

# CHAPTER 4

## **Technology, Innovation and Digitalisation**

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### ACCELERATING DIGITALISATION

Digitalisation is critical for SME sustainability in the new economy. As digitalisation continues to gather pace the world over, it is imperative for Malaysian SMEs to embrace the digital economy to not only ensure they are not to be left behind but also to help spur economic growth. E-commerce is a game-changer for SMEs with an online presence, unlocking as it does vast new opportunities for SMEs to break away from the limitations of a small market and into a global market with billions of customers. From the cost perspective, building an online presence comes with a fraction of the costs for a physical store along with minimal investment in e-commerce solutions.

Additionally, social media, cloud-based services and the digital marketplace are levelling the playing field for SMES with large firms in terms of productivity enhancement in business operations such as marketing, accounting, sales and payroll as well as inventory management. The Malaysia Digital SME Study 2018 conducted by SME Corp. Malaysia and Huawei Technologies (M) Sdn Bhd shows that SMEs that are using social media and e-commerce in their business operations are seeing productivity improvement of between 26.0% to 27.0%, proving that leveraging on the internet for e-commerce will boost growth opportunities, sales productivity and wealth creation for SMEs and ultimately for the economy at large.

Recognising the pivotal role of digitalisation in the new economy, the Government has introduced a slew of initiatives and programmes to address the specific needs of SMEs and entrepreneurs by providing support in the form of funding, human capital development and assistance in market access. The programmes, which

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target to encourage SMEs to digitalise and build online presence, include:

- eTrade (Malaysia External Trade Development Corporation, MATRADE);
- eUsahawan and Digital Free Trade Zone (Malaysia Digital Economy Corporation, MDEC);
- DesaMall@Online (Ministry of Rural Development);
- Youth Digital Programme – Young Heroes (Ministry of Youth and Sports);
- Product Transformation and Effective Distribution (Ministry of Domestic Trade and Consumer Affairs); and
- Implementation of e-Commerce initiatives under the National e-Commerce Strategic Roadmap.

These programmes have been strengthened with the introduction of several initiatives under the COVID-19 economic stimulus packages to assist SMEs and entrepreneurs to build online presence to cushion the impact of the pandemic on their physical business operations. These initiatives comprise:

- RM70 million for Microenterprises and SMEs e-Commerce Campaigns to boost adoption of e-commerce;
- RM70 million for ‘Shop Malaysia Online’ to encourage online consumers consumption through e-commerce vouchers;
- RM20 million for the transformation of *Pusat Internet Desa* (Rural Internet Centres) into e-commerce hubs; and
- A grant of RM1,000 to 10,000 local entrepreneurs to sell their products via e-commerce.

Embedding digital technology in business models has proven to be a boon for productivity and sustainability in the long term, and this has been particularly evident during a time of crisis like the COVID-19 pandemic. Adoption of technology will help to bridge the productivity gap between SMEs and large firms through enhancing capacity and capability for greater competitiveness and innovation. Digitalisation enables SMEs to tap the opportunities offered through various online platforms to capture a bigger market share. The advantage offered by technology adoption is well illustrated in the case of ARBA Travel & Tours Sdn Bhd. The company’s business model leverages on technology for their operations and this has enabled them to withstand the shocks brought about by the pandemic on the travel industry.

However, with more and larger online platforms emerging and competition intensifying, small businesses have found it ever more challenging in the pursuit of market share, especially when competing against big foreign players. SMEs are disadvantaged when it comes of pricing as they do not have economies of scale. Large firms can offer better deals, for example, fast delivery on top of lower price, which SMEs cannot afford to, given their thinner margins. To level the playing field for domestic businesses, the Government has introduced a 6.0% digital service tax on foreign digital service providers in Malaysia from 1 January 2020.

The Malaysia Digital SME Study 2018 shows that one of the factors that has hindered digitalisation among SMEs is the lack of talents, with 48.0% of respondents reporting that their workforce lacks the skills needed to use digital tools in business operations such as sales, marketing, production, planning and finance. Financing is another obstacle for digitalisation, especially for microenterprises while SMEs have doubts about returns on their digitalisation investment. Respondents also cited concerns on data security and legal issues that could disrupt business operations and affect the trust of international customers.

