions permeating all levels of the economy and communities.

With such tech innovations alongside the growing cybersecurity threat, what is the landscape or trends of the tech industry in Malaysia?

Undoubtedly, the nation is poised for significant growth and transformation in 2023 and into 2024,

particularly in cloud computing, artificial intelligence (AI), virtual reality (VR), blockchain, Web3, automation, 5G and data centre developments.

Adoptions of Web3 technologies is worth mentioning here as Web3 represents the third iteration of the World Wide Web, envisioning a decentralised and open internet that integrates blockchain technologies and token-based economics.

Companies from established giants to ambitious startups are exploring Web3's potential. In response to recent industry shake ups, especially the collapse of high-profile cryptocurrencies and retrenchments, companies venturing into Web3 are expected to adopt a sharper and more prudent growth and hiring strategy.

Cost optimisation, productivity enhancements and quicker returns on investments will likely drive the majority of business decisions in this domain.

In essence the following outline the trends that will be pervasive in the tech industry here in the years ahead:

● Cloud Computing and Web3 Technologies

- In 2023, cloud computing, cybersecurity, AI, IoT, VR and blockchain will continue to witness vibrant developments;
- Companies are shifting towards Web3 technologies, aiming for a decentralised and open Web with blockchain integration;
- Web3 adopters are focusing on cost optimisation, productivity and prudent growth strategies;
- Regulators like BNM are also more receptive to the financial sector in adopting cloud platforms.

● Automation in Industries

- Transportation, manufacturing and supply chain industries will benefit from automation, enhancing efficiency;
- Banking, financial services and insurance sectors are constantly transforming to meet evolving customer demands;

- The use of RPA and BOT are also more pervasive across many industries especially in the services sector.

● 5G Revolution

- Malaysia's 5G rollout is underway, led by the Digital Nasional Berhad (DNB);
- This is expected to create around 39,000 value-added jobs and boost the local digital economy;
- There will be high demand for 5G-specific professionals, especially in manufacturing, transportation, finance, and retail.

● Data Centre Developments

- Malaysia remains the preferred data centre location in Southeast Asia, driven by stable connectivity and internet penetration;
- Multinational corporations (MNCs) are investing over US\$2 billion in Malaysia-based data centres between 2022 and 2027;
- Cyberjaya plays a central role with 14 data centre facilities;
- Anticipated three-fold increase in data centre supply due to announced and under-construction projects;

- Highly regulated industries such as banking are expanding data centre capabilities;
- Continuous upgrades are essential to meet evolving business and customer needs, driven by advancements in cloud technology;

CONCLUSION

The tech trends in Malaysia for 2023 and 2024 are marked by exciting developments in cloud computing, automation, the 5G revolution and substantial growth in data centre infrastructure.

