

ACCELERATING MALAYSIAN DIGITAL SMEs:

Escaping the Computerisation Trap

Overcoming the Digitalisation Chasm
of Malaysian SMEs



the 1990s, the number of people in the UK who are employed in the public sector has increased by 1.5 million, from 2.5 million in 1980 to 4 million in 1995. The public sector has also become an important employer of women, with 55% of public sector employees being women in 1995, compared with 45% in 1980.

There are a number of reasons why the public sector has become an important employer of women. One reason is that the public sector has a high proportion of jobs that are traditionally held by women, such as teaching, nursing, and social work. Another reason is that the public sector has a high proportion of jobs that are part-time or flexible, which are more likely to be held by women.

There are also a number of reasons why the public sector has become an important employer of women in the 1990s. One reason is that the public sector has a high proportion of jobs that are in the health and social care sectors, which are traditionally held by women. Another reason is that the public sector has a high proportion of jobs that are in the education sector, which is also traditionally held by women.

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Content

02	FOREWORD
03	Foreword from YB Datuk Seri Mohd Redzuan Md Yusof, Minister of Entrepreneur Development Malaysia
04	Foreword from YBhg. Dato' Dr. Mohd Gazali bin Abas, Secretary General of Ministry of Education Malaysia
05	Foreword from Mr. Jeffrey Sachs, Eminent Economist
06	Foreword from Mr. Baker Zhou, CEO of Huawei Technologies (M) Sdn. Bhd.
08	ACCELERATING MALAYSIAN DIGITAL SMEs: ESCAPING THE COMPUTERISATION TRAP
09	Introduction
11	SMEs in Malaysia
12	The SME Perspective
13	The Computerisation Trap
24	Crossing the Digitalisation Chasm
32	Sucess Stories of Malaysian SMEs
36	INITIATIVES FROM OTHER COUNTRIES
37	Singapore Case Study
39	Czech Republic Case Study
41	Thailand Case Study
45	Spain Case Study
50	RECOMMENDATIONS
52	INNOVATE: Assist SMEs to think like an innovative digital SME
53	FACILITATE: Assist SMEs on their digitalisation journey
54	ACCELERATE: Assist SMEs to accelerate digital transformation of their businesses
55	ENGAGE: Create an Innovation Centre to provide SMEs with an ecosystem that engages all stakeholders to drive digital transformation
60	Essential Guidance For policymakers For SME businesses
64	APPENDICES

FOREWORD

Foreword from YB Datuk Seri Mohd Redzuan Md Yusof,
Minister of Entrepreneur Development Malaysia

Foreword from YBhg. Dato' Dr. Mohd Gazali bin Abas,
Secretary General of Ministry of Education Malaysia

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Foreword from

YB Datuk Seri Mohd Redzuan Md Yusof

Minister of Entrepreneur Development Malaysia



Representing 98.5% of total business establishments in Malaysia, SMEs are indeed an important growth driver for Malaysia as it aspires to become a developed and inclusive nation. The Government is committed to develop and empower SMEs by providing a conducive ecosystem for SMEs to thrive and prosper. For those that are ready to venture abroad, we will support them with various programmes and incentives designed to turn them into competitive and dynamic global players that enhance SMEs' contribution to the economy.

In 2017, SME contribution to the overall GDP stood at 37.1%. Time is running short and we have to accelerate SME growth further to achieve our goal. For the year 2020, we are aiming for a contribution target of 41%. This is one of the reasons for the re-establishment of the Ministry of Entrepreneur Development (MED) to help spur the growth of entrepreneurs and SMEs in the country. While there is a continuous need to coordinate and streamline the policies and programmes for SME development, the Government also needs to align our SMEs to the megatrends and digitalisation which have transformed the business landscape today. This technological revolution will lead to the growth of Financial Technology, Big Data Analytics and e-commerce, as well as regional integration and opening up of new markets.

Moving forward, ICT has a huge role to assume in advancing the growth of SMEs not only through an increase in efficiency and productivity, but also in expanding their market reach. E-commerce for instance will enable our SMEs to break away from the limited domestic market and to reach out to the one billion digital customers worldwide. This Whitepaper on Accelerating Malaysian Digital SMEs: Escaping the Computerisation Trap produced by Huawei Technologies in collaboration with SME Corp. Malaysia and University Consortia is very timely as we strive to push our SMEs further into digitalisation to leverage on the digital economy for a more sustainable growth. It serves as a good reference to gather insights on the current state of digital adoption among SMEs in Malaysia, challenges and way forward.

However, the information will remain on paper if there is no deliberate attempt to address the challenges and to turn the action plans into implementable measures. Thus, I urge all stakeholders that are policymakers, academicians and general public especially the SMEs to read and digest the findings and recommendations, and start taking action!

Foreword from

YBhg. Dato' Dr. Mohd Gazali bin Abas

Secretary General of Ministry of Education Malaysia

The Whitepaper “Accelerating Malaysian Digital SMEs: Escaping the Computerisation Trap – Overcoming the Digitalisation Chasm of Malaysian SMEs” addresses the Malaysian SMEs’ strategies in adapting to the digitalisation landscape. The comprehensive Study covers the SME community and industries in Malaysia including services, manufacturing, construction, agriculture and mining segments as well as micro, small and medium SMEs.

The Fourth Industrial Revolution represents new ways in which the emerging technology breakthroughs will accelerate the digital economy phenomenon and fundamentally alter the way business is performed. This key Whitepaper on SMEs digitalisation is timely as it documents the current scenario in the SMEs with regards to digital technology adaptation. The findings highlight the importance of embracing digitalisation in ensuring that the SMEs advancements correspond with the global digitalisation growth. The Study reveals that digitalisation is paving the future for the SMEs, ergo driving productivity and progression of the digital economy landscape.

The Ministry of Education is grateful to the alliance and collaboration of SME Corp. Malaysia and Huawei Technologies (M) Sdn. Bhd., together with University Consortia and International Data Corporation (IDC) as consultants in contributing towards the completion of the Whitepaper. We sincerely hope that this report will be a useful reference for SMEs development in Malaysia towards the future, especially with regards to realising the full potential of digitalisation.



Foreword from

Mr. Jeffrey Sachs

Eminent Economist

As global leader in creating Digital Nations, Huawei offers Malaysia invaluable advice on deploying the new generation of information and communications technologies (ICTs). The proposed set of recommendations are directed towards Malaysia's SMEs and Government. The SMEs are the cornerstone of the Malaysian economy, and their success is vital if Malaysia is to escape the "middle-income trap." The Government's role, of course, is to create the enabling environment for ICTs to enable the SMEs to thrive and grow.

The key message is that digitalisation is more than a technology, an application, or a device. Digitalisation is a system, that integrates end-to-end digital processing from consumer interactions and consumer payments to product and process innovations to back office operations. SMEs need to be ready to digitalise their operations holistically, and Governments need to provide a digital environment with clear standards, high-quality infrastructure, and supportive regulations to enable their SMEs to thrive as true digital enterprises.

Huawei, as a global leader with vast experience in implementation, offers some pertinent advice to the Malaysian Government. The Malaysia national plan should incorporate SME connectivity and strong broadband infrastructure. The Government should implement an Innovation Centre as a one-stop shop to support SME digitalisation and facilitate the use of cloud platforms to support access to digital technologies.

Digitalisation will support Malaysia's achievement of the Sustainable Development Goals, the Paris Climate Agreement, and other national objectives on the path to prosperity and shared wellbeing. Huawei's guide will be an invaluable resource for successful digitalisation. I am proud to say that the Jeffrey Sachs Centre on Sustainable Development at Sunway University, established to help Malaysia and other countries of Southeast Asia to achieve the Sustainable Development Goals, will be honored to work with the Government of Malaysia, Huawei, the Malaysian business community, and civil society to achieve the aims outlined by Huawei's invaluable report: a 21st century Malaysia that is in the forefront of global technology and of human well-being.



