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SUBSECTOR PRODUCTIVITY REPORT

ICT SERVICES

MALAYSIA PRODUCTIVITY CORPORATION

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Subsector Productivity Report ICT Services

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Table of **Contents**

Key Highlights
Executive Summary
Message from the Director General, Malaysia Productivity Corporation
Statement from the Champion, Digital Productivity Nexus

Key Highlights

Malaysia's Productivity Performance of the ICT Services Subsector

ICT Services Productivity 2017-2022

	2017	2018	2019	2020	2021	2022
Productivity Level in Value Added per Employment (RM)	339,185	354,004	356,995	366,778	380,197	384,845
Productivity Growth (%)	2.2	4.4	0.8	2.7	3.7	1.2

Source: Department of Statistics Malaysia

ICT contributed 23.2% to the GDP with a growth of 12.1%				
Year	**Overall (RM)**	**GVAICT**	**E-commerce of other industries**	**ICT to economy**
2020	320.4b	14.2%	8.4%	22.6%
2021	359.3b	14.0%	9.2%	23.2%

Gross Value Added ICT Industry (GVAICT)	
Year	**Services**
2020	45.0%
2021	44.7%

Gross Value Added of E-commerce		
Year	**Overall (RM)**	**ICT Industry**
2020	163.8b	3.2%
2021	201.1b	3.8%

Employment of ICT Industry	
Employment of the ICT Industry increased to **1.21 million persons in 2021**	
Year	**ICT Services**
2020	29.5%
2021	29.2%

Import & Export of ICT Products			
	Year	**Overall (RM)**	**ICT Services**
Import	2020	215.8b	10.5%
	2021	261.2b	9.8%
Export	2020	314.8b	8.1%
	2021	360.8b	7.9%

Source : Department of Statistics Malaysia

In the year 2022, Malaysia's Information and Communication Technology (ICT) services subsector continuously sustained its productivity level. At RM384,845, ICT services has the highest productivity level in comparison to the other nine productivity nexus. The prevalence of ICT and digitalisation has significantly contributed to other sectors and played an important role in positively influencing productivity levels of the various productivity nexus.

Executive Summary

In the year 2022, Malaysia's Information and Communication Technology (ICT) services subsector continuously sustained its productivity level. At RM384,845, ICT services has the highest productivity level in comparison to the other nine productivity nexus. The prevalence of ICT and digitalisation has significantly contributed to other sectors and played an important role in positively influencing productivity levels of the various productivity nexus. Correspondingly, the ICT services subsector played an important role in positively influencing productivity levels of the various productivity nexus.

On a separate note, the COVID-19 crisis has brought about a tremendous change in the way companies in all sectors and regions operate their respective business. Companies have accelerated the digitalisation of their customers and supply-chain interactions of their internal operations by three to four years. Digital adoption has taken a quantum leap at both the organizational and industry levels.

This report will highlight various challenges faced by the industry, and recommendations to elevate the productivity growth of the industry in Malaysia. Details on the role of the Digital Productivity Nexus (DPN), an industry-led initiative stipulated in the Malaysia Productivity Blueprint (MPB) under the purview of Malaysia Productivity Corporation (MPC) will be outlined. Further, this report will point out the role of DPN in impacting the demand and supply of the ICT subsector.

Among the key challenges faced by the industry are namely shortage of ICT professionals, low speed and low quality of connectivity compared to neighbouring countries, high cost of broadband, fragmented and lack of centralised agency and impact of COVID-19 on digital adoption. Taking into consideration the adverse impact of the pandemic, attention will also be drawn to the outlook of the ICT subsector. Recommendations that will be put forward include Digital Platform Network + (DPN+), the development of a Malaysia Future Skills Framework, accelerate digitalisation through the Leader for Innovative & Future Talent (LIFT) programme and to embark on regulatory experimentation initiatives in the process of developing digital infrastructures.

Message from the
Director General,
Malaysia Productivity Corporation

> **" The Subsector Productivity Report 2022 presents a roadmap for attaining sustainable productivity gains, fostering innovation, enhancing the overall competitiveness of our industries, and propelling Malaysia towards sustainable economic growth "**

Malaysia Productivity Corporation (MPC) plays a pivotal role in bolstering Malaysia's economic growth by driving productivity advancements across all sectors, as outlined in the Twelfth Malaysia Plan (12MP). Malaysia's economy demonstrated promising performance, with a remarkable 8.7 percent GDP growth in 2022, surpassing the 3.1 percent achieved in 2021. This growth can be attributed to the recovery of private spending and investment, a decline in unemployment rates, and the strengthening of the ringgit.

The year 2022 presented both opportunities and challenges for Malaysia's economic landscape. Our nation navigated through a dynamic global environment characterised by technological advancements, shifting market dynamics, and the ongoing recovery from the pandemic's impact. Amidst these circumstances, productivity emerged as a critical driver of economic growth and competitiveness, serving as a key pillar for Malaysia's sustainable development.

MPC strategically leverages the sectoral Productivity Nexus to drive significant productivity growth in the services, manufacturing, and agriculture sectors. These efforts are carried out in alignment with the Malaysia Productivity Blueprint (MPB), which outlines

impactful initiatives since 2017, and key policies such as the New Industrial Masterplan 2030 and the 12MP Mid-Term Review. By maximising collaborative efforts across various platforms, MPC actively supports and facilitates the industry-driven initiatives of the Productivity Nexus.

We take pride in highlighting the remarkable achievements of our subsectors in enhancing productivity. Through innovative practices, strategic investments, and a collaborative approach, our industries have embraced initiatives for productivity improvement, charting for an optimistic goal for a labour productivity growth of 3.8% per annum for the remaining 12MP period.

The Subsector Productivity Report 2022 presents a roadmap for attaining sustainable productivity gains, fostering innovation, enhancing the overall competitiveness of our industries, and propelling Malaysia towards sustainable economic growth. We believe that this publication will inspire fruitful collaborations, catalyse meaningful change, and contribute to our nation's shared prosperity.

Encik Zahid Ismail
Director General
Malaysia Productivity Corporation (MPC)

Statement from the
Champion,
Digital Productivity Nexus

> " With on-going efforts and initiatives with stakeholders, DPN hopes to enhance the business environment and digital infrastructure for all subsectors "

The Digital Productivity Nexus (DPN) was established as a one-stop centre that caters to industry players especially from the ICT industry to boost productivity, increase innovation and capture growth opportunities. The Nexus' initiatives emphasise the development of a holistic ecosystem to increase technology adoption and further strengthen key industry enablers. The goals outlined in the 12th Malaysia Plan has set a direction for the ICT services subsector to progress in the next five years, and DPN is committed to facilitate this journey.

In order to accomplish the goals set in the 12th Malaysia Plan, DPN has embarked on several initiatives which include implementing a course on digital transformation called the 'Digital Victory' for both large firms and MSMEs. Industry leaders from these organisations have pledged their commitment to drive digital transformation within their organisation.

Visionaries like Elon Musk inspire us to be extraordinary, embracing a mindset of possibility and harnessing our innate power for greatness. Extraordinary leadership in the digital age rests on 3 fundamental elements: Breakthrough (B), Integrity (I), and Good (G). Breakthrough represents our commitment to challenging the status quo, pushing boundaries, and embracing disruptive technologies.

Integrity is the cornerstone of exceptional leadership, built on honesty, transparency, and unwavering ethical standards. Good refers to our dedication to making a positive impact and aligning our strategies with the greater good of society. By leading with B. I. G. and a focus on productivity through digitalization, we can drive successful digital transformations and elevate productivity to new heights.

With on-going efforts and initiatives with stakeholders, DPN hopes to enhance the business environment and digital infrastructure for all subsectors. While striving to address challenges faced by the society in the ICT industry, we are grateful for the continuing support of all our stakeholders and look forward to working with them to create a better future for the ICT industry in Malaysia.

On a personal note, I would like to thank Malaysia Productivity Corporation (MPC) for their endless support in taking the subsector to a higher level. Let's seize the moment, embrace the challenges, and lead our organizations towards a prosperous and digitally transformed future.