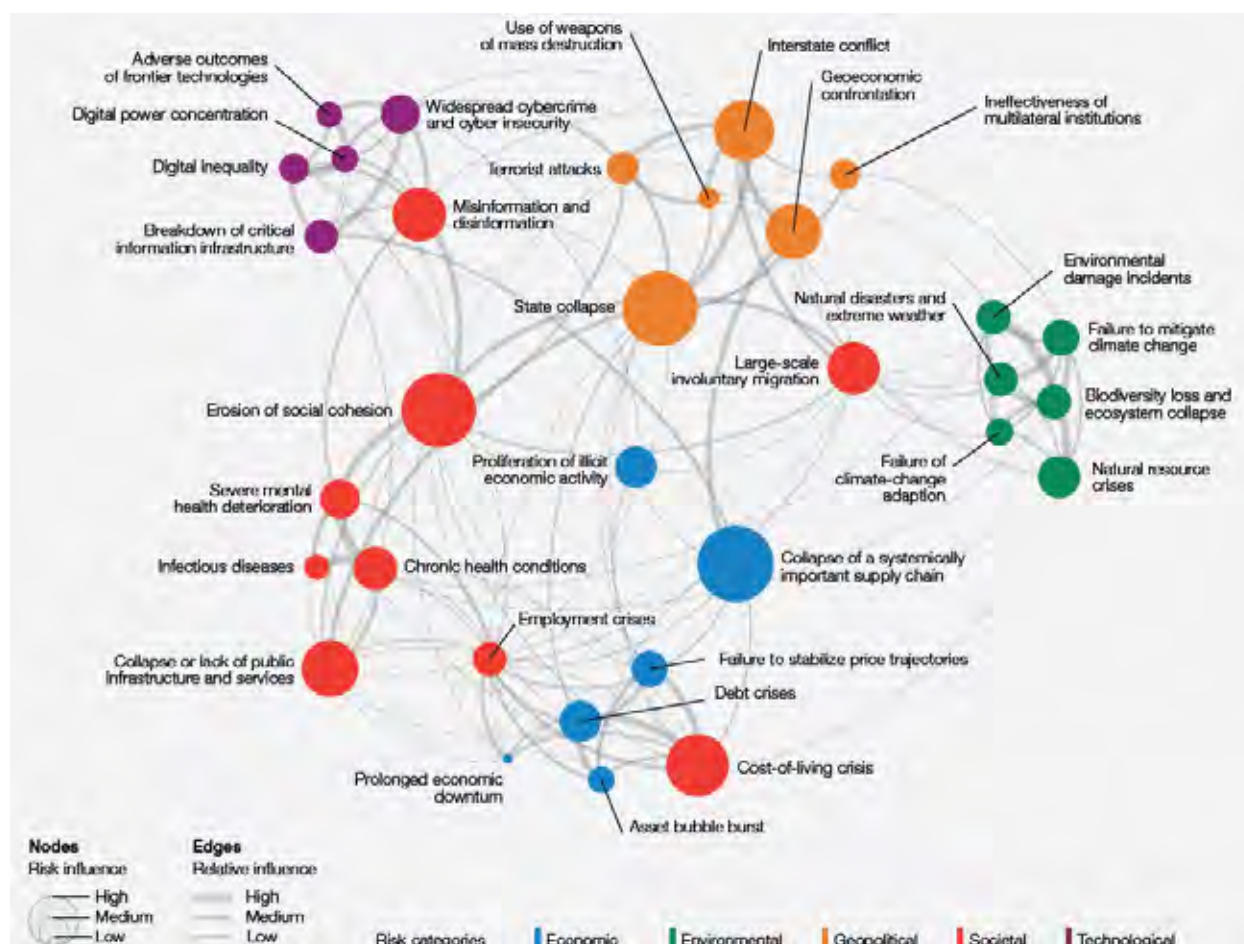
These trends reflect a promising future for Malaysia's digital economy, technological advancement, and its position as a key player in the Southeast Asian tech landscape. As these trends unfold, businesses and professionals in Malaysia should prepare to embrace these opportunities and stay at the forefront of innovation.

Another perspective to ponder is the question of collaboration among the tech industries and tech associations in a Southeast Asian region of 600 billion people, especially in areas of innovation, research, cybersecurity risk mitigations and adoptions of new technology.

There is a wise old saying *"if you grow your pie, your share will also grow!"*



FUTURE OF WORK: BUILDING RESILIENCE THROUGH TECHNOLOGY.



GLOBAL RISKS & THEIR IMPLICATIONS

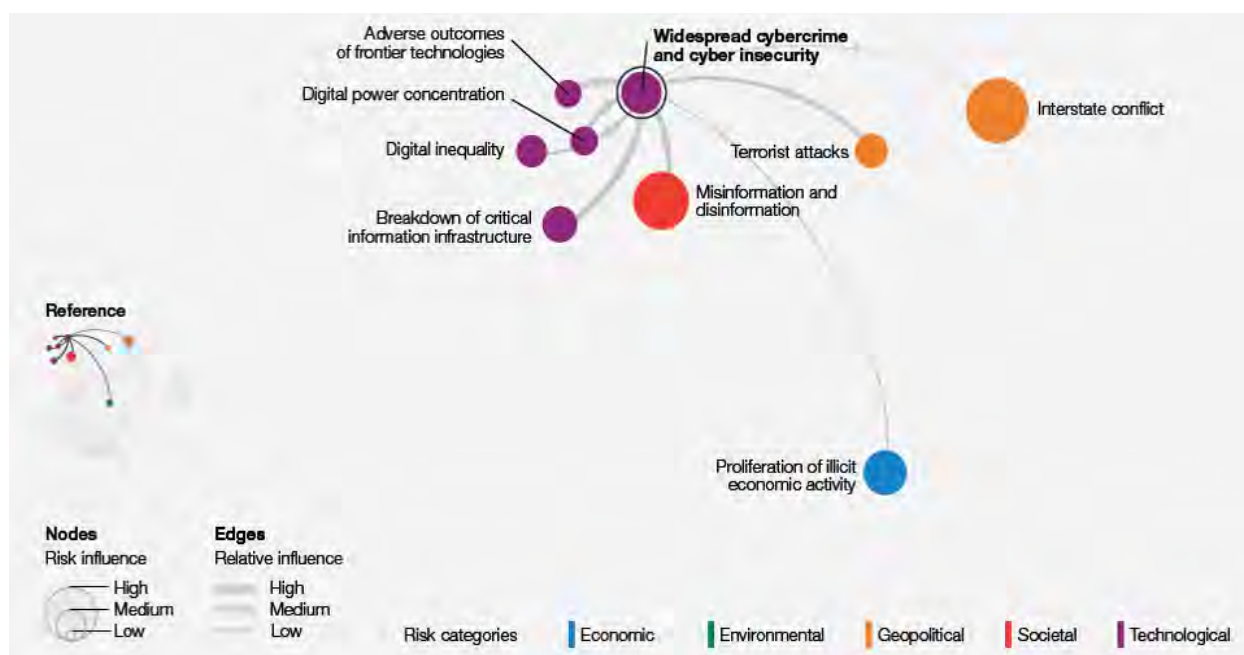
In 2022, the World Economic Forum had articulated about a divergent post-pandemic economic recovery where deepening divisions would exacerbate at a time when collaboration was urgently required to address looming global challenges. Yet despite hard-learned lessons around the interdependence of global risks, few would have anticipated the extent of instability that would soon unfold – Ukraine war and supply breakdowns, rising carbon emissions, increased cybersecurity challenges et al. The same report in 2023 is more foreboding. Food and energy have become weaponized by the war in Ukraine, sending inflation soaring to levels not seen in decades, globalizing a cost-of-living crisis and fueling social unrest. The resulting shift in monetary policy marks