Foreword from

Mr. Baker Zhou

CEO of Huawei Technologies (M) Sdn. Bhd.



The world is witnessing exponential growth in technology, driving digital transformation in the way business is conducted and services are provided to end users. Recognition of this fact has led to many Governments across the world to put in best efforts to nurture their economies digitally. The Malaysian Government continues to focus on strengthening and developing its digital infrastructure, catalysing the shift from a labour-intensive economy to a more knowledge-driven society. Towards that goal, one of the key segments that needs to adopt digitalisation most swiftly is the Small Medium-sized Enterprises (SMEs).

The SMEs sector in Malaysia, much like in many other countries, is considered to be the backbone of the economy. As per data released by SME Corp. Malaysia, SMEs represent 98.5% of all establishments, contributing to 37.1% of the Malaysia's Gross Domestic Product (GDP) and 66.0% of employment in 2017.

Malaysian SMEs have a strong aspiration to grow and innovate new products and services. Realising the importance of this crucial building block, we have been spearheading many initiatives with SME Corp. Malaysia in areas of research, innovation and talent development. We continue to work together to develop and implement initiatives that help boost digital transformation of SMEs, as part of promoting a digital economy.

To achieve this, SMEs will need to leverage the capabilities of ICT in Malaysia. Huawei, in its close to two decades of operations in Malaysia, has worked closely with Malaysian SME ecosystem to embrace the digital revolution. To better understand the Malaysian SME sector's operational issues, perspective, plans and pain-points towards going-digital, and Malaysian Government's strategy towards improving digital infrastructure and supporting SMEs in their goals - Huawei sanctioned this Whitepaper, in collaboration with SME Corp. Malaysia.

I congratulate SME Corp. Malaysia and my team at Huawei Malaysia, for the efforts that they have put in to make this research insightful, and not only highlighting the computerisation trap that Malaysian SMEs have fallen into, but also suggesting solutions to address the problem. Their partnership, efforts and expertise are deeply appreciated. I hope the Whitepaper encourages wide-ranging discussions among all involved groups and agencies, about the future of digitalisation in Malaysia and promotes a greater understanding of how to overcome the digitalisation chasm.

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ACCELERATING MALAYSIAN DIGITAL SMEs: ESCAPING THE COMPUTERISATION TRAP

Introduction

SMEs in Malaysia

The SME Perspective

The Computerisation Trap

Crossing the Digitalisation Chasm

Success Stories of Malaysian SMEs

Introduction

Digital technologies enabled by ICT infrastructures continue to influence enterprises and individuals alike and their application among businesses is widespread. Digital transformation through these technologies improves the business landscape by creating unparalleled opportunities to boost growth, expand jobs and accelerate innovation. The transformation process is progressive, in which embracing digital can be broadly categorised into computerisation and digitalisation. Computerisation is the adoption and usage of digital devices that are more geared towards individual usage and limited business usage, while digitalisation is defined as business process transformation including customer management, transaction, services and feedback in a complete digital environment. Businesses of all industries and sizes are talking about it, but many are not realising the full potential of digitalisation, especially among small and medium enterprises (SMEs).

SMEs in Malaysia represent 98.5% of total business establishments, contributing to 37.1% of the Malaysia Gross Domestic Product (GDP) and 66.0% of total employment in 2017. The Malaysia Government's goal to grow the economy, improve productivity, start up more entrepreneurial companies and increase employment opportunities cannot happen without the digital transformation of the SMEs.

To many SMEs, digitalisation is merely putting a front-end digital platform (e.g. website, Facebook page) to reach their customers, which does not bring real value-add to business. To be truly digitalised, SMEs must re-engineer and refresh their businesses by assessing and ensuring that their business strategies, business models, processes, and infrastructures are aligned and fully integrated to support their digital transformation.

In June 2018, SME Corp. Malaysia, together with Huawei Technologies, commissioned a study of 2,033 SMEs representing all sectors (services, manufacturing, construction and agriculture) and regions to explore the state of ICT adoption as well as to examine the drivers and barriers of digital transformation through the lens of SMEs in Malaysia. The Study involved a survey that was administered by International Data Corporation (IDC) and a consortium of universities in Malaysia. The summary of this report and its recommendations have been shared with various Government agencies, trade associations and SMEs for their feedback.

This Study reveals the computerisation trap that Malaysian SMEs have inadvertently fallen into and proposes several approaches to help SMEs to cross the digitalisation chasm and to uncover their full digital strength, with the help of public and private sectors.

“Information and communications technology (ICT) development is not only for big enterprises but for SMEs as well... Yet despite these efforts, SMEs are not receiving the attention that they deserve in the global arena...

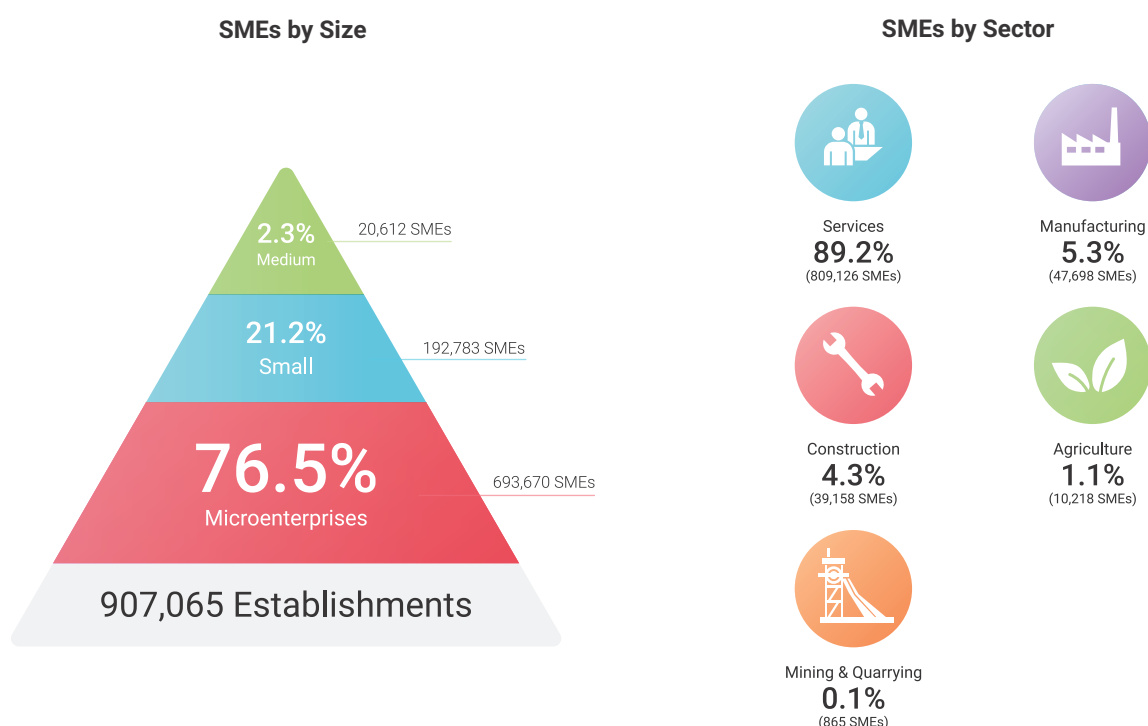
Thus, SMEs need to be on the international platform to share their ideas, to learn best practices from bigger companies or enabling organisations, and benefit from innovation through collaborative efforts.”