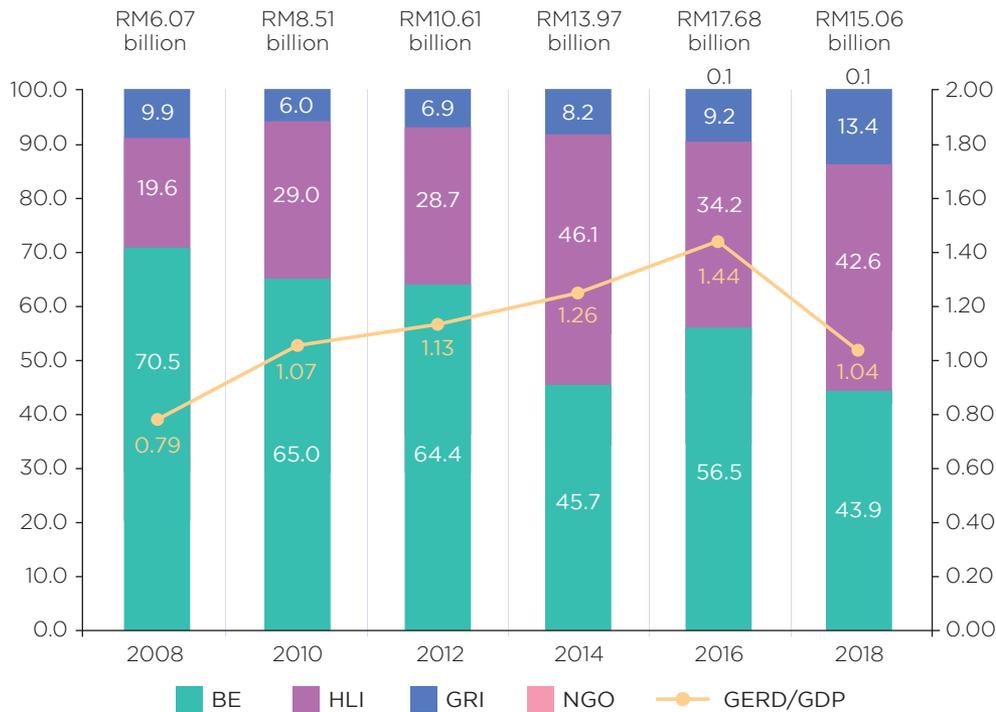
The COVID-19 outbreak is re-shaping the world of commerce and accelerating the transition from physical stores to digital shopping. This has caused a surge in online purchases and businesses are responding by adopting technology and getting on-board e-commerce platforms to capture market share. A similar trend is seen in Malaysia. Post-COVID-19, the evolving consumer behaviour and SME transformation from the conventional business model to online models will be a key determinant in the expansion of the domestic e-commerce ecosystem.

## PROMOTING TECHNOLOGY, INNOVATION AND RESEARCH & DEVELOPMENT

### National R&D Survey 2019

Gross Expenditure on Research and Development (GERD) is the primary indicator for the research & development (R&D) activities of a country. Malaysia's GERD has been increasing since 2008.

**Chart 4.1:** R&D Expenditure in Malaysia (2008 – 2018)



Source: 2019 National R&D Survey, Ministry of Science, Technology and Innovation



A total of 73 patent and technology know-how licences were issued in 2018, from which RM83.5 million in revenue was generated.