Dato' Wei Chuan Beng
Champion
Digital Productivity Nexus
26 May 2023

PART I

INFORMATION AND COMMUNICATION TECHNOLOGY SERVICES SUBSECTOR PERFORMANCE
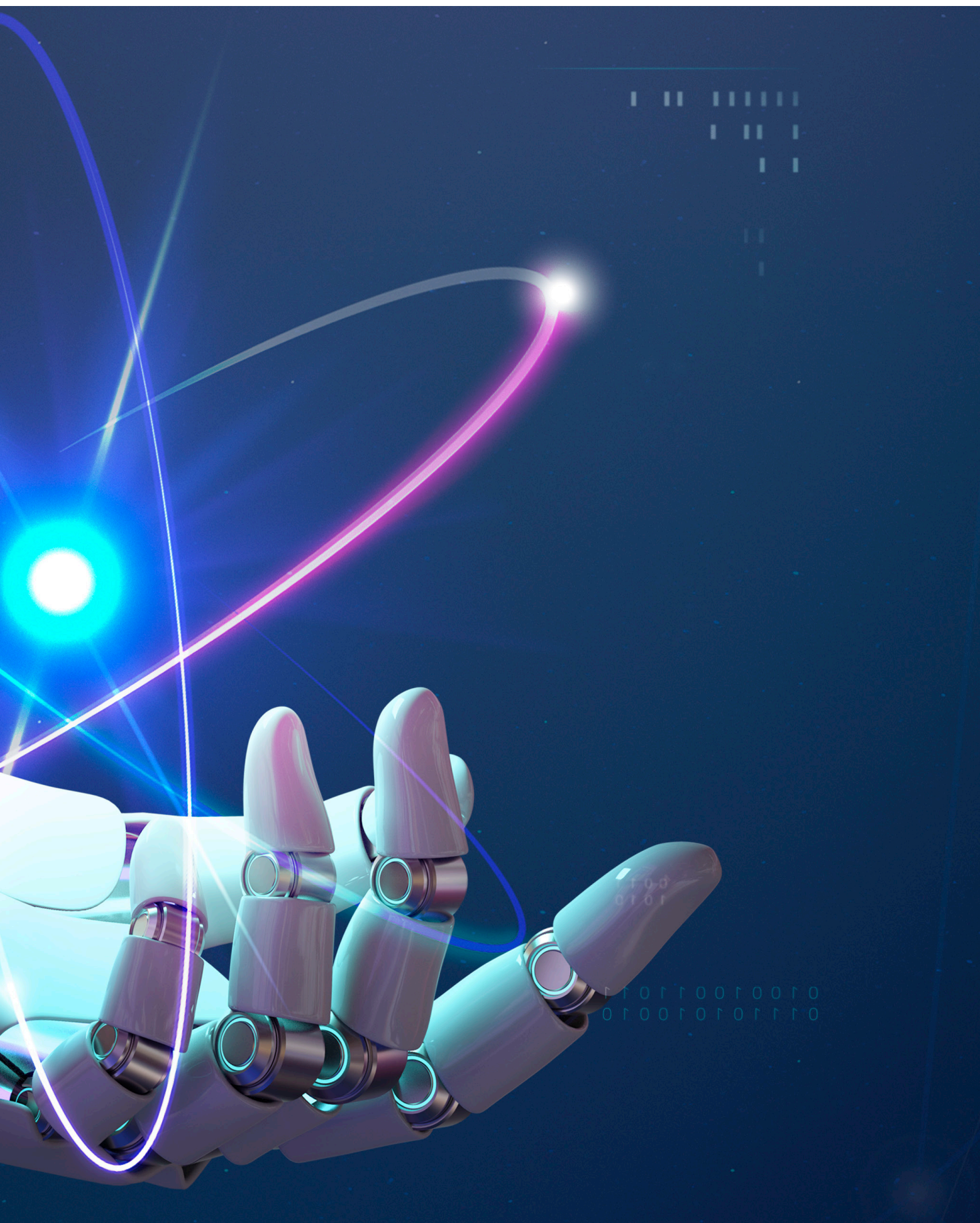
INFORMATION AND COMMUNICATION TECHNOLOGY SERVICES SUBSECTOR PERFORMANCE

AN OVERVIEW

In the past few years, the information and communication technology (ICT) services subsector in Malaysia has made a remarkable growth, thus profoundly impacting the economy. As ICT affects everyday lives, we see changes and improvements in the way people work, conduct business, communicate with various organizations and manage social lives. This in turn has improved other aspects of life such as infrastructure and the standard of living.

Recently, digital technologies have advanced more rapidly than any innovation in history. In Malaysia, we saw a tremendous growth in the last five years coupled with an increase of digital buyers and online payments by both businesses and consumers. The emergence of the COVID-19 pandemic has inherently shifted commercial activities from traditional business to digitalized business models at an enormous scale. ICT has fundamentally changed the way we live and made life different compared to previous decades.

GLOBAL PERFORMANCE OF THE ICT SERVICES SUBSECTOR

The global ICT services subsector has penetrated every sector of the economy and played a significant role in all aspects of modern society. We have observed a transformation within the internal operations of global companies, enabling them to overcome managerial diseconomies of scale. It has even transformed the nature of the research and development (R&D) processes, the nature of their products, as well as the relationship of the systems integrator firms with their supply chain and customers. The pace of the ICT revolution is accelerating with the advent of cloud computing, artificial intelligence, machine learning and the internet.

According to a recent forecast by Gartner Incorporation, global IT spending is expected to reach USD$4.5 trillion in 2023, representing a 2.4% rise from the previous year. All regions worldwide are projected to have a positive IT spending growth in the year 2023. The software and IT services segments are projected to grow by 9.3% and 5.5% respectively. In comparison to the year 2022, the data centre systems and communication services segments are estimated to decline by 0.7% and 0.1% respectively. In addition, devices segment is forecasted to decline by 5.1% as both consumers and enterprises lengthen device refresh cycles.

As developing countries struggle to recover from the COVID-19 pandemic, digital solutions are enabling economic transformation and putting them on a path toward green, resilient, and inclusive growth.

Private and public investment in digital solutions are bringing critical services to the poorest, creating jobs, strengthening small and medium businesses, enabling trade and services, and building resilience to shocks. In terms of digital revolution, many countries around the globe are innovatively using digital technologies. From digital financial services, to remote schooling, to more inclusive government services, digital solutions are accelerating more equitable and resilient growth. Major companies in the information technology (IT) market include Apple, Microsoft, Verizon Communications, China Mobile, AT&T Inc., Huawei, Deutsche Telekom AG, Dell Technologies Inc., Samsung Electronics Co., Ltd. and Comcast Corporation. Globally, Asia-Pacific is the leading region in terms of information technology (IT) growth followed by North America.

Advances in ICT have brought a slew of cost savings, opportunities and conveniences. They range from highly automated businesses processes that have cut costs, to the big data revolution where organizations are turning the vast trove of data generated by ICT into insights that drive new products and services, to ICT enabled transactions such as internet shopping, telemedicine and social media that give customers more choices in the method they shop, communicate and interact.

On a separate note, the ICT industry has also created problems and challenges to organizations and individuals across the globe. The digitisation of

data, the expanding use of high-speed internet and the growing global network together have led to new levels of crime, where so-called bad actors can hatch electronically enabled schemes or illegally gain access to systems to steal money, intellectual property or private information or to disrupt systems that control critical infrastructure. ICT has also brought automation and robots that displace workers who are unable to transfer their skills to new positions. Moreover, ICT has allowed more people to limit their interactions with others, creating what some people fear is a population that could lose some of what makes it human.

MALAYSIA'S PERFORMANCE IN THE ICT SERVICES SUBSECTOR

Malaysia has long been a leader in the transition to the digital world. The robust core government policies, high-tech-focused national development, and accessibility of trained labor in the Malaysian ICT market have helped the sector thrives in the nation. According to the Department of Statistics Malaysia (DOSM), ICT contributed to 23.2% of Malaysia's gross domestic product (GDP) in the last year, with an increase of 12.1% from the previous year. Both import and export and of ICT products has seen an overall growth of 21% and 14.6% and respectively. The increased digitalization of processes across all significant industrial sectors is mainly responsible for this positive growth.

Consistent with the global ICT growth, Malaysia has seen an increase of compound annual growth rate (CAGR) at 2.6% in terms of labour productivity from 2017 to 2022. Compared to other Asian neighbouring nations, Malaysia is expected to witness a comparatively high broadband penetration. The demand for ICT goods and services would continue to be high, mainly attributable to the rollout of 5G, hybrid business models, digital banking, and consumers who keep up with the newest trends.

In the past five years, we observed a consistent positive growth for both national productivity and services productivity at 6.3% and 6.8% respectively. The Malaysian government's numerous initiatives (e.g., JENDELA, DNB, MYDIGITAL) in pursuing this, suggest a bright outlook for ICT services subsectors.

In the next five years, the ICT market in Malaysia is expected to grow at a compound annual growth rate (CAGR) of 8.6%. The growth is mainly supported by the rising adoption of mobility, cloud computing, data analytics, storage and business process outsourcing will be the five leading IT solution areas. Based on the International Trade Administration Department of Commerce USA, Malaysia's ICT subsector is expected to grow from USD$16.5 billion to USD$25.2billion in the year 2023. Much of that growth is driven by the increased digitalisation of processes across all major industrial sectors. More effort is needed to elevate the country towards becoming a regional leader in digital economy and achieving inclusive, responsible and rapid growth within the ICT market.