the end of an economic era defined by easy access to cheap debt and will have vast ramifications for governments, companies and individuals, widening inequality within and between countries.

It is crucial to appreciate the interdependence of such risks and how they manifest across economies and societies. A range of risks have come to the fore and continue to plague economic and social endeavors. Both short and medium-term outlooks with these risks indicate strong to severe repercussions. The persistence of the resultant crises is already reshaping the world that we live in, ushering in economic and technological fragmentation¹.

A continued push for national resilience in strategic sectors will come at a cost – one that only a few

¹ Source: Global Risks Report 2023; World Economic Forum; www.weforum.org



economies can bear. Geopolitical dynamics are also creating significant headwinds for global cooperation, which often acts as a guardrail to these global risks.

TECHNOLOGY RISKS MANIFESTED

A global view to the matrix nature of interconnections where technology is an initiator are well described in the infographic below.

Interestingly so, a range of new-age risks are beginning to manifest in ways that current policy constructs, regulatory boundaries, or supranational collaborative endeavors are unable to contain or eliminate. Some of the more pertinent ones are as below:

Widespread cybercrime and cyber insecurity

- Widespread cybercrime has become a top ten global risk today for the first time, reflecting upon severe implications for critical national information infrastructure, and their collective resilience. Malicious activity in cyberspace is growing, with more aggressive and sophisticated attacks taking advantage of more widespread exposure.

Risk to Individual Autonomy - The proliferation of data-collecting devices and data-dependent AI technologies could open pathways to new forms of control over individual autonomy. Individuals are increasingly exposed to the misuse of personal data by the public and private sector alike, ranging from

discrimination of vulnerable populations and social control to potentially bio-weaponry.

Risk to Right-to-Privacy - Non-malicious threats to the digital autonomy and sovereignty of individuals where larger data sets and more sophisticated analysis heighten the risk of the misuse of personal information through legitimate legal mechanisms.

Risk to Freedom of Movement through Commercialized Privacy

- monitoring of individuals leading to more insidious technologies leveraging networked data/ information to control and commoditize such “everyday experiences” thereby leading to increased surveillance.

Risk to Anonymity & Consent - As more data is collected and the power of emerging technologies increases over the next decade, individuals will be targeted and monitored by the public and private sector to an unprecedented degree, often without adequate anonymity or consent.

Risk of Re-identification & Attribute Disclosure - as collection, commercialization and sharing of data grows, consent in one area may reveal far more than intended when aggregated with other data points. This is known as the “*mosaic effect*”, which gives rise to two key privacy risks: re-identification and attribute disclosure.

2 Recombinant DNA - Post discovery of DNA, and the Watson-Crick model that permitted scientists to manipulate DNA, the first time such moral considerations were taken into account was in 1972, when scientists worldwide had halted experiments using recombinant DNA technology (which entailed combining DNAs from different organisms) due to potential safety hazards. These principles (known as the Asilomar Principles of Recombinant DNA) continue to hold good in the biotechnology world.