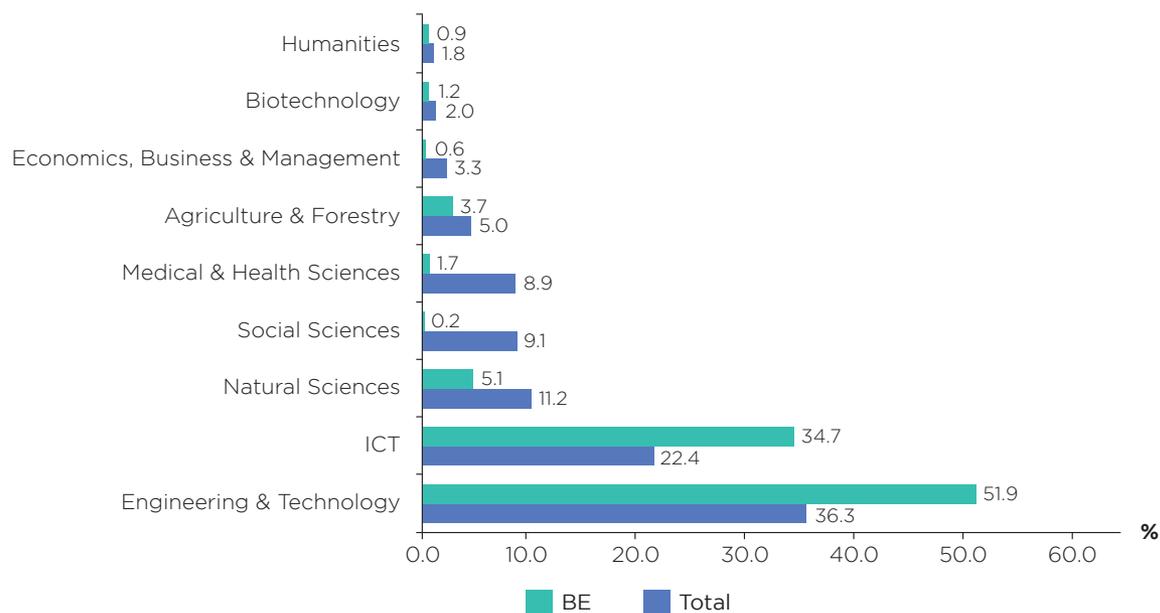
The National R&D Survey which reports on R&D activities in Malaysia among business enterprises (BE), Government research institutes and agencies (GRI), higher learning institutions (HLI) and non-governmental organisations (NGO) shows that GERD in Malaysia is estimated at RM15.06 billion in 2018, a decline of RM2.62 billion compared with RM17.68 billion in 2016. BEs are the main drivers of R&D activities except in 2014 and 2018 when HLIs contributed about the same share to GERD.

SME Corp. Malaysia estimates the share of the GERD of SMEs at RM2.04 billion or 30.9% of the GERD of BEs. The GERD of SME as a share of Gross Domestic Product (GDP) is estimated at 0.15% and to SME GDP is 0.39%. The decline in GERD is largely derived from the reduction in R&D activities in BEs, which declined from RM10.01 billion in 2016 (derived from a probability survey) to RM6.61 billion in 2018 (derived from a census). The drop in GERD of BE is attributed to reduced allocations or budget cuts.

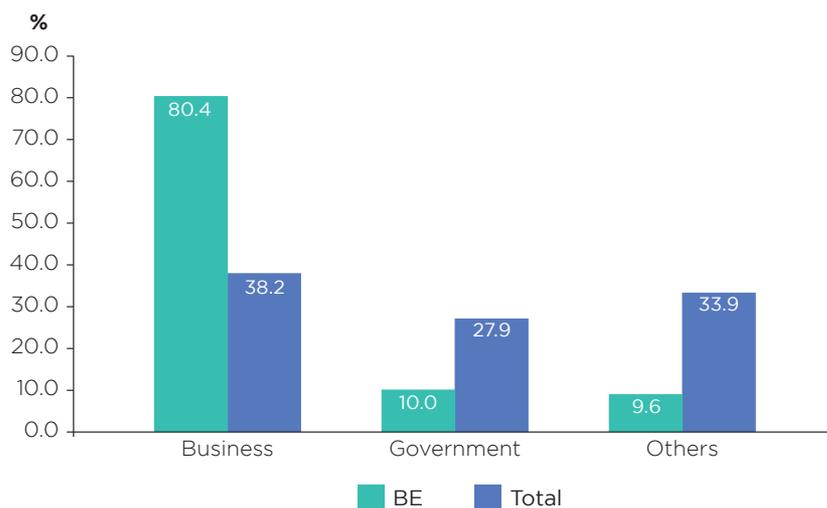
A total of 73 patent and technology know-how licences were issued in 2018, from which RM83.5 million in revenue was generated. The number of commercialised products totalled 1,064, from which revenue amounting to RM979.7 million was generated. The top three types of R&D incentives received by business enterprises were R&D grants or matching grants (31.9%), pioneer status (31.9%) and income tax exemption (31.2%).