Productivity Performance of the ICT Services Subsector

As illustrated in Figure 1, the ICT services' productivity level in value added per employment saw a clear upward trend from the year 2017 to 2022. Additionally, the productivity level in value added per hour worked experienced varying and increasing growth rates, especially from 2017 to 2020. The year 2020 saw a remarkable surge in productivity, with the amount soaring to RM170.10, representing an impressive growth rate of 12.3%. The upward trends are attributed to a rise in digital adoption following the COVID-19 pandemic.

The pandemic in turn has somewhat benefited the ICT services subsector, which is evident through the digital economy growth and the demand for digital technology. Businesses have shifted from face-to-face and physical based business operations to online and virtual platforms. The restriction in movement forced the population to maximise the use of technology and digitalisation. This consistently rose at moderate levels due to strong demand in digital services and solutions needed in 2022. Apart from this, the government and private sector in Malaysia are in the process of embracing a country-wide digital transformation. The digitalisation of operations across all major industrial sectors will be a decisive factor in securing Malaysia's role in the future global economy.

In terms of annual labour productivity per employee and per hours worked, the compound annual growth rate (CAGR) from 2017 to 2022 are 2.13% and 3.20% respectively. In the year 2022, the

annual labour productivity per employee grew slightly by 1.2% in comparison to 3.7% in the year 2021. Among the nine priority subsectors under the Productivity Nexus, the labour productivity for ICT recorded an amount of RM384,845 which is the highest in contrast to other subsectors.

Based on the International Trade Administration Department of Commerce USA, Malaysia's ICT subsector is expected to grow from USD$16.5 billion to USD$25.2billion in the year 2023. Much of that growth is driven by the increased digitalisation of processes across all major industrial sectors.

Figure 1 : ICT Services Productivity 2017-2022

	2017	2018	2019	2020	2021	2022
Productivity Level in Value Added per Employment (RM)	339,185	354,004	356,995	366,778	380,197	384,845
Productivity Growth (%)	2.2	4.4	0.8	2.7	3.7	1.2

	2017	2018	2019	2020	2021	2022
Productivity Level in Value Added per Hour Worked (RM)	140.60	148.50	151.50	170.10	163.90	169.80
Productivity Growth (%)	0.8	5.6	2.0	12.3	-3.6	3.6

Source : Department of Statistics Malaysia

Box Item
Information and Communication Technology Satellite Account 2021

Information and Communication Technology Satellite Account is a statistical framework to gauge the performance of the Information and Communication Technology (ICT) industry inclusive of e-commerce and its contribution to the economy. The compilation of these statistics is in accordance with the framework of the System of National Accounts 2008, the OECD Guide to Measuring the Information Society 2011 and the OECD Internet Economy Outlook 2012. These statistics are compiled annually and integrate products and industries related to information and communication technology.

Gross Value Added ICT Industry (GVAICT)

Year	Overall (RM)	Manufacturing	Services	Trade	Content & Media
2020	201.4b	34.5%	45.0%	14.2%	6.3%
2021	217.1b	35.6%	44.7%	14.0%	5.7%

Gross Value Added of E-commerce

Year	Overall (RM)	ICT Industry	Other Industries	Share of e-commerce to GDP
2020	163.8b	3.2%	8.4%	11.6%
2021	201.1b	3.8%	9.2%	13.0%

Employment of ICT Industry

Year	Total ICT Employment	ICT Manufacturing	ICT Services	ICT Trade	Content & Media
2020	1.16 mil	34.5%	45.0%	14.2%	6.3%
2021	1.21 mil	35.6%	44.7%	14.0%	5.7%

Import & Export of ICT Products

	Year	Overall (RM)	ICT Goods	ICT Services	Content & Media
Import	2020	215.8b	87.6%	10.5%	1.9%
	2021	261.2b	88.7%	9.8%	1.5%
Export	2020	314.8b	89.8%	8.1%	2.1%
	2021	360.8b	90.5%	7.9%	1.6%

The GVA of the ICT industry in Malaysia was RM217.1 billion in 2021, accounting for 14% of the country's GDP. The manufacturing, services, trade, and content and media sectors contributed 35.69%, 44.7%, 7.40%, and 5.7%, respectively, to the GVA of the ICT industry. The manufacturing sector, with 35.69%, contributed the most compared to the other sectors. This indicates that the Malaysian ICT industry heavily relies on manufacturing.

In 2021, the ICT industry in Malaysia employed 121 million individuals, constituting 3.6% of the nation's overall workforce. Among these, the ICT services sector led the way with a contribution of 44.7%, signifying its pivotal role as the primary employer of highly skilled workers within the Malaysian ICT industry. Meanwhile, the ICT trade, content and media, and manufacturing sectors accounted for 35.69%, 14.0%, and 5.7% of the employment in the ICT industry respectively.

The import of ICT products in Malaysia was RM261.26 billion in 2021, with ICT goods, ICT services, and content & media accounting for 90.2%, 9.8%, and 1.5%, respectively. The export of ICT products in Malaysia was RM360.8 billion in 2021, with ICT goods, ICT services, and content & media accounting for 90.5%, 79%, and 1.6%, respectively. The most significant figure was the 90.5% of ICT goods exported from Malaysia in 2021, demonstrating that the Malaysian ICT industry is highly export oriented.

These data highlight the pivotal role of the Malaysian ICT services subsector in the nation's economy. They emphasize its dependence on manufacturing, its significant employment opportunities, and the need for continued government support to foster growth and innovation.

ICT SERVICES MSIC CODE

The ICT services subsector in Malaysia is categorized and defined by the Department of Statistics Malaysia through the Malaysia Standard Industrial Classification (MSIC) codes. The MSIC codes are used to categorize and provide guidelines on each subsector. The ICT services subsector outlined by MSIC codes are listed below:

Figure 2 : Classification of ICT services economic activities according to the MSIC Code

No.	Activities	MSIC Code
1.	Motion picture, video and television programme production activities	59110
2.	Motion picture, video and television programme post-production activities	59120
3.	Motion picture, video and television programme distribution activities	59130
4.	Motion picture projection activities	59140
5.	Sound recording and music publishing activities	59200
6.	Radio broadcasting	60100
7.	Television programming and broadcasting activities	60200
8.	Wired telecommunications services	61101
9.	Wireless telecommunications services	61201
10.	Satellite telecommunications services	61300
11.	Provision of Internet access over networks between the client and the ISP not owned or controlled by the ISP	61901
12.	Other telecommunications activities n.e.c	61909
13.	Computer programming activities	62010
14.	Computer consultancy	62021
15.	Computer facilities management activities	62022
16.	Information Communication Technology (ICT) system security	62091
17.	Other information technology service activities n.e.c	62099
18.	Activities of providing infrastructure for hosting, data processing services and related activities	63111
19.	Data processing activities	63112
20.	Web portals	63120
21.	Other information service activities n.e.c	63990

Source : Department of Statistics Malaysia

The main activities under the ICT services include media, telecommunication, computer programming activities and information services activities. The following are details of the services provided by ICT :

Figure 3 : Advanced and emerging technologies under the ICT services

COMMUNICATIONS/ NETWORKING Communication/Networking; Communications (Business, Customer Service, Sales, Marketing)	**IOT/ROBOTICS** IOT; Robotics; Maintenance; Robotics Process Automation Solution	**ARTIFICIAL INTELLIGENCE** Artificial Intelligence
DATA CENTRE/WEB HOSTING Data Centre; Web Hosting Providers; SEO	**PROCESS AUTOMATION** Process Automation (Business, End-to-end process)	**SOFTWARE DEVELOPMENT** Software Development; Games; Mobile Apps Development
ECOMMERCE eCommerce	**BIG DATA/ANALYTICS** Big Data/Analytics; Business Intelligence	**SHARED SERVICES/SI** Shared Services; Systems Integrators
TELCO/DIGITAL INFRASTRUCTURE Telco/Digital Infrastructure; Managed Network Services - Telecommunications	**DATA ANALYSIS/ SYNCHRONISATION** Data Synchronisation; Data Analysis; Data Management	**CREATIVE CONTENT** Creative Content; Branding & Digital Marketing; 3D Mapping, Interactive virtual tour, Digital Twin, VR & AR content creation
DISTRIBUTORS/ RESELLERS/RETAILERS Distributors; Principal & Manufacturers; Resellers; Retailers	**SECURITY/CYBERSECURITY** Information Security/ Cybersecurity; Security – Software; Security – Network; Electronic Surveillance; Cybersecurity Monitoring Services	**EVENT MANAGEMENT** Event Management (Hybrid - offline and online platforms)
CRM/ERP/MES/WMS CRM; ERP; Warehouse Management; Asset Tracking; Manufacturing Execution System	**BPO/ITO/KPO/CONSULTANCY** Business Process Outsourcing; IT Outsourcing; Knowledge Process Outsourcing; Consultancy/Professional Services; Disaster Recovery	**EDUCATION/TRAINING** Education/Training; HRDF Authorised Training
HRMS/POS/HMS/CAMS/FM • Accounting Software; HR/Payroll Software; Hotel Software Solutions (Management, Administration); College Administration Management System; Point-Of-Sales System; Fleet Management Platform and Services		**BLOCKCHAIN** Blockchain Technology; Corporate Tokenizatio