– Zhao Houlin, ITU Secretary-General

SMEs in Malaysia

Based on the latest Economic Census 2016: Profile of SMEs (reference year 2015) conducted by the Department of Statistics, Malaysia (DOSM), there were altogether 907,065 SMEs operating in Malaysia in 2015, which represent 98.5% of the total establishments of 920,624 firms (see Figure 1). Majority of the SMEs were microenterprises, constituting 76.5% of total SMEs in Malaysia. Meanwhile, small-sized SMEs formed 21.2% of the total SMEs and the balance 2.3% were medium-sized SMEs. Looking across key economic sector, SMEs are highly concentrated in the services sector that accounted for 89.2% of total SMEs, predominantly in the wholesale and retail trade as well as food and beverages services. The manufacturing sector is the second highest with 5.3%, followed by 4.3% in the construction sector, agriculture sector (1.1%) and the remaining 0.1% in the mining and quarrying sector.

Figure 1: Number of Establishments and Percentage Share by Sector and Business Size



Source: Economic Census 2016: Profile of SMEs (reference year 2015), Department of Statistics, Malaysia

In 2017, SME GDP recorded a higher growth of 7.2% compared with 5.2% in the previous year, and continued to outperform the overall Malaysia GDP growth of 5.9% (2016: 4.2%). The higher SME GDP growth was driven by strong domestic demand, led by both consumption and investment activities, higher SME exports, and continued growth in employment and income. This has resulted in the contribution of SMEs to overall GDP increased from 36.6%

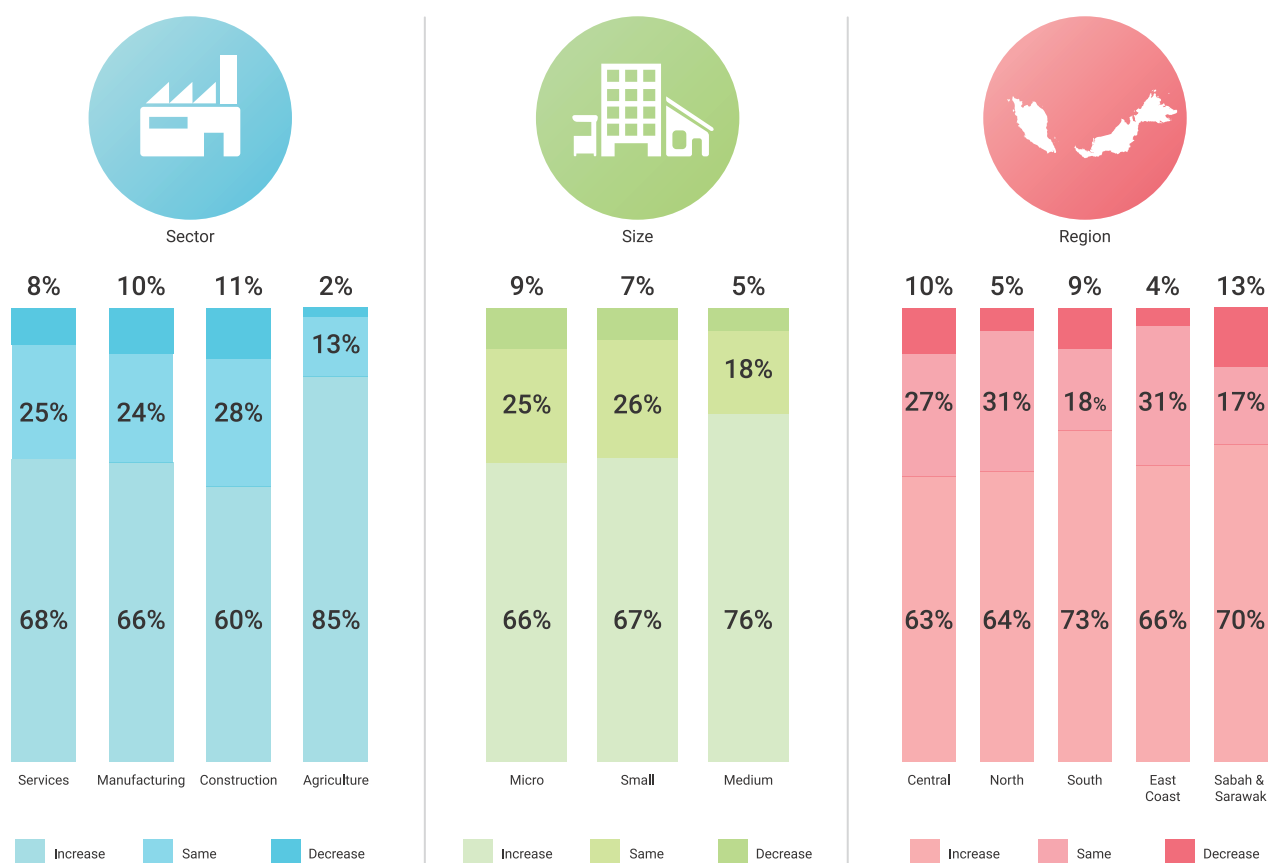
in 2016 to 37.1% in 2017. SME employment also grew at 3.4% in 2017, resulting in SME contribution to overall employment at 66.0%, an increase from 65.3% in 2016. Meanwhile, SME exports registered a higher growth of 7.9% in 2017 (2016: 7.0%), driven by growth in the agriculture, manufacturing and services sectors. Nevertheless, SME contribution to the total exports was lower at 17.3% (2016: 18.6%) due to higher export growth by large firms.

The SME Perspective

Any transformation is undertaken with a collective intent and sustainable objectives, such that all SMEs in Malaysia are working towards a robust growth in the future. In fact, about two-third of SMEs surveyed believed that their firms' revenues will increase in the next financial year while a quarter of them are expecting stagnation in business growth. Only about 8% of the SMEs felt that their revenues will be reduced (See Figure 2). SMEs in the agriculture and services sectors are the most optimistic. Medium-sized SMEs and those in South, Sabah and Sarawak are also more bullish towards the economic outlook in the future.

In a survey conducted by the Future of Business Survey on 22 countries, it was found that around 60% SMEs are positive about their future business prospect. Compared to this Study, the number of Malaysian SMEs that are optimistic about the future is still slightly higher. The Survey also showed that the more positive the outlook of a business is, the more likely the use of online tools.

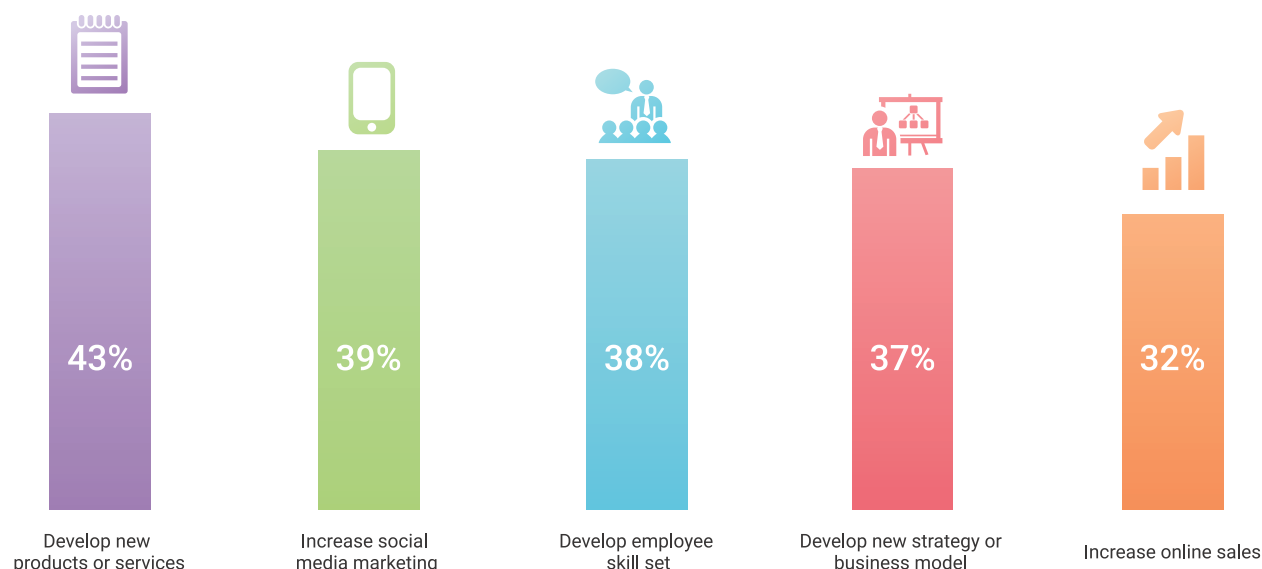
Figure 2: Malaysian SMEs' Business Outlook



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

When it comes to short to mid-term growth, SMEs' confidence is expected to be driven by a few initiatives that they intend to implement. The top initiatives reported including developing new products and services to grow the business, followed by increasing marketing reach through social media and developing employee skill set in sales or marketing as well as in ICT-related competence (See Figure 3).