The five main factors that were cited as hindrances to the R&D activities of BEs are lack of skilled R&D personnel; limited financial resources or increased cost of capital; lack of R&D infrastructure and support services; insufficient Government funding; and difficulties in collaborating with public institutions.

BEs focused their R&D activities in engineering and technology (51.9%) and information and communication technology (ICT) (34.7%). Contributions to R&D activities by other fields of research are natural sciences; social sciences; medical and health sciences; agriculture and forestry; economics, business and management; biotechnology; and humanities.

**Chart 4.2:** R&D Expenditure by Field of Research, 2018

Source: 2019 National R&D Survey, Ministry of Science, Technology and Innovation

**Chart 4.3:** Source of Funds for R&D Activities, 2018

Source: 2019 National R&D Survey, Ministry of Science, Technology and Innovation

Of the total expenditure of BE on R&D activities, 70.0% were from large companies while 17.0% were from medium-sized companies and 13.0% from small-sized companies. Expenditure on R&D from microenterprises made up 0.9% of the total expenditure of BE.

## Box Article

# National Technology and Innovation Sandbox – Advancing Malaysia through Advanced Technology



The National Technology and Innovation Sandbox (NTIS) is a key initiative announced under the Short-Term Economic Recovery Plan (PENJANA) to drive Malaysia's aspirations to be a high-income and high-tech nation through enhancing development and access to advanced technology. NTIS aims to create high-skilled jobs, boost growth in GDP and Gross National Product (GNP) along with social inclusion as well as enhancing investment and collaboration in research in the private sector.

As a national solution coordination and facilitation centre, NTIS is empowered to allow relaxations of all or selected processes and / or regulatory requirements in order to accelerate the development of innovative solutions from the R&D stage to commercialisation. A RM100 million fund has been provided to support researchers, innovators, start-ups and high-tech entrepreneurs in testing their products, services, business models and delivery mechanisms in live settings.

The initiative is led by the Ministry of Science, Technology and Innovation and the Malaysian Global Innovation and Creativity Centre (MaGIC), with the latter serving as the main secretariat. NTIS aims to drive the development and commercialisation of advanced technology projects, especially those related to prioritised technologies with high potential as listed below.