PART II

CHALLENGES, INITIATIVES AND RECOMMENDATIONS

CHALLENGES, INITIATIVES AND RECOMMENDATIONS

THE ESTABLISHMENT OF DIGITAL PRODUCTIVITY NEXUS (DPN)

ICT Productivity Nexus was established under Malaysia Productivity Blueprint (MPB) in 2017. The objective is to increase productivity of the ICT services subsector and to address the challenges as outlined in the MPB. The challenges are shortage of ICT professionals, low speed and quality of connectivity compared to neighbouring countries, fragmented initiatives and lack of centralised agency. In order to address the challenges, the nexus will address based on the five (5) strategic thrust as highlighted namely talent, technology, incentive structure, business environment, and productivity mindset.

The term "ICT Productivity Nexus" referred to the relationship between information and communication technology (ICT) and productivity. It was used to describe how investments in ICT could enhance productivity in various sectors of the economy.

As the nexus is driven by private sectors, the leader was selected from the industry to lead the initiatives in driving productivity of the ICT services subsector. The first champion was Mr Ganesh Kumar Bangah, a Malaysian serial entrepreneur, technology industry leader and startup investor. He is the founder of MOL Global and Commerce Asia. He was named the Ernst & Young Technology Entrepreneur of the Year Malaysia in 2002 and at the age of 23, was certified by the Malaysia Book of Records as the youngest Chief Executive Officer of a Malaysian public listed company.

As technology evolves, the use of technology has become more pervasive and integral to all aspects of business and society, the term "ICT" has become somewhat outdated. Today, digital technology encompasses not just ICT, but also other emerging technologies such as artificial intelligence, machine learning, the Internet of Things, and blockchain.

Since 2020, ICT Productivity Nexus was known as Digital Productivity Nexus. The change of the name was approved by the then Prime Minister, Tun Dr Mahathir Mohamad in the National Productivity Council meeting in 2020.

Therefore, the term "Digital Productivity Nexus" better reflects the broader range of technologies and their impact on productivity in modern society. It acknowledges that digital technology is now the driving force behind innovation and productivity growth, and not just limited to ICT.

Since 2020, Digital Productivity Nexus was chaired by Dato Wei Chuan Beng. Dato' Wei Chuan Beng is currently a member of the Council of National Digital Economy and Fourth Industrial Revolution (IR 4.0). He co-founded REDtone Telecommunications Sdn Bhd (REDtone) in 1996 and left the company in 2015. Dato' Wei Chuan Beng is also the Co-Founder and Chairman of Digital Way Academy.

The 11 productivity nexus, each under the leadership of selected champions from relevant industries, aims to address sectoral and firm-level productivity performance according to Malaysia's Productivity strategic thrusts which comprise of the following:

1	Building Workforce of the Future
2	Driving Digitalisation and Innovation
3	Making Industry Accountable for Productivity
4	Forging a Robust Ecosystem
5	Securing a Strong Implementation Mechanism

As such, each nexus will strengthen enterprises to effectively adopt & utilise technology while taking advantage of digitalisation.

The following key productivity challenges were identified to address and improve productivity levels of the ICT services subsector:

Productivity Challenges	Initiatives	Thrust
1. Lack of awareness on incentives and ICT adoption	Raise awareness of available incentives to ensure proper utilisation of ICT adoption	Business environment
2. Fragmented initiatives and lack of centralised agency	Centralise and coordinate efforts between relevant agencies to ensure proper utlisation of initiatives and programs	Business environment
3. Shortage of ICT professionals	Strengthen collaboration between industry and academia to reduce mismatch of supply and demand of workforce	Workforce
4. Connectivity is at a lower speed & cost of broadband is relatively high	Improving the access pricing framework for providers	Technology

Source : Malaysia Productivity Blueprint

CHALLENGES WITHIN THE ICT SERVICES SUBSECTOR IN MALAYSIA

The growth of ICT services industry is in tandem to the level of digital adoption in Malaysia. However, we must acknowledge that there are challenges faced by the industry to accelerate digital technology adoption in Malaysia.

Workforce: Shortage of ICT professionals.

In adopting technology, large firms and SMEs would require continuous supply of ICT professionals to drive or execute their digital transformation. The MPB identified a supply gap in new ICT graduates, a shortage of experienced ICT professionals with specialised skills, such as software development, system application and products, enterprise resource planning as well as brain drain of skilled ICT professionals to countries with higher pay as the underlying reason for the shortage. To address the shortage, the collaboration between industry and academia would need to be strengthened in order to reduce the mismatch of supply and demand of the workforce.

Technology: Connectivity perceived to have lower speed and quality than neighbouring countries.

Even with an aggressive push for digital adoption, the ICT services subsector would not be able to function optimally without rapid connectivity. Based on the IMD World Digital Competitiveness Ranking, Malaysia is ranked 35th in the world in terms of average internet bandwidth. Presently Singapore's internet bandwidth is a rapid speed of 191.7mbps in comparison to Malaysia's internet bandwidth speed of only 89.7 mbps. As digital connectivity is a crucial priority, it is vital for the government to accelerate the development of digital infrastructure to further improve the speed.

Meanwhile, Malaysia is ranked 49th in the world in terms of the quality of communication technology. In today's digital age, the public and business community rely heavily on communication technology to stay connected with one another. With new products and services constantly being developed and released

by the competitive technology industry, the public and business community seem to have higher expectations on the latest technologies that offer better quality, features, and functionality than their predecessors.

To address this issue, Malaysia will need to expand and upgrade its broadband infrastructure.

Technology: Cost of broadband is relatively high.

The cost of broadband for internet access to broadband suppliers, firms and users literally affects the decision made on the need for digital transformation. Business have cited high cost of broadband as one of the biggest challenge to digitalisation.

The cost of broadband within the Malaysian subsector is 2.4% of Gross National Income (GNI) per capita, which is higher than Vietnam (2%), South Korea (1.3%), Japan (0.6%), and Singapore (0.4%), as highlighted in MPB.

To address this issue, the government should consider reducing the barriers to digitalisation by collaborating with technology solution providers and introduce lower pricing packages for SMEs. Moreover, temporary tax incentives could be introduced for newly digitalised SMEs to offset the initial financial investment.

Business Environment: Fragmented initiatives and lack of centralised agency.

Malaysia has various government agencies under their respective ministries who run separate programs to provide training and drive ICT adoption. The agenda for digital adoption of each agency would be driven by a separate objective of their ministries. From the ICT services subsector point of view, ICT adoption cannot be fully optimised without a centralised agency. Hence initiatives by various agencies are disintegrated and ICT adoption is not fully optimised. To address this issue, a relevant body should be appointed to coordinate and consolidate efforts among agencies. This in turn will ensure that initiatives and programmes are appropriately implemented, and all agencies collaborate to work together.

Impact of COVID-19 on digital adoption.

The level of digital adoption in Malaysia is still rather low. Businesses indicate that the cost of finances or digitalisation remains the top challenge. These include costs related to internet connectivity, software subscription fees, and digital hardware. The pandemic has severely impacted many large firms and small businesses. Consequently, cash flow problems has hindered their abilities to embark on digital transformation. Higher digital and technology adoption also necessitates leadership and change management. The lack of commitment to remain persistent in the digitalisation journey and insufficient success stories among SMEs that can inspire other SMEs to adopt digital technology could be factors influencing the leaders.