ETHICAL CONSIDERATIONS

For perhaps the second time² in our industrialization history, ethical and moral considerations are taking centerstage. Dual-use technologies with autonomy and potential sentience increase consequences for societal collapses.

The range of new risks posed due to ethics are only increasing, and incorporating further complexity with human endeavor. Many institutions have begun to address moral and ethical implications emanating from use of augmented and artificial intelligence, given machine learning models / large language models seem to have become party to promoting existing biases instead of eliminating them. The argument that machines are purely logical in analyzing and providing solutions does not necessarily result in the best solutions for mankind, as the approach often results in “greatest good for the greatest number” – an idea that has more adverse consequences that warranted. One such glaring example can be found in the use of autonomous AI solutions – deployed in both civilian and military contexts. Dual-use technologies are only adding to the existing complexity.

IN CONCLUSION

The world today continues to embrace modern technologies with a zeal never seen before, given the substantial gains we have made across sectors from healthcare and drug discovery to digital financial inclusion and democratized learning markets.

However, these exponential gains being made in technology through autonomous and artificial intelligence are introducing new risks that are both misunderstood and misinterpreted. Consequently, proponents of these technologies present a blinkered and short-sighted consumerist view, while ignoring the larger societal and economic implications.

A concerted effort at understanding the larger adverse implications are crucial if we are to enable societies and economies in an inclusive manner where implosion becomes far-fetched. The 2017 endeavor³ at incorporating some fundamental principles into use and deployment of artificial intelligence is surely in the best interests of mankind, should there be no players trying to dilute them in their quest to prop up predatory capitalist models.

DUAL-USE TECHNOLOGIES WITH AUTONOMY AND POTENTIAL SENTIENCE INCREASE CONSEQUENCES FOR SOCIETAL COLLAPSES A GREATER THREAT.

³ Asilomar Principles for Artificial Intelligence by Future of Life Institute: In January 2017, over two thousand global leaders agreed to leverage artificial intelligence in a responsible manner. The 23 principles encompass morals/ ethics, sustainable development, inclusive growth, transparency, explainability, robustness, and accountability. These principles are accessible via link <https://futureoflife.org/open-letter/ai-principles/>

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Bobby is explicitly acknowledged as one of Top 20 Global Leaders for **“Future of Work”** and **“Business Strategy”** by Thinkers 360; one of the Top 25 **“Globalization Powerhouse Leaders”** by **Globalization Today**; and one of Top 50 **Global Leaders** for **“Digital Disruption”** by Thinkers 360.

He is the Founder of **Matryzel Consulting** – an independent global sourcing advisory firm acknowledged as one of the World’s **“Best of the Best Outsourcing Advisory Firms”**, and one of top 20 best outsourcing advisory firms for three years in a row (2013, 2014, 2015, 2019). He is also the Founder of **Regenerative Futures** – a strategic solutions company focused on carbon management & circular economy. He brings with him over two decades of experience in consulting and management across Technology, Business Services and building global operations. He advises federal governments across North & South America, Middle East/ North Africa, Asia-Pacific and Australia on ICT sector development with emphasis on policy transformation, and industry-government partnerships aimed at creating domestic resilience through increasing productive (and inclusive) faculties of technology entrepreneurs. Bobby also advises Fortune 500 customer organizations and emerging market entrepreneurs on strategy, growth, sourcing, expansions, mergers & acquisitions, and inter-party trust ecosystems.

He holds fiduciary responsibilities as a **Board Member for IAOP** (a New York hq’d Standards setting organization for the sourcing industry), and the Global Sourcing Council (a New York hq’d entity focused on the UN SDGs and sustainable sourcing). He is an **Exco Member of Malaysia-Australia Business Council** (a KL-hq’d entity focused on cross-border collaboration and enabling trade). Further, he is Co-Founder of a new-age blockchain based technology company called **ThynkBlynk** (a US hq’d IT firm focused on building heterogeneous inter-party trust).

Bobby is closely involved in developing and enhancing two global business standards for adoption and deployment by corporations worldwide: (a) Outsourcing Professional Standards (OPS) owned and evangelized by the International **Association of Outsourcing Professionals** (www.IAOP.org); and (b) Impact Sourcing Standards owned and evangelized by the **Global Impact Sourcing Coalition** (www.GISC.bsr.org).