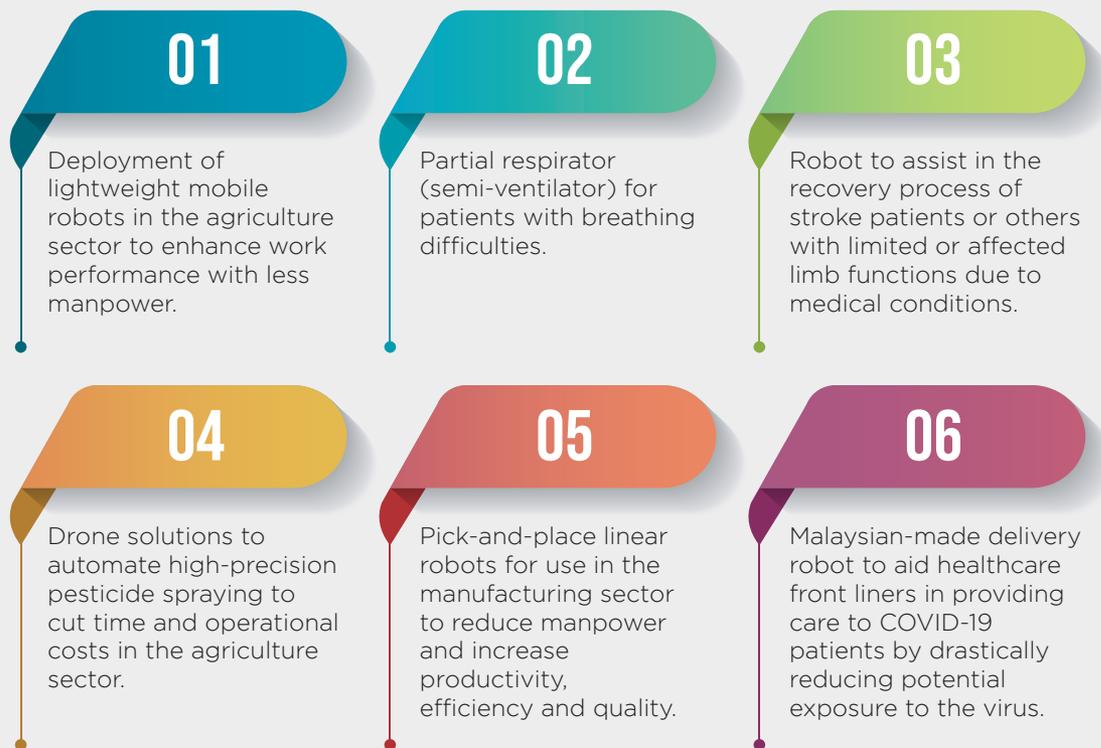
Prioritised Sectors	Prioritised Technologies	
<ul style="list-style-type: none"> <li>• Medical and healthcare technology</li> <li>• Travel and tourism</li> <li>• Manufacturing</li> <li>• Agriculture</li> <li>• Education</li> </ul>	<ul style="list-style-type: none"> <li>• 5G/6G</li> <li>• Sensor technology</li> <li>• 4D/5D printing</li> <li>• Advanced materials</li> <li>• Advanced intelligent systems</li> <li>• Augmented analytics and data discovery</li> <li>• Blockchain</li> </ul>	<ul style="list-style-type: none"> <li>• Neuro technology</li> <li>• Bioscience technology</li> <li>• Robotic</li> <li>• Manufacturing technology</li> <li>• Electrical and electronics</li> <li>• Cyber security and encryption</li> <li>• Drones</li> </ul>

Participants in the NTIS programme will receive support in the form of:

- Capacity-building programmes
- Facilitation for market access and procurement
- Funding facilitation
- Facilitation for testbed and testing environment
- Facilitation and review of regulations and laws
- Multi-industry adoption

Individual Malaysians or Malaysian-owned firms are eligible to participate in NTIS. Foreign companies with joint venture or incorporation plans with Malaysian-owned entities are also eligible to participate in the programme once such plans are approved. NTIS will consider the inclusion of foreign technology in the programme if the solutions are owned by a company with majority Malaysian ownership. The solutions, however, may not qualify for Government funding.

Applications for the NTIS programme have been open since 15 July 2020. As at August 2020, 658 applications have been received, of which 94 completed applications have been processed. Six pilot projects have been identified to start off the programme as follows:



More information on NTIS is available at [www.sandbox.gov.my](http://www.sandbox.gov.my).