DPN'S INITIATIVES TO CATALYSE DIGITAL TRANSFORMATION AND PRODUCTIVITY GROWTH
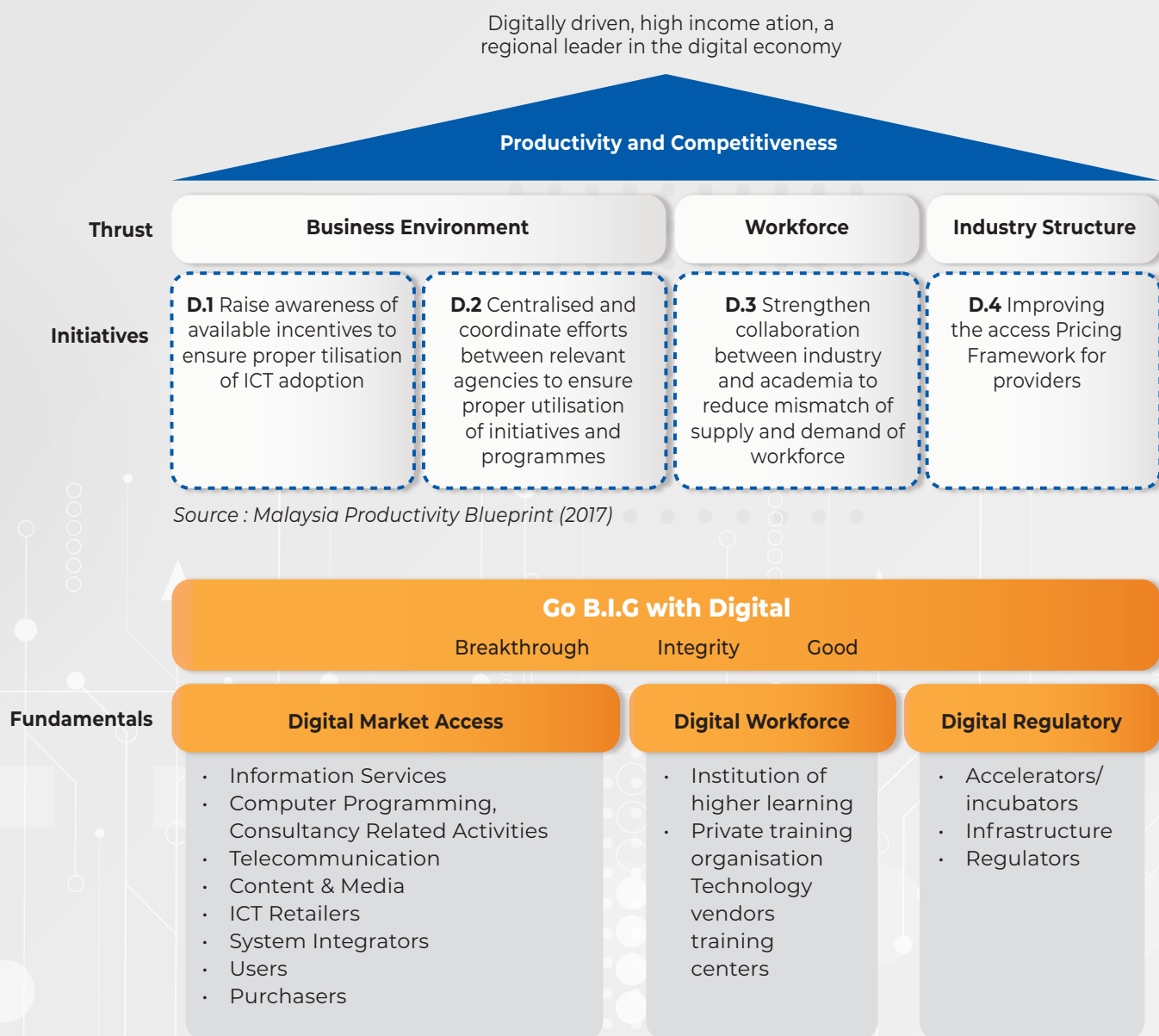

Go B.I.G WITH DIGITAL

Digitalisation is seen as a prominent platform to boost productivity growth and economic competitiveness in a country's long-term growth. This is often demonstrated by high-productivity nations, especially where tremendous adaptation to changes is brought about by technology advancement, and willingness to implement advanced mechanism of doing business.
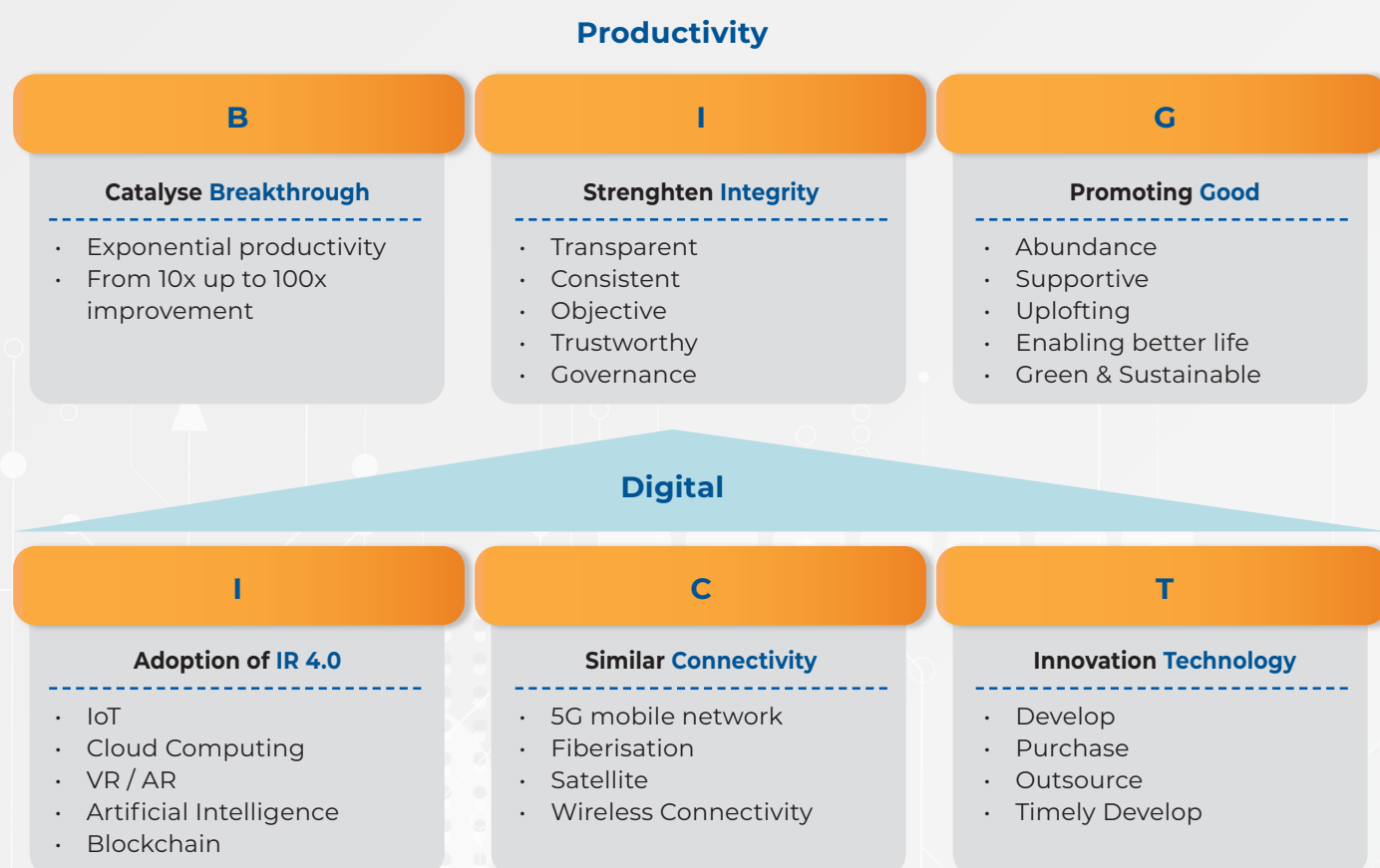
Digital Productivity Nexus (DPN) introduced the Go B.I.G with Digital initiative, which aims to raise productivity through digital and technology adoption towards creating a big and drastic impact in business. In addition, this initiative also aims to foster awareness of the digital technology adoption among leaders in the public and private sectors.

Further, the Go B.I.G with Digital also focused on being a catalyst for productivity growth towards breakthrough (B), results with the strengthening of integrity (I),as well as best practices and be a force of good (G) in increasing productivity growth. Hence the term B.I.G, represents Breakthrough, Integrity and Good.