He is an avid author of various knowledge papers in both print and electronic media across global publications. Further, he has authored a book titled **“Humanomics – Making Sense of Socio-economic Impacts of Global Sourcing”**, published by Penguin Random House. Bobby is also frequently quoted in global media – Economist, fDI, Outsourcing Gazette,

CIO Asia, CIO Africa, ZD Net, ICT Media BV, Silicon India, The Outsource, Professional Outsourcing, Pulse, MABC Byline, APAC CIO et al. Bobby is a recipient of many awards: **Top 20 Thought Leaders in Future of Work and Business Strategy** (2020, 2021, 2022, 2023 by Thinkers 360); **Excellence in Leadership & Outsourcing** (2016, 2015 and 2014, by Asia Outsourcing Congress, India); **Golden Globe Tiger Awards for Leadership & Outsourcing** (2015, by World CSR Day, APAC); **Top 25 Globalization Powerhouse Leaders** (2011, by Globalization Today, USA); **Member of the Year** (2012, by IAOP, USA).

Bobby holds a Diploma in Sustainable Development from Columbia University, USA; and two Masters Degrees (one each in Solid State Physics and Management) from Berhampur University, India. He is one of the world’s first Certified Outsourcing Professionals (COP), a certified Core Banking Professional (HSBC) and an ISO 9000 and CMMi Quality Systems Auditor. Bobby has lived and worked in India, UK, USA, Brazil, UAE and Malaysia. In his spare time he actively pursues his passion – scuba diving. He has attained a number of diving related qualifications across the recreational and technical diving spectrum and is currently an open-circuit trimix deep exploration diver. He splits his time between Newark, DE, USA and Kuala Lumpur, Malaysia with his wife and two sons.



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ASOCIO - BRIDGING DIGITAL DIVIDES FOR A SUSTAINABLE FUTURE

In the ever-evolving landscape of technology and information, the Asian-Oceanian Computing Industry Organisation (ASOCIO) stands as a beacon of progress, collaboration, and innovation.

Founded in 1984, ASOCIO has become the premier platform for ICT (Information and Communication Technology) professionals and businesses across the Asia-Oceania region, working tirelessly to shape the future of technology while ensuring that no one gets left behind.

MISSION AND VISION:

ASOCIO's mission can be summarised in one compelling statement: *"Connecting for Inclusive Digital Transformation."* This mission reflects their unwavering commitment to bridge the digital divides that persist in our interconnected world.

ASOCIO envisions a future where technology is not just a tool for a privileged few, but a force for positive change that touches the lives of every individual in the Asia-Oceania region.

Key Initiatives:

- **Advocating Digital Inclusion:** ASOCIO works closely with governments, industry leaders, and civil society organisations to advocate for policies and initiatives that promote digital inclusion. This includes efforts to expand internet access, digital literacy programs, and affordable technology solutions for underserved communities.
- **Fostering Innovation:** ASOCIO serves as a catalyst for innovation by fostering collaboration among its member organisations. Through conferences, seminars, and networking events, ASOCIO

facilitates the exchange of ideas, knowledge, and best practices in the ICT sector.

- **Capacity Building:** Recognising that the future of technology depends on a skilled workforce, ASOCIO invests in educational programs and initiatives to develop the next generation of ICT professionals. These efforts help close the skills gap and ensure that the region remains competitive in the global tech ecosystem.
- **Promoting Sustainability:** ASOCIO is committed to promoting sustainable technology practices. They encourage the development and adoption of environmentally friendly technologies and support initiatives that reduce the carbon footprint of the ICT industry.

GLOBAL IMPACT

ASOCIO's influence extends far beyond its member countries. As a regional powerhouse, it actively collaborates with international organisations, fostering partnerships that drive global progress. By sharing its expertise and experiences, ASOCIO contributes to shaping international policies and standards in the ICT sector.

ASOCIO continues to stand at the forefront of technological advancement in the Asia-Oceania region, driving innovation, advocating for inclusion, and championing sustainability. With a clear mission and unwavering commitment to a brighter, more connected future, ASOCIO remains a driving force in shaping the digital destiny of our world. Join ASOCIO in its mission to connect for inclusive digital transformation, and together, we can build a more equitable and sustainable future for all.



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PIKOM, the National Tech Industry Association of Malaysia, is a not-for-profit organisation. It is the largest association representing information and communications technology (ICT) players in Malaysia. Since its inception in 1986, PIKOM has come of age as the voice of the Tech industry. It has become an ICT referral centre for government and industry players, as well as international organisations. In this regard, PIKOM takes on the responsibility to publish ICT-relevant information in a periodic manner.

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