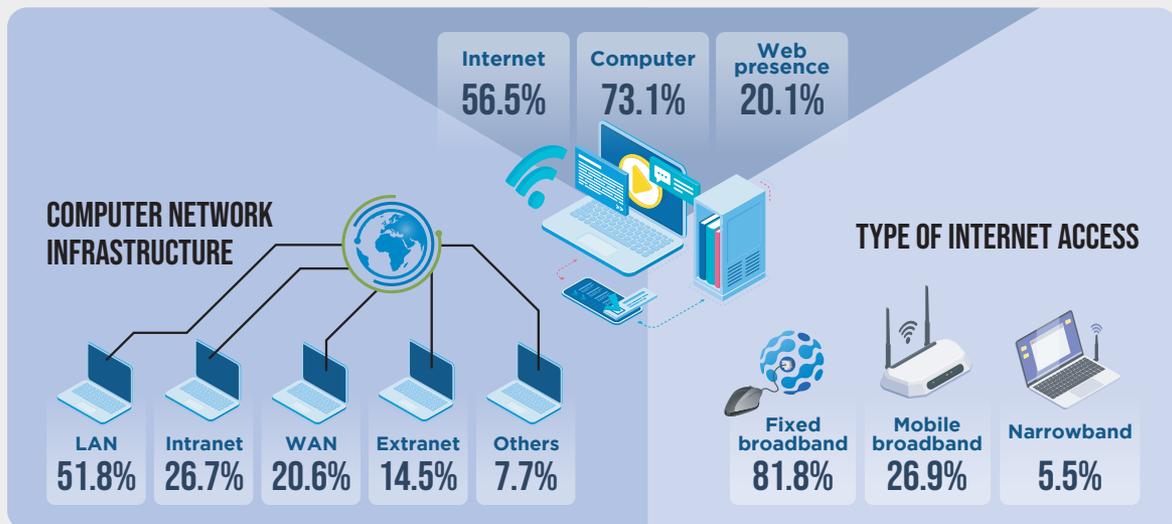
## Box Article

# SMEs and ICT Adoption

The Economic Census 2016 (reference year 2015) conducted by the Department of Statistics, Malaysia (DOSM) shows that computer usage among SMEs has surged, from only 27.0% of SMEs in 2010 to 73.1%. In 2015, the internet was used by 56.5% of SMEs and 20.1% has online presence for their business. The majority of SMEs (81.8%) accessed the internet via fixed broadband while others used mobile broadband (26.9%) and narrowband (5.5%). SMEs mainly used the internet for emails (71.2%), internet banking (41.2%), obtaining information on goods and services (38.5%) and posting information or instant messaging (36.9%).

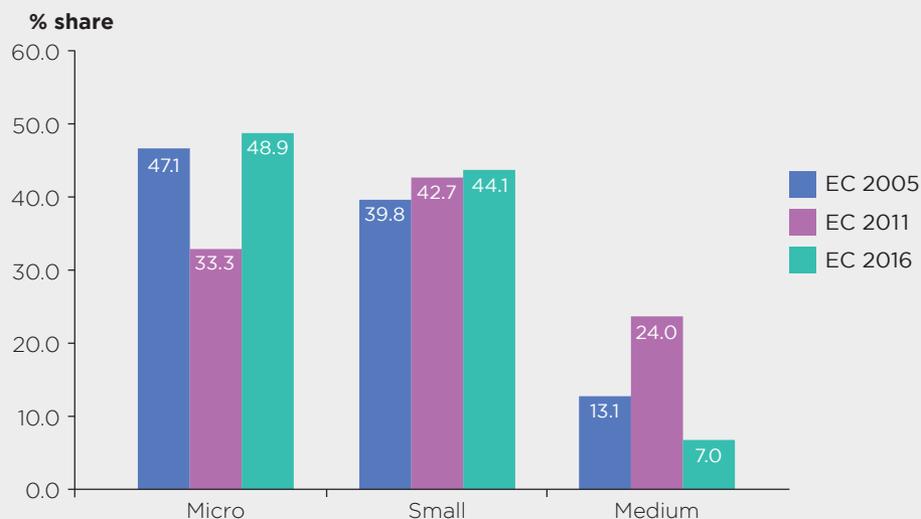


**Chart 1:** ICT Usage among SMEs



Source: Department of Statistics, Malaysia (DOSM)

Between 2003 and 2015, the number of SMEs engaged in the information and communication technology (ICT) sub-sector grew, on average, by 17.6% annually. From 2005 to 2015, the share of SMEs in ICT against total SMEs and against total SMEs in services sector quadrupled.

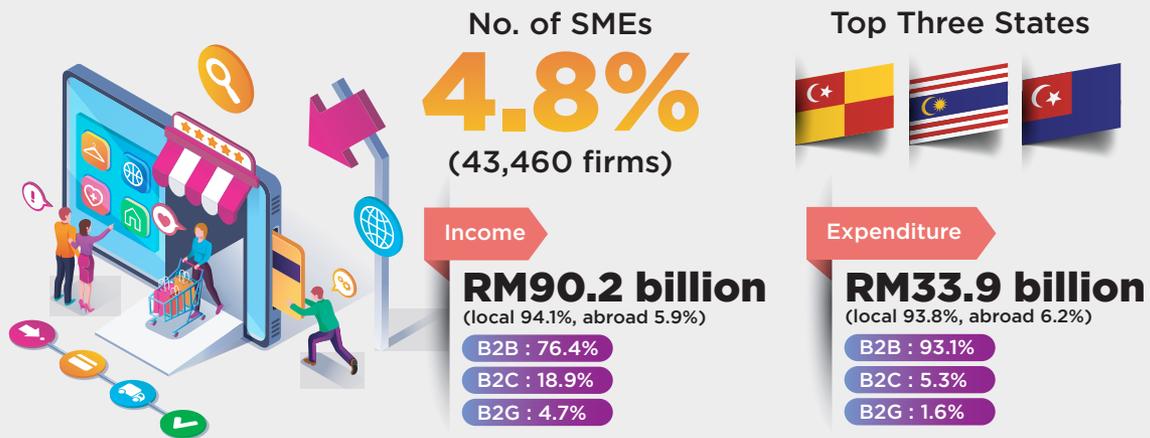
**Chart 2:** Percentage Share of SMEs in ICT Sub-sector by Size (Across Various Census)