Figure 4 : Go B.I.G with Digital Framework

Digitally driven, high income ation, a
regional leader in the digital economy

Productivity and Competitiveness

Thrust	Business Environment		Workforce	Industry Structure

| Initiatives | **D.1** Raise awareness of available incentives to ensure proper tilisation of ICT adoption | **D.2** Centralised and coordinate efforts between relevant agencies to ensure proper utilisation of initiatives and programmes | **D.3** Strengthen collaboration between industry and academia to reduce mismatch of supply and demand of workforce | **D.4** Improving the access Pricing Framework for providers |

Source : Malaysia Productivity Blueprint (2017)

Go B.I.G with Digital

Breakthrough   Integrity   Good

Fundamentals	**Digital Market Access**	**Digital Workforce**	**Digital Regulatory**

Digital Market Access
- Information Services
- Computer Programming, Consultancy Related Activities
- Telecommunication
- Content & Media
- ICT Retailers
- System Integrators
- Users
- Purchasers

Digital Workforce
- Institution of higher learning
- Private training organisation Technology vendors training centers

Digital Regulatory
- Accelerators/ incubators
- Infrastructure
- Regulators

Productivity

B	I	G
Catalyse Breakthrough	**Strenghten Integrity**	**Promoting Good**
• Exponential productivity • From 10x up to 100x improvement	• Transparent • Consistent • Objective • Trustworthy • Governance	• Abundance • Supportive • Uplofting • Enabling better life • Green & Sustainable

Digital

I	C	T
Adoption of IR 4.0	**Similar Connectivity**	**Innovation Technology**
• IoT • Cloud Computing • VR / AR • Artificial Intelligence • Blockchain	• 5G mobile network • Fiberisation • Satellite • Wireless Connectivity	• Develop • Purchase • Outsource • Timely Develop

The Go B.I.G with Digital Framework was established to outline initiatives and fundamentals to drive productivity and competitiveness in the digital economy. Initiatives that have been put in place include raising awareness among ICT subsector stakeholders on available incentives and centralising relevant agencies to ensure proper utilisation of initiatives and programs.

For the purpose of ensuring that there is an appropriate match of supply and demand within the ICT service subsector workforce, collaboration between the industry and academia have been strengthened. Further, incremental steps have also been taken to improve the industry structure access

pricing framework for providers. Meanwhile focus will also be put on enhancing productivity, strengthening integrity and promoting good values among the industry players and stakeholders.

The Go B.I.G initiative aims to achieve breakthrough productivity for huge and drastic impacts in businesses, through digital and technology adoption, and the Fourth Industrial Revolution (4IR). The Go B.I.G with Digital aims to provide suggestions on predicaments faced by businesses.

Go B.I.G Digital is being implemented via its 6-Ps framework comprising the stages of Promotion, Pilot, Proliferation, Protect, Prosper and Partnership

6Ps to Go B.I.G with Digital

1 PROMOTION
To Promote digital culture and embrace the use of digital technologies in your organisation

2 PILOT
To pilot digital adaptation in 3 dimensions-customer, operation and product

3 PROLIFERATION
Expansion of digital adaptation throughout the organisation

4 PROTECT
To protect organisation's digital infrastructure and data

5 PROSPER
Maximise the power of digital to increase revenue and lower the cost

6 PARTNERSHIP
Partner with digital solution providers and digital talents

Digital Victory - A step-by-step journey in digital transformation for SMEs

A roadmap on digital transformation provides a step-by-step guide on what small business owners must do to transform, survive and thrive in the new age. Newly operated SMEs can take up this journey by taking advantage and signing up to the Digital Pledge. This will give them a head start in going digital. Upon signing and completing the pledge, they will be provided with the Digital Transformation Guideline (DiTG), which is a survival kit for micro, small and medium businesses to transform from traditional ways of doing business to digital transformation as the way forward.

Figure 5 : Step-by-Step Guide to Digital Transformation for SMEs
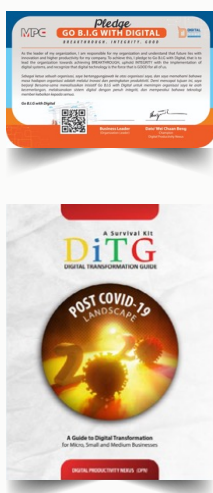
DIGITAL PLEDGE
- Business leaders pledge their commitment to participate in digitalisation project
- Download digitalisation self guide Digitalisation Transformation Guide (DiTG)

DIGITAL ADOPTION
- Companies to participate in digital projects
- Collaborate with other government agencies to provide guidance for the industry player
- Match industry player with the Digital Solution Provider

01 WEBINARS

02

03 DIGITAL VICTORY
Business Advisory Clinic

04

05 MEASURE POST PROGRAMME IMPROVEMENT
Measure productivity improvement

Go B.I.G with Digital Webinar Series

In order to create awareness on the importance of digital technology and digital solutions available in the market, DPN has organised 18 webinars which have been attended by 7,000 attendees. The webinar series were held in collaboration with MDEC, SMECorp, TPN, and SAMENTA. The said webinars have been designed to address challenges faced by businesses and ICT professionals in the various aspects of the ICT services subsector. With the Micro Connector and Digital Leadership programmes, DPN managed to gauge the importance and benefits of digital adoption and its strategies among business leaders. Consequently, DPN also provides in depth guide to business leaders to successfully transform their digital business.

DPN has also organised webinars to address the demand and supply of ICT professionals. In terms of the demand for ICT professionals, businesses are guided on how to address the shortage and the government's initiatives undertaken measures to help address this shortage. Where there is a shortage in ICT professionals, business are provided with guidance on the hiring of ICT professionals. These measures would equalize and balance the demand and supply of ICT professionals.

DPN has also organised webinars covering technical topics such as key technology areas and trends. These topics are commonly sought by businesses as it provides an insight and acts as a topical guide to Implement digital transformation. With knowledge and awareness on the fundamental aspects of these technologies, participants and business are able to move forward with the next steps in digital adoption.

Figure 6 : Go B.I.G with Digital Webinar Series' selected topics

The top 3 digital projects pledged by business leaders includes Internet of Things (IOT), e-commerce and e-payment and Digital Marketing. The business aspiration of the leaders includes : To boost sales and build their brands, to automate their processes, to increase digital marketing and also reduce costs from process improvements.

Go B.I.G with Digital Pledge

In order to encourage large firms and SMEs to undertake digital transformation that would accelerate digital adoption, DPN has garnered more than 4,000 pledges from business leaders. These pledges comprise of business owners (33%), Managing Directors, Senior Management & Chief Executive Officers (40%), Board members (8%) and Chief Operating Officers (4%).

The pledge would aspire leaders to positively focus and take charge in leading their organizations towards adopting digital technology. This would also set the business leaders in the direction of "Go B.I.G with Digital", for a big leap in productivity and performance with digital transformation.

Digital Transformation Guide (DiTG)

The Digital Transformation Guide (DiTG) is a survival kit for micro, small and medium businesses to transform from traditional way's of doing business to digital transformation as the way forward.

A Roadmap on Digital Transformation is also featured in this survival kit, providing a step-by-step guide on what smaller business owners must do to transform and survive, then thrive in the new age.

Business Virtual Advisory Clinics

The Business Virtual Advisory Clinics were established to assist digital and technology-based businesses in rebuilding their company due to the adverse impact of COVID-19, which focus on :

1. Strategic positioning
2. Financial consultation
3. Legal and regulatory advice
4. Innovative business operation
5. Business development and marketing solutions
6. Technical solutions

Digital Solutions Directory

In collaboration with PIKOM, Profesional Services Productivity Nexus (PSPN), Tourism Productivity Nexus (TPN), Retail and Food and Beverages Productivity Nexus (RFBPN), DPN has developed a directory that matches digital technology solutions with industry players. The directory provides industry players with a range of digital technology solutions that could be adopted in their digital transformation process.

Apart from this, the directory could help accelerate business recovery with faster access to digital technology solution providers. With 21 solution categories and 160 solution providers, the directory could increase digital adoption and drive the demand for technology.

Support for Digital Solution Providers

Pursuant to the roll-out of the Digital Solutions Directory, DPN has also organised a Get2Gather for the digital solutions providers. The gathering provides an avenue for the technopreneurs to discuss issues faced and assistance needed.

PRODUCTIVITY MINDSET
➤ **Digital Technology for Productivity**

MPC collaborated with the Federation of Malaysian Manufacturers to organize a series of forums on Digital Technology for Productivity. The series were held in four locations throughout Malaysia and was attended by 537 participants. This program was also an avenue for MPC and DPN to acknowledge more than 20 digital solution providers and leaders as Productivity Champion.

Interestingly, the forum was aimed in encouraging business to go digital by sharing success stories of various organisations, conveying information on government incentives and relaying industry know-how into the subsector. During the forum, MPC's Director General Dato' Abdul Latif Haji Abu Seman sighted MPC and FMM's commitment to

improve Malaysia's digital competitiveness. Further, he remarked that Malaysia will need to aggressively improve in knowledge, technology and future readiness to transform the country towards an advanced digital economy.