Figure 3: Business Improvement Initiative Plans in the Next 1-2 Years



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

This is similar to the initiatives of SMEs from other countries as reported by the Future of Business Survey, where the top initiatives by SMEs from across 22 countries is to develop new products and innovation in order to grow their businesses. The SME ecosystem realises the need to function in the digital environment as a fundamental shift and to work towards it with the best possible effort. Thus, employee skill set development is a key focus area among all SMEs and the details would be presented in the subsequent sections of this report.

Malaysian SMEs have a strong aspiration to grow and innovate new products and services. In order to achieve this, SMEs will need to leverage on the capabilities of ICT in Malaysia. To ensure the accelerated adoption and usage of digital environment, there are three areas that need to be prioritised:

- Having access to digital technology (including affordability and experience);
- Having literacy and know-how to use the technology; and
- Being able to participate in and create the necessary digital environment with available technology.

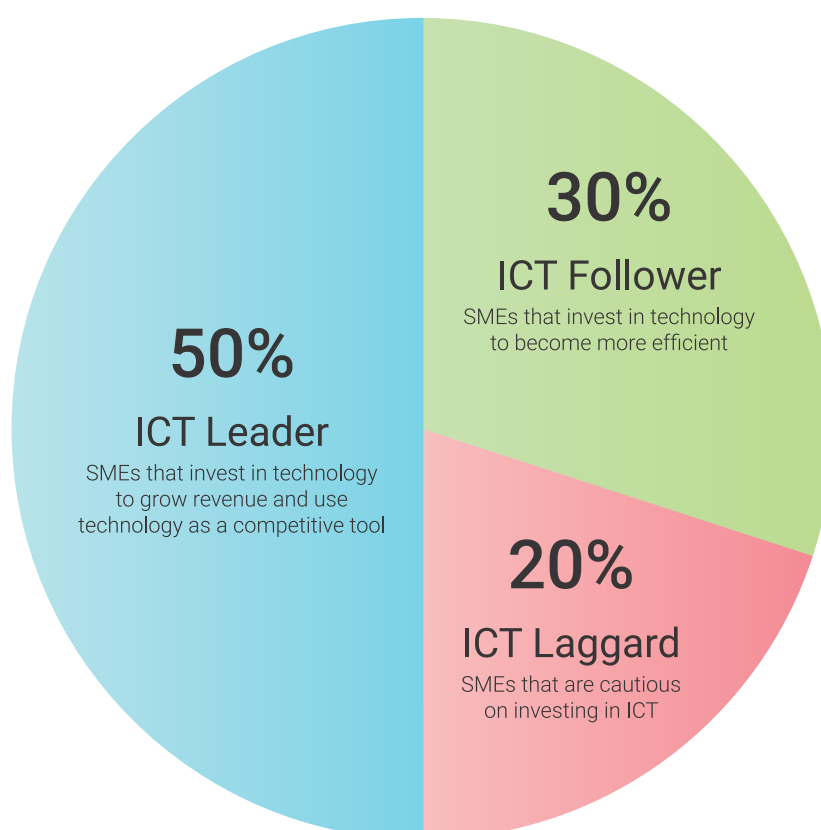
Growth initiatives such as social media marketing will require the SMEs to be proficient in developing a digital marketing strategy, and to have adequate access to quality broadband and social media tools. The development of new products and services will require the SMEs to rely on data analytics to inform them of their customer needs and to guide their product development.

Today's customers and their interactions are digital in nature, communicating via digital channels, consuming a large number of digital products and services, and expecting fast reliable services that are customised to their unique needs. Therefore, SMEs will need to consider these trends and develop new innovative products and services that draw on digital technologies to communicate, promote or market, and deliver to the digital-savvy customers. For example, an SME providing food and beverage (F&B) services will need to learn on how to promote their new products through social media, provide multiple channels of ordering such as through a mobile application and allow for customisation of the order through the application. A personal-service SME like a hairdresser or wedding coordinator will need to consider an application to allow for appointment, scheduling, services customisation and queue monitoring, as well as to manage the customers' accounts. SMEs will thus need to consider adopting digital tools such as cloud computing, application development and Internet of Things (IoT) as enablers to achieve their business goals.

The Computerisation Trap

SMEs in Malaysia are receptive to using digital technologies to enhance their businesses in general. The Study revealed that over half of the SMEs invest in technology to expand into new areas, reach new customers, and increase sales, or that they are excited about new technology and would like to experiment with it to develop a competitive advantage.

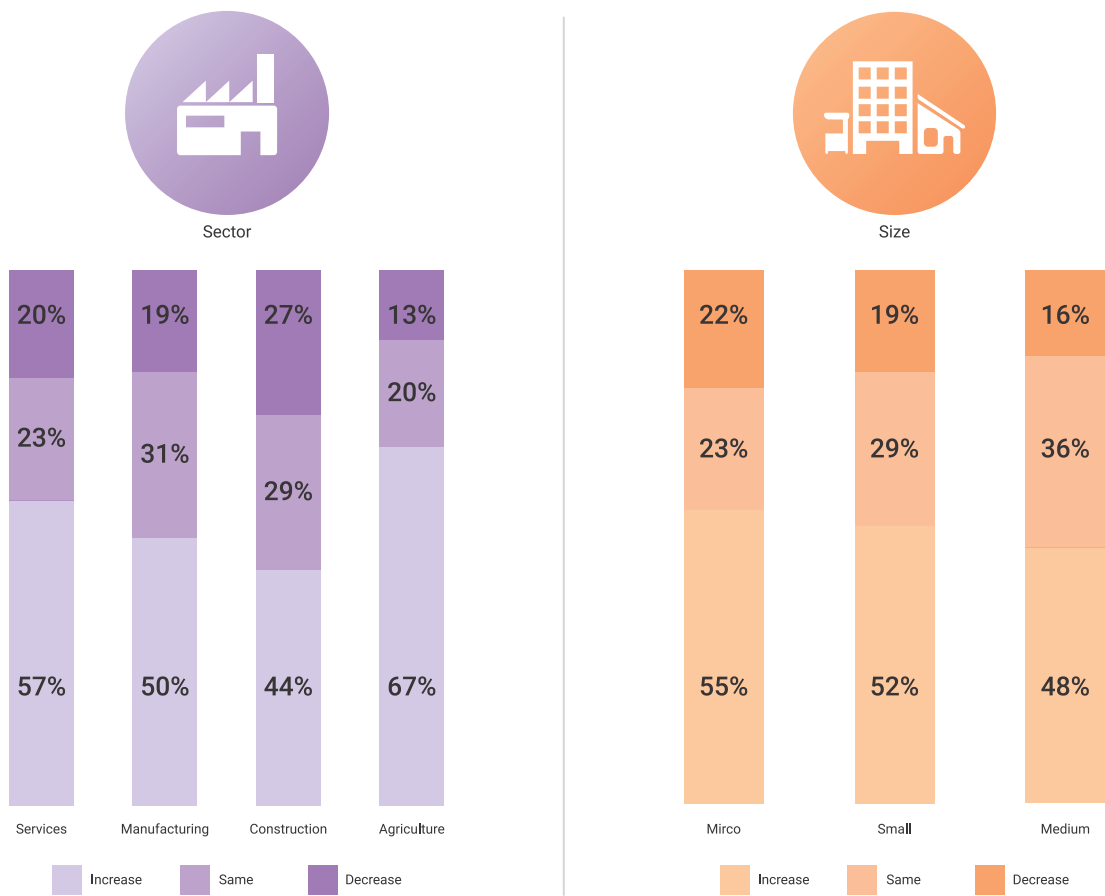
Figure 4: Classification of SMEs in Relation to Technology Adoption