Source: Department of Statistics, Malaysia (DOSM)

## SMEs and E-commerce

The Economic Census 2016 shows that only 4.8% of SMEs (43,460 out of 907,065 SMEs) were engaged in e-commerce transactions in 2015, with these largely from the manufacturing and services sectors. In services sector, the wholesale and retail as well as information and communications sub-sectors are the leading e-commerce players. More than half of the SMEs involved in e-commerce were concentrated in Selangor (34.6%) and Kuala Lumpur (28.8%). There are ample opportunities for SMEs to raise the market profile of their products or services by getting on-board e-commerce platforms, given that these are the most cost-effective sales channels available.

In 2015, in terms of income and expenditure transactions via e-commerce, the manufacturing sector was the main contributor in the domestic market while services sector were the leading contributor in the overseas market. SME income from e-commerce transactions totalled RM90.2 billion, of which RM84.9 billion (94.1%) was generated domestically and RM5.3 billion (5.9%) from abroad. The highest income, totalling RM68.9 billion (76.4%), was generated through business-to-business (B2B) transactions, followed by business-to-consumer (B2C) with RM17 billion (18.9%) and business-to-Government (B2G) with RM4.2 billion (4.7%). Expenditure transactions of SMEs engaged in e-commerce was valued at RM33.9 billion, with 93.8% spent locally and 6.2% abroad. B2B expenditure transactions accounted for 93.1% of the total while 5.3% was for B2C and 1.6% for B2G.



Source: Department of Statistics, Malaysia (DOSM)

Based on the Information and Communication Technology (ICT) Satellite Account 2018 published by DOSM, e-commerce contributed 8.0% to overall GDP in 2018, with its value-added growing by 7.9% to RM115.5 billion compared with RM107.1 billion in 2017 when growth was 11.9%. The findings also show that the contribution of ICT to the national economy has continued to grow albeit by at slower pace of 6.9% to RM267.7 billion in 2018 compared with RM250.4 billion in 2017 when a 9.8% growth was recorded. ICT contributed 18.5% to GDP in 2018 (2017: 18.3%), from which the industry contributed 12.6% (2017: 12.5%) and e-commerce for non-ICT industries contributed 5.9% (2017: 5.7%).

According to the 2019 SME Survey conducted by SME Corp. Malaysia which covered 1,347 firms, 35.3% of respondents are engaged in online business, a slight drop compared with 37.9% in the third quarter of 2018. Interesting to note that an average of 15.0% of total business sales were generated from online sales. The majority of SMEs (77.0%) mainly use social media platforms like Facebook (78.3%), WhatsApp (61.5%) and Instagram (54.3%) for their online business. However, social media usage is increasingly being complemented by online e-commerce marketplace platforms like Shopee (used by 18.7% of respondents) and Lazada (14.9% of respondents) to showcase their products or services.

Looking at the current scenario, as the COVID-19 pandemic reshapes the world, more consumers have begun shopping online and businesses too have resorted to technology and online platforms that will help them conduct business operation. This pandemic has certainly brought some lights by accelerating the shift away from physical stores to digital shopping globally, and we do expect the same growth acceleration of e-commerce in Malaysia. For post COVID-19 period, the consumers behaviour and SMEs transformation from conventional business to online business model will be the key factors in further expanding the e-commerce ecosystem.