On a separate note, Jacob Lee, Chaiman of FMM's Digital Economy and Industry 4.0 Committee Member expressed his gratitude to the Government for taking heed of the industry's recommendations. Apart from this, he praised the Government for supporting the industry's adoption of technology and digitalisation which will be instrumental in driving business recovery, transformation, productivity and innovation.

Digital Technology for Productivity

Special collaboration with FMM to encourage business to adopt digitalisation

PRODUCTIVITY MINDSET
▶ **Leadership and Digital Summit 2020: Go B.I.G with Digital**

"Leadership and Digital Summit 2020: Go B.I.G with Digital" was organized on 8 December 2020 at Kuala Lumpur. The Summit was officiated by the Senior Minister of International Trade and Industry Malaysia, YB Dato' Seri Mohamed Azmin Ali.

Champion of Digital Productivity Nexus, Dato Wei Chuan Beng opened the discussion by emphasizing on the importance of accelerating the digitalisation's adoption rate. He remarked that the rapid pace of changes in technology today will revolutionise how we live and how businesses operate. In response to the Covid-19 pandemic, digital technologies have proven to be practical solutions while Digital Malaysia will be ready for challenges and opportunities in the future. In addition, he explained that Go B.I.G with Digital is aimed in motivating all leaders to embrace a change in mindset and move towards a new breakthrough performance with digital adoption.

Honorable speakers for the summit include YBhg. Tan Sri Mohd Zuki Ali, the Chief Secretary to the Government, YBhg. Tan Sri Jamaludin Ibrahim, the President of Axiata Group Berhad, Dato' Michael Tio, CEO and MD of PKT Logistics Group, Dr Dzaharudin Mansor, National Technology Officer of Microsoft Malaysia. Datuk Wira Dr. Rais Hussin Mohamed Ariff and M. Nazri Muhd, CEO

of MyFinB Group. Moderators of the summit were PIKOM Chairman, Danny Lee and PIKOM Advisor, Shaifubahrim Saleh. The Summit also saw the ceremony of Exchange Certificate of Collaboration between the Department of Polytechnic and Community College Education (DPCCE) and MPC.

The Leadership Summit was attended by over 300 online delegates across all industry sectors which included heads of government agencies. The closing of the summit also featured technology providers in Augmented Reality (AR) and Artificial Intelligence (AI) showcase.

INCENTIVES
➤ ICT Incentives and Grants for SMEs

Most companies in Malaysia were not aware on the available ICT incentives and grants provided to eligible entrepreneurs. The ICT Incentives and Grants for SMEs' Program was objectively introduced to provide information on the available incentives and grants related to the ICTs and technologies for Malaysia-based Small and Medium-sized Enterprises (SMEs).

Most of the programs are open to individuals and entrepreneurs that have innovative and creative ideas or products with the potential to be successful.

Favourable provisions have been set up for digital adoption as the government is actively encouraging more local businesses to move rapidly into the technology sphere.

Among the list of agencies providing incentives and grants are Cradle Fund Sdn Bhd, Steinbeis Malaysia, PlaTCOM Ventures Sdn Bhd, TalentCorp Malaysia, Malaysian Investment Development Authority, Bank Pembangunan Malaysia Berhad and Perbadanan Kemajuan Filem Nasional Malaysia.

Figure 7 : Publication of Incentives & Grants for SMEs

TECHNOLOGY
➤ Digital Persona

In collaboration with industry players, DPN has upskilled the participants with the fundamentals of consumer data analytics and how they could use persona analytics in order to enhance their productivity in marketing. Besides deepening their understanding on customer requirements and

improving the content based on the recommended message, the participants also learnt how they could improve their marketing campaigns and enhance their reach with the advertisement generated from the Digital Persona.

DIGITAL PERSONA

Experiential learning on Consumer Data Analytics which improve business digital marketing skills

Background
Hassan Hardware supplies home building equipment and materials.

Background
Omnimal supplies date-based products.

Save digital marketing cost by 90%

Before	After
Spent RM3,000 for digital marketing 2 branches	Spent RM500 digital marketing cost for 5 branches for the same outcome

Increase reach by 250%

Before	After
Lack online marketing strategies	Increase Facebook reach by 250% Increase understanding on customer data on demography, lifestyle and others

Box Item 1
Digital Persona - Consumer Data Analytics Workshop to Upskill Participants

OMNI MAL AGENCIES SDN BHD

About
Established in 1997, Omni Mal has been supplying quality, healthy and delicious dates value-added products. The products come with special feature and are one-of-its-kind in the market under the brand of Gurun Emas and Date-Licious.

Challenges
Omni Mal must establish a new marketing strategy to drive sales traffic to their Shopee shop. Their primary target audience would be people who have previously interacted with their page, as well as a lookalike audience.

Approach
Based on data from Dattel Voyager, Omni Mal created two personas which are Nutritious me and Chef Me. They then used the personas generated to develop the new marketing approach. Omni Mal used Dattel Voyager's insight on brand affinity, favourite media and lifestyle behaviour in order to better understand their customers and to implement the change from hard selling contents to storytelling.

TALENT
➤ Digital STARS

The Digital Stars Internship Programs provides students with placement opportunities by matching the industry with digital technology students from Malaysian Institutions of Higher Learning upon undertaking two weeks of online courses.
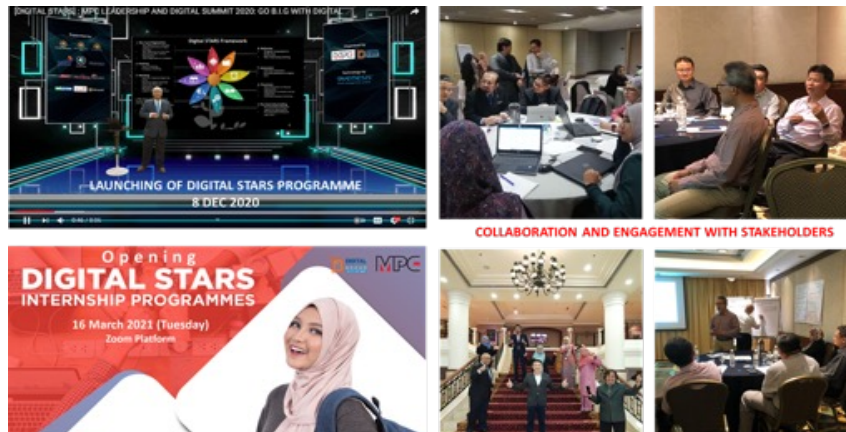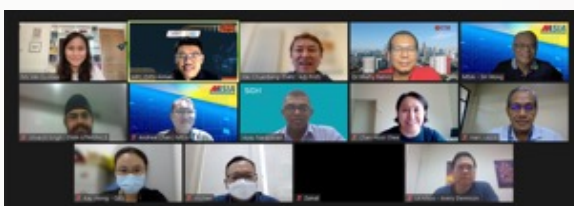

TALENT
➤ Go B.I.G with Digital Talent

Facilitating industry players to reskill and upskill their digital talent by leveraging on government incentives.

Collaboration with MDEC to promote MyDigital Workforce Work in Tech (MyWIT) to industry.

Collaboration with UTMSPACE to promote Industry Apprenticeship for Degree Program.

TALENT
➤ Industry Skills Framework for Artificial Intelligence

MPC has collaborated with HRDCorp, MDEC, and PIKOM to develop the Industry Skills Framework for Digital Technology (Artificial Intelligence).

The IndSF for Digital Technology is a comprehensive guide for individuals, industry players, institutions of higher learning, training providers and stakeholders to gain knowledge, experiences, master various skills and promote lifelong learning in the digital industry.

This Framework outlines a common reference for skills and competencies required in the digital industry, thus helping individuals to make informed decisions on skills development. Concurrently, employers may recognize skills needed and invest in skills training for their employees, while training providers may design programs that addresses the sector's manpower and skills needed.

Career Pathways - Artificial Intelligence (AI)

DATA SCIENCE/AI SCIENCE	Data Engineering	Data Science	Data Analyst
	(Has been covered under previously published Data Science document)		

MACHINE LEARNING/AI ENGINEERING	Theoritical AI Researcher	Applied AI Researcher	

DATA ENGINEERING	AI Product Manager	AI Product Manager	Senior AI/ML Engineer
			AI/ML Engineer

AI APPLIED RESEARCH	AI Application Developer	AI Ethnic Officer	Associate AI/ML Engineer

REGULATION
➤ Digital Infrastructure Competitiveness Index

The Digital Infrastructure Competitiveness Index (DICI) study measures the efficiency and the effectiveness of the construction permitting system in localities of Malaysia in deploying telecommunication structures. The study was approved for implementation by the Economic Action Council (EAC) as a means to compare the time taken, procedures and cost imposed for the deployment of telecommunication structures among localities in Malaysia. The study was carried out from February until July 2020.