Any fundamental change in the way of doing business starts with the underlying mindset that dictates the strategy and business approach for an enterprise. The Survey probed the mindsets of SMEs in Malaysia and it is very encouraging to note that over 50% of SMEs have the ICT Leader mindset, which is to use ICT to grow their businesses or develop a competitive advantage. However, about a quarter of the SMEs only look at ICT as a productivity tool instead of a business enabler (ICT Follower), and a final 20% of SMEs are ICT Laggards as they tend to wait until someone has invested in, tested and proven a particular technology before considering using it (See Figure 4).

Figure 5 shows that a larger proportion of medium-sized SMEs and SMEs in the construction sector view technology as merely a productivity driver rather than as a critical competitive advantage and growth driver for their businesses.

Figure 5: SMEs' Stance on Technology

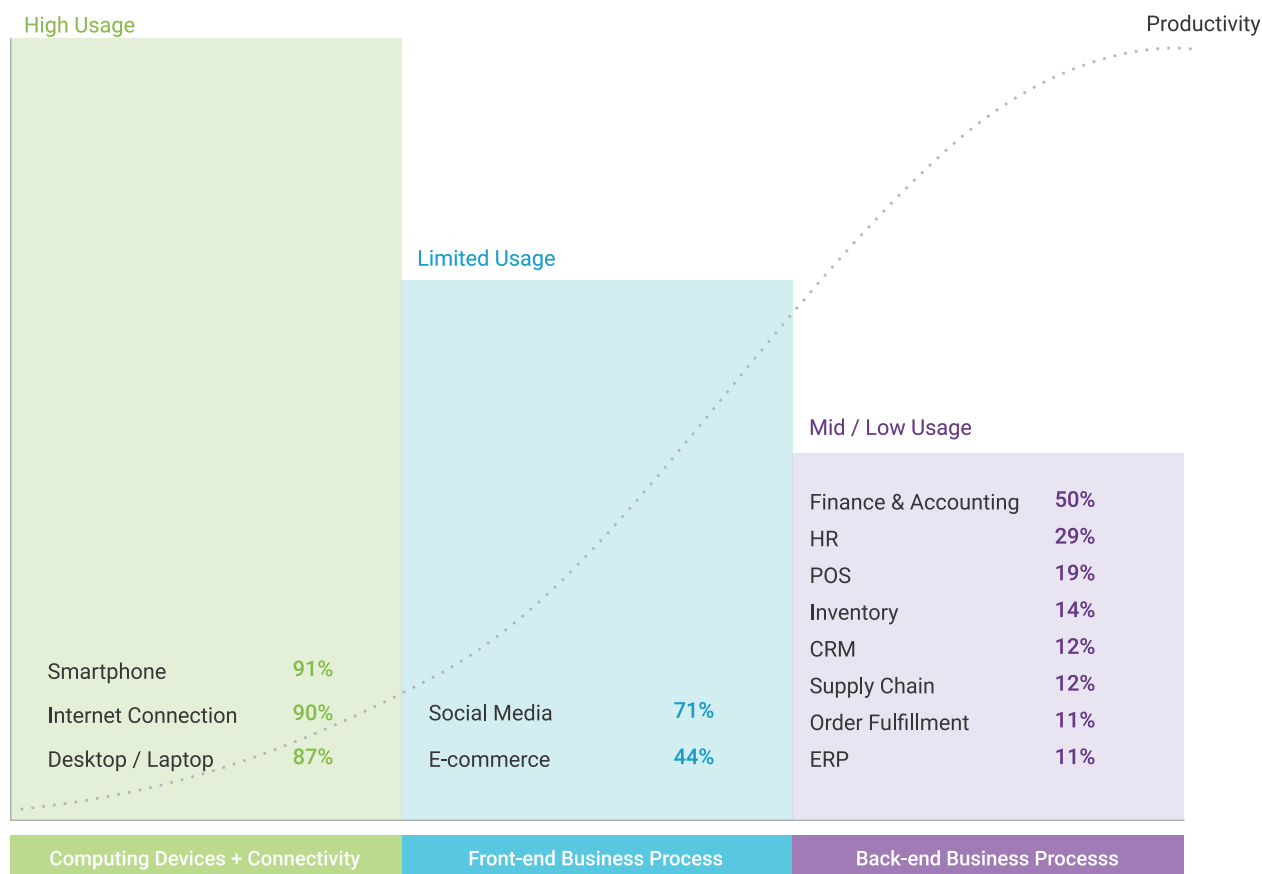


Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

The SME ecosystem reflected positive signs with over half of the SMEs in Malaysia being positive about how ICT can transform their businesses. However, a further deep-dive into SMEs' usage of ICT reveals gaps in terms of business usage and untapped potential. Generally, almost all SMEs in Malaysia have computing capabilities and internet connectivity, in which they use either a smart device or a personal computer such as a desktop or a laptop. To really assess whether SMEs are using ICT to transform their businesses, the

use of computing devices and internet connectivity should extend to their business processes. SMEs often end up getting trapped with limited business usage of these tools and are only using them merely for social media and personal consumption of digital content. For an SME to truly benefit from ICT, they need to start using such tools to drive more businesses through e-commerce as well as driving more productivity through the use of software that improves their business processes.

Figure 6: Malaysia SMEs' Usage of the ICT Tools, Services or Systems



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

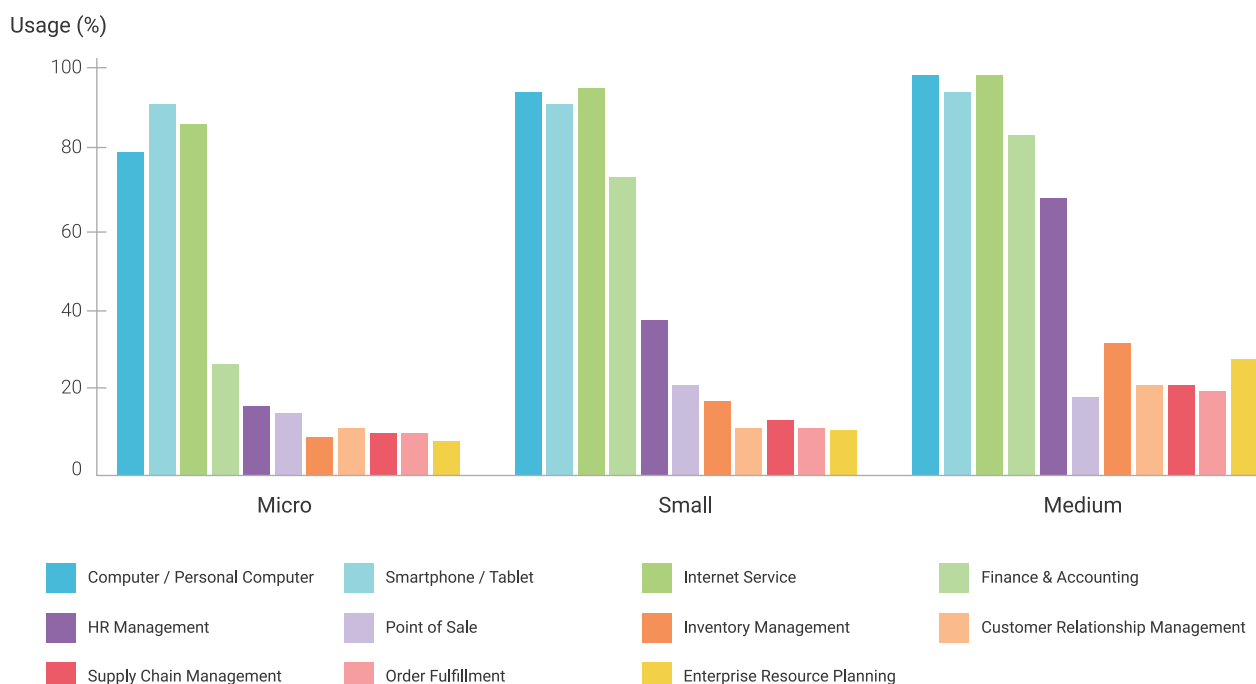
The study explored the usage of other ICT technologies beyond basic computing and the statistics revealed some fundamental gaps - about 71% of SMEs engaged in social media for product communication and marketing, while only 44% involved in e-commerce activities (see Figure 6). Analysing further the use of business applications that have an impact on business productivity (other than Finance and Accounting and Human Resource software), the usage of other administrative solutions impacting business operations drops to less than 20%.

Software process improvement is not a common practice by SMEs. Over the years, efforts by various Government agencies, including SME Corp. Malaysia, have been successful in getting SMEs to adopt computing to modernise their businesses. This can be seen that majority of SMEs utilise computers and internet. However, the low level of process improvement shows that the SMEs are facing a hurdle to move beyond computerisation to digitalisation of their businesses.

Figure 7 shows that medium-sized SMEs are more invested in applications to improve their processes, with over 80% and 67% using Finance or Accounting software and Human Resource software, respectively. However, the percentage of application usage that impacts their operations drops drastically to less than one-third, despite medium-sized SMEs having the financial ability to adopt these solutions.

Small-sized SMEs show an even lower percentage of HR application and an insignificant usage of other applications. Only a quarter or less of micro-sized SMEs are using some form of business applications.

Figure 7: Usage of ICT Tools, Services or Systems by SMEs



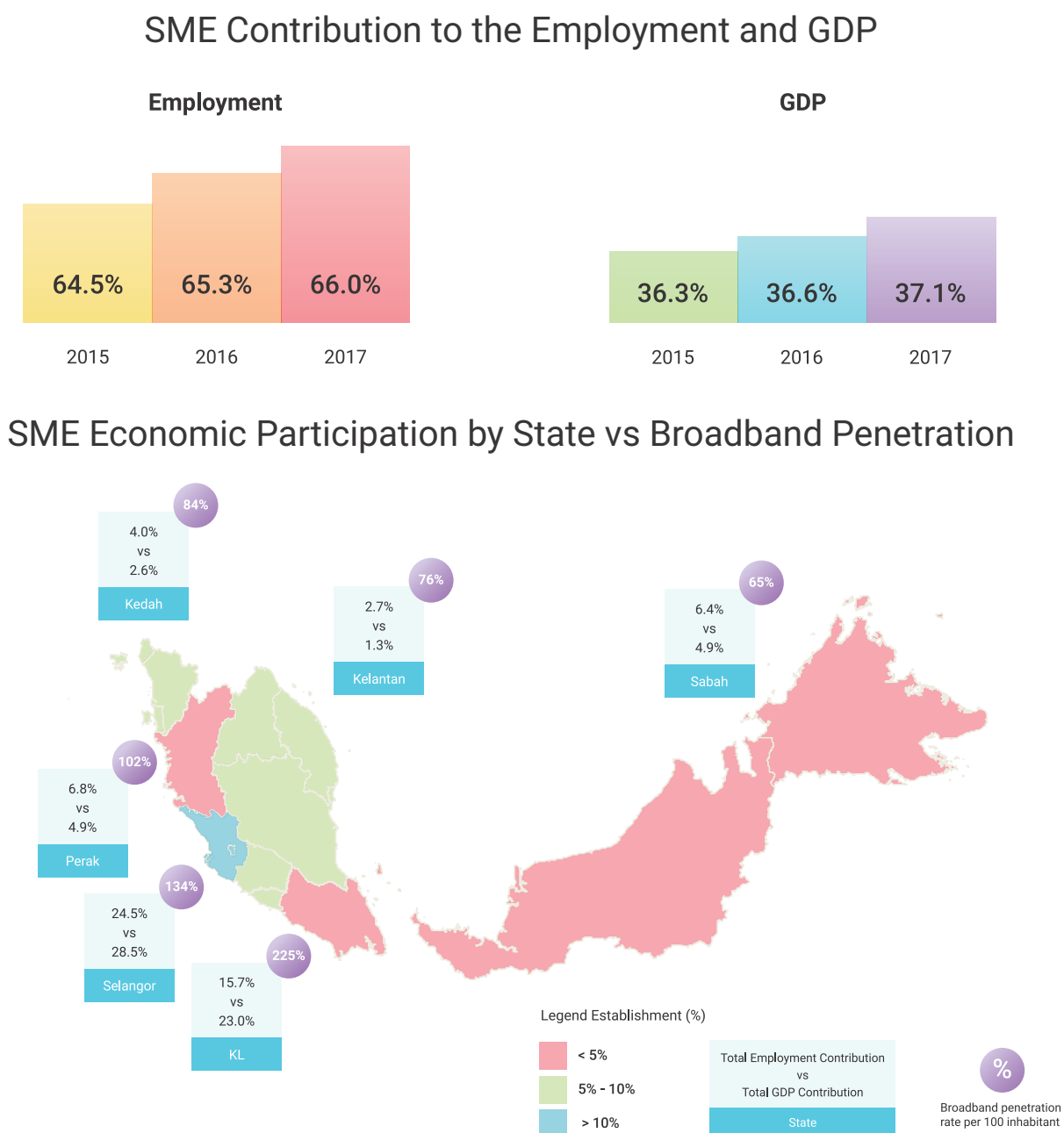
Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

ICT tools will enable SMEs to grow their businesses and improve their productivity. However, if SMEs get stuck at the computerisation stage, the greater and more sustainable benefits from digitalisation cannot be realised. Computerisation allows the SMEs to benefit from administrative productivity. For example, it is easier to communicate, draft or send documents, compile and keep basic records in office productivity tools. While there is a productivity impact, it is limited to just office productivity.

If these SMEs do not leverage the internet for e-commerce, they will lose out on growth opportunities, sales productivity, and wealth creation for themselves and the economy in general. If SMEs do not invest in software that improves their business processes, they miss out on higher productivity gain that comes from their operations beyond the office and on the opportunity to build a new business model.

In 2017, SMEs accounted for 66.0% of the total employment, yet it only contributed 37.1% to the overall GDP. This disproportionate contribution of SMEs to the employment and GDP suggests a challenge around productivity of the workforce being added. Analysing the geographical spread, based on the Economic Census 2016: Profile of SMEs by Department of Statistics Malaysia, it is very clear that area with access to robust and better broadband connectivity have yielded higher productivity, with Kuala Lumpur and Selangor employing 15.7% and 24.5% and contributing to 23.0% and 28.5% of the GDP, respectively (see Figure 8).

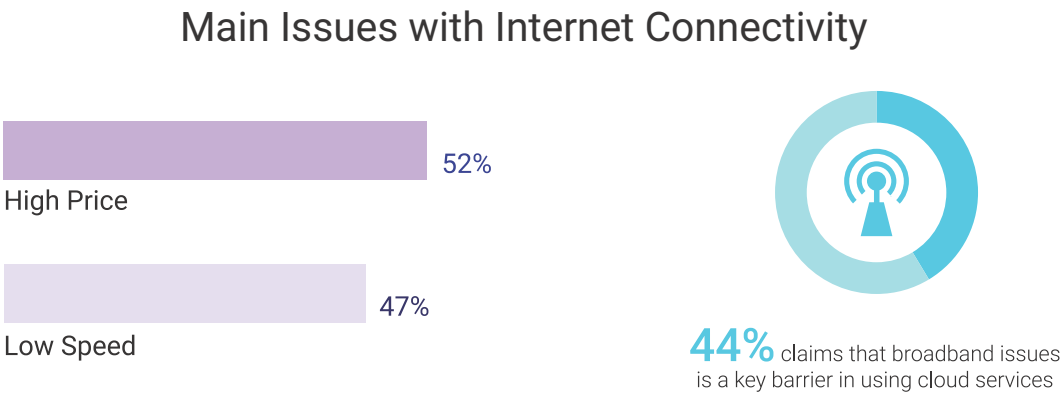
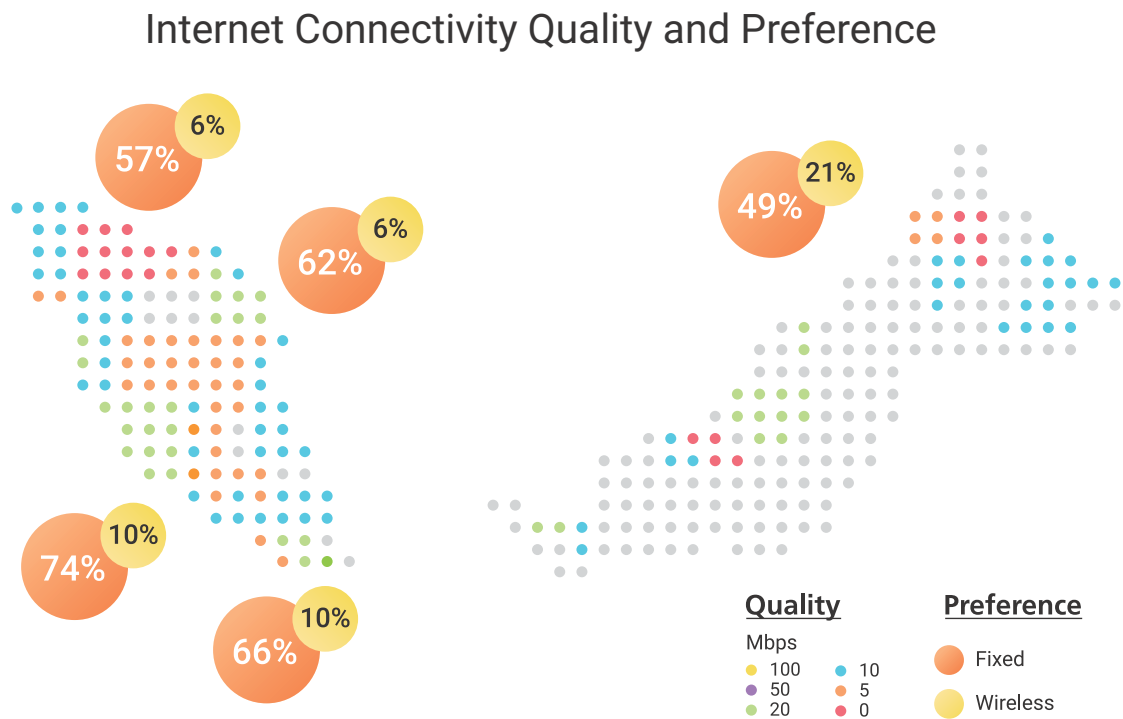
Figure 8: SME Contribution to the Employment and GDP & SME Economic Participation by State vs Broadband Penetration



Source: Economic Census 2016: Profile of SMEs (reference year 2015) by Department of Statistics Malaysia;
Q4 2017 Communications and Multimedia: Pocket Book of Statistics by Malaysian Communications and Multimedia Commission

Broadband infrastructure is critical to support the development of digital solutions and adoption of digital tools for a sustainable ecosystem. However, specific regions in Malaysia are still lagging in broadband coverage. This Study found that SMEs rely heavily on fixed networks and affordability as well as experience are key requirements across the country (see Figure 9). In order to realise SME digitalisation, broadband connectivity needs to be strengthened to drive stronger ICT adoption among SMEs to accelerate their digital transformation.

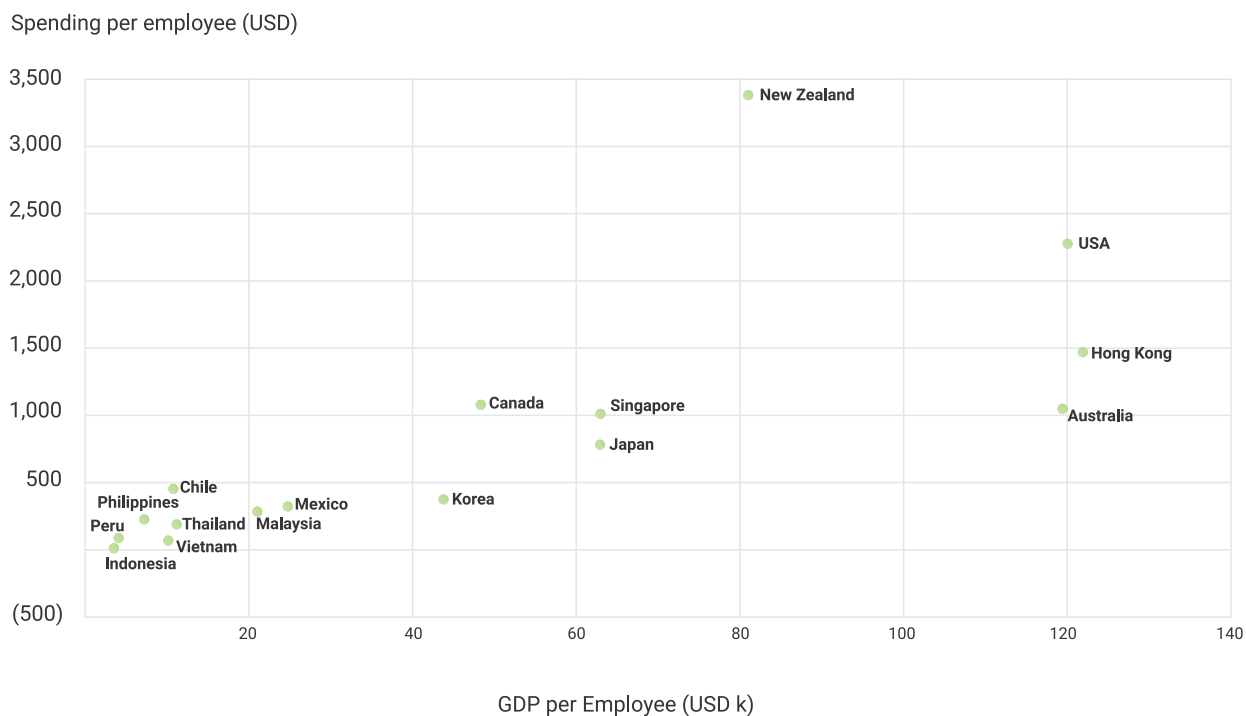
Figure 9: Internet Connectivity in Malaysia



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.; Ookla Speed Test

Figure 10 shows the micro and SME (MSME) productivity and IT spending per employee across several countries. Data estimates from Asia-Pacific Economic Cooperation, United Nations and IDC indicated that the countries with the more productive MSMEs are also countries where the MSMEs spend more on ICT per employee.

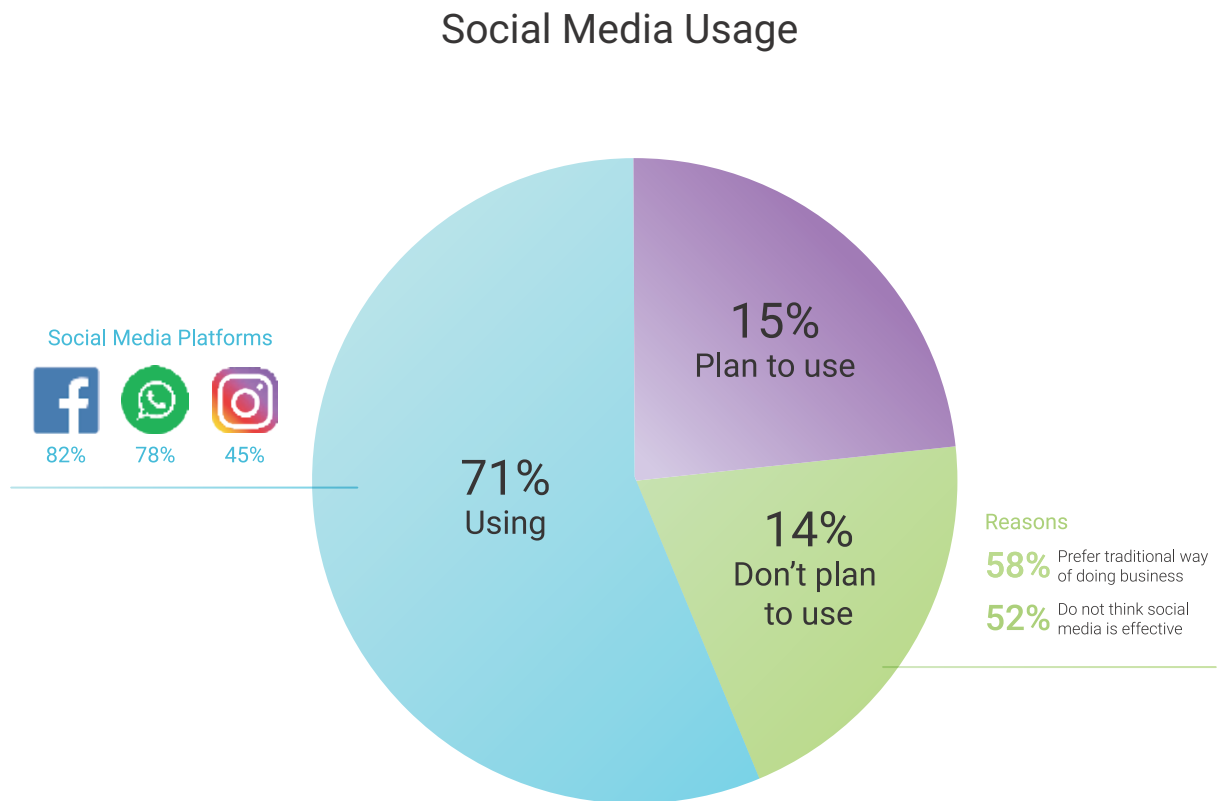
Figure 10: MSME Productivity and IT Spending per Worker



Source: International Data Corporation 2018

It is therefore imperative that SMEs invest in information technologies to enhance their productivity. This can only be achieved if SMEs invest in more advanced digital technologies beyond just computers and network. SMEs in Malaysia are unfortunately caught in a computerisation trap, with just having a computer and internet connectivity alone and not realising that they have stopped short of greater productivity gains and sales growth from investing further. SMEs thus need help to cross the chasm from computerisation to digitalisation.

Figure 11: SME Usage of Social Platforms for Marketing Purpose

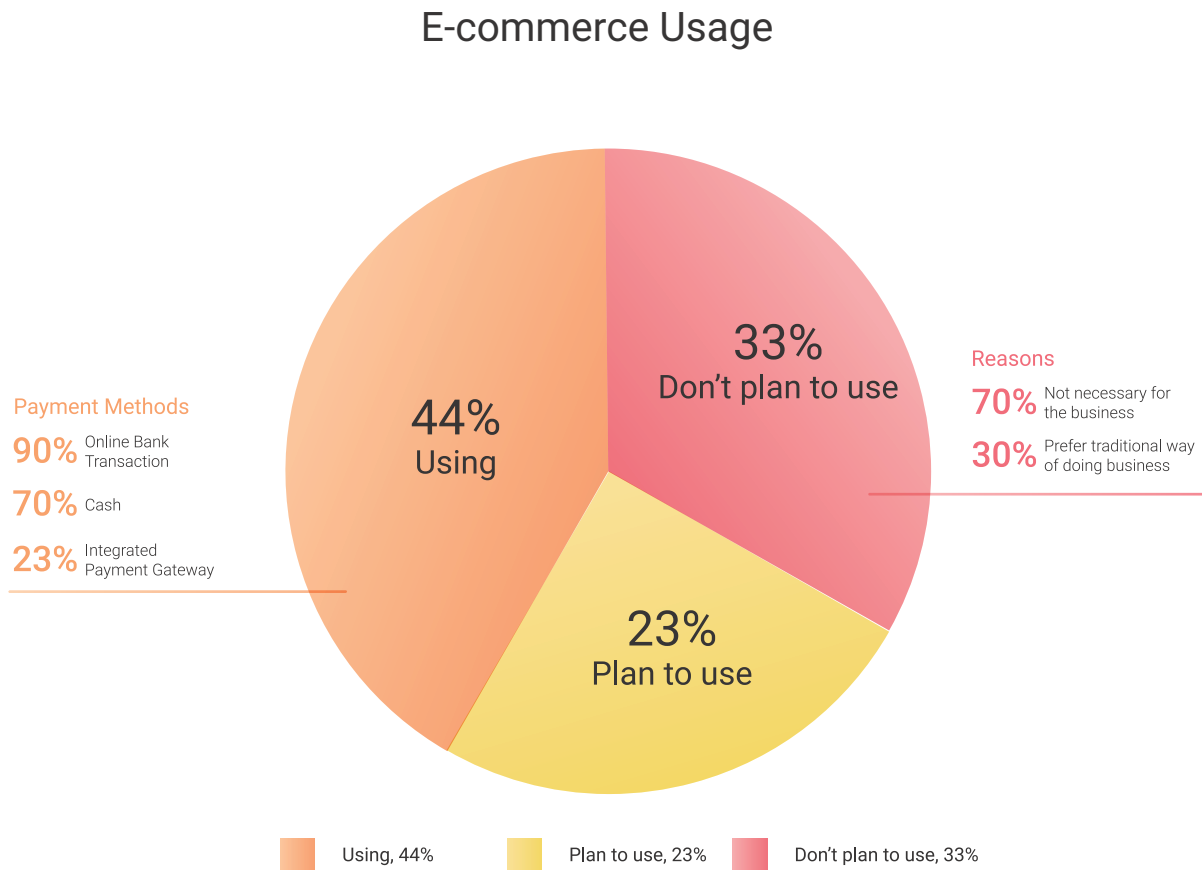


Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

It is evident that currently the use of social media and e-commerce tools is limited to reaching out to customers rather than enabling an end-to-end digital transactional process. As seen in Figure 11, the number of SMEs that use social media for communications and marketing is as high as 71%, with majority of these activities taking place on Facebook and WhatsApp. The effectiveness of their social marketing strategy will depend on how many followers they have and whether they can maintain fresh content regularly to keep their customers interested.

SMEs that do not feel a need to run social media marketing most commonly cited that they do not think it is effective and they prefer the traditional way of doing their marketing. These are mainly the medium-sized companies that are steeped in their old ways and companies from the construction and real estate sectors.

Figure 12: E-commerce Usage of SMEs