With respect to the efficiency and the effectiveness of the construction permitting system in 10 localities of Malaysia and in deploying telecommunication structures, the findings confirm the non-standardised processes and procedures practised by local authorities and agencies. Herewith, regulators and agencies would have contradictory interpretations reflected in each of their respective client charter and procedures. Moreover, it is probable that there will be a huge variance from one locality to another on cost imposed upon investors.

The study and the indexes provide information as to where the choke points are, thus allowing for state policy makers to identify improvements needed for their construction permitting system. In order to exercise the above mentioned improvements, verification and validation of data must be carried out with the regulators and agencies. Both parties must confirm the reliability of data provided, thus ensuring the accuracy of the data.

Instead of amending laws and regulations, The Business Process Reengineering approach shall be adopted as the key approach. Further, unnecessary costs which are not stipulated under any legislation shall not be imposed upon investors. Besides that, a fair and justifiable compliance cost shall be established and imposed upon investors.

Rank	Cities	DICI Index
1	KUALA LUMPUR	71.00
2	PUTRAJAYA	60.38
3	KANGAR	57.68
4	SEREMBAN	55.14
5	ALOR SETAR	53.65
6	KUALA TERENGGANU	51.32
7	GEORGETOWN	36.20
8	JOHOR BHARU	33.38
9	IPOH	29.52
10	KUANTAN	29.00

REGULATION
➤ Improving Digital Infrastructure through Agile Regulation Method

In line with the target set by JENDELA and the national objective to transform Malaysia digitally, the tower infrastructure across the country must be improved substantially. However, the Bank Guarantee and Service Fee charged by Lembaga Lebuhraya Malaysia (LLM) to build towers along the highway involves high cost and strict regulations thus affecting the targets set by JENDELA.

A series of engagement with stakeholders from KKR and LLM

Certain regulations stipulated by local authorities such as LLM have caused extreme inconveniences to the industry. Among the issues faced by industry players is the red tape involved in processing time and financial requirements in obtaining necessary approval for clearance in development work. This issue was highlighted and brought to the PIKOM chairman and CEO for attention and further action.

For JENDELA to facilitate and expedite the transformation of digitalisation, 4G coverage in the country must be increased from 91.8% to 96.9% in a span of two years. With this, approximately 2,000 to 3,000 new towers would need to be built in rural areas and highways. The towers will serve as important belts for mobile voice, data for users or commuters and the general population.

Taking consideration of the 40 highways or expressways (in Peninsular Malaysia), the industry estimates that around 1000 new towers (with an assumption of minimum 25 new towers per highway) is to be built along these highways for 4G, and eventually more towers for 5G – in the span of two years.

	Before	After
Bank Guarantee	RM50,000	5% of project cost
Service Charge	RM50,000	RM20,000.00 / 10 years

RECOMMENDATIONS TO ACCELERATE DIGITALISATION AND INCREASE THE ICT SERVICES SUBSECTOR'S PRODUCTIVITY

To fully optimise productivity, Malaysia will need to address the requirements of the ICT services subsector and the remaining productivity nexus. A strong network of industry players backed by enhanced digital infrastructure would promise a thriving economy that will recover rapidly from the results of the pandemic.

Facilitate SMEs' access to support programs by establishing an online one-stop shop

Digital Productivity Nexus and MPC to establish an online database platform known as Digital Platform Network+ (DPN+). With this in place, SMEs will be able to easily search the DPN online and obtain information on programs that meet their needs and expectations. SMEs could also benefit from greater hands-on support from a program manager or business units to help navigate the application process.

Development of a Malaysia Future Skills Framework

The challenges in the ICT services subsector remain in the areas of workforce, technology and business environment. In terms of workforce, the subsector faces a shortage of ICT professionals, a supply gap for new ICT graduates, a lack of experienced ICT professionals with specialised skills, such as software development, system application and products, enterprise resource planning, and a brain drain of skilled ICT professionals to countries offering a higher pay. It is recommended that a Malaysia Digital and Future Skills Framework is developed. This framework will serve as a model that describe skills and competencies required in Malaysia's digital talent. The development of this framework will require involvement and support from MDEC, HRDCorp, and ICT industry players. With a focus in measuring the

level of digital talent in Malaysia, the framework could possibly serve as the main guidelines to policy makers and investors in Malaysia.

Accelerate digitalization through Leader for Innovative & Future Talent (LIFT)

The level of digital adoption in Malaysia is still rather low. Businesses indicate that financing or digitalisation costs remains their top challenge. Costs related to internet connectivity, software subscription fees and digital hardware are among the challenges sighted. The pandemic severely impacted many small businesses, hence hindering their cash-flow position and disrupting their abilities to embark on digital transformation. To address these challenges and to accelerate digitalization, MPC intends to carry out the Leader for Innovative & Future Talent (LIFT) Program.

Many business leaders doubt the impact digitalization could have on their respective companies. Leading companies and business leaders lack resources and work with outdated tools and software. Herewith, LIFT aims to enable digital and business leaders to closely interact with one another and integrate digital technology into their business. Meanwhile, the objective of the LIFT programme is to create a spark among leaders on the benefits and importance of digitalisation under the B.I.G key elements.

WAY FORWARD FOR THE ICT SERVICES SUBSECTOR

The ICT services subsector is one of the movers and shakers of the Malaysian economy. It has experienced strong growth, but still has vast potential for innovation and development. According to the Department of Statistics Malaysia, ICT contributed 22.6% to Malaysia's GDP in 2020. The ICT services subsector is expected to grow from USD$16.5 billion in 2019 to an estimated USD$25.2 billion in 2023. Much of that growth is driven by the increased digitalisation of processes across all major industrial sectors. Major ICT opportunities for companies exporting to Malaysia include data systems integration, cloud computing, Internet of Things (IoT), cybersecurity, big data analytics and emerging digital technologies.

Currently, ICT laws and policies are still being drafted, revised, and reviewed by the Malaysian government to be in line with regional and international standards. Some policies under review include Personal Data Protection Act, Cybersecurity, Data Localization and Cloud Service. Malaysia's Economic Stimulus Package provides strong incentives in digital transformation, connectivity, security, satellite broadband, digital infrastructure for buildings, 5G ecosystems, and intelligent automation. The demand for automation and digitalization exports is expected to continue to grow post-pandemic due to the government focus on modernizing and standardizing Malaysia's manufacturing sector and global supply chain network. Malaysia's second-tier manufacturers, component manufacturers, and service providers are being offered incentives by the Malaysian government to increase digital integration and expand automation to remain competitive.

Meanwhile, the growth of the ICT services subsector is in line with the governments agenda on empowering the digital economy, which will support and strengthen the national economic growth under the 12th Malaysia Plan, 2021-2025. Adoption of advanced technology and Industry 4.0 are vital to drive Malaysia's digital economy.

As the key enabler of digitalisation, the adoption, utilization of ICT and Artificial Intelligence, the ICT services subsector aims to increase productivity, efficiency, transparency and security. Governments worldwide including Malaysia, have been proactively digitalising their public services to make them more transparent and efficient, thus sustaining continuous improvement for future generations. Consumers are migrating to the digital realm, primarily through e-commerce and online banking for quick and convenient transactions. Some countries like the US, Finland, China, Sweden and Singapore have previously launched long-term strategies and initiatives to gain benefits of the digital economy. Malaysia has launched the MyDIGITAL initiatives to transform the nation into a digitally-driven, high-income and a regional leader in the digital economy.

MyDIGITAL is a national initiative which symbolises the aspirations of the Government to successfully transform Malaysia into a digitally-driven, high-income nation and a regional leader in the digital economy. The Malaysia Digital Economy Blueprint spells out the efforts and initiatives to deliver the aspirations of MyDIGITAL. The Blueprint charts the trajectory of the digital economy's contribution to the Malaysian economy and builds the foundation to drive digitalisation across Malaysia.

CONCLUSION

In conclusion, Malaysia's ICT services subsector will continue to grow and the advancement in the ICT sector will support the vision of Industrial Revolution 4.0 aspired by the government. A whole-of-nation approach would require the participation of all stakeholders, including the government, private sector, academia, and civil society to drive

Malaysia towards a digital economy, A whole-of-nation approach can bring together the resources and expertise of all stakeholders to drive Malaysia towards a digital economy. By working together towards a common goal, Malaysia can become a more innovative, competitive, and resilient nation in the digital era.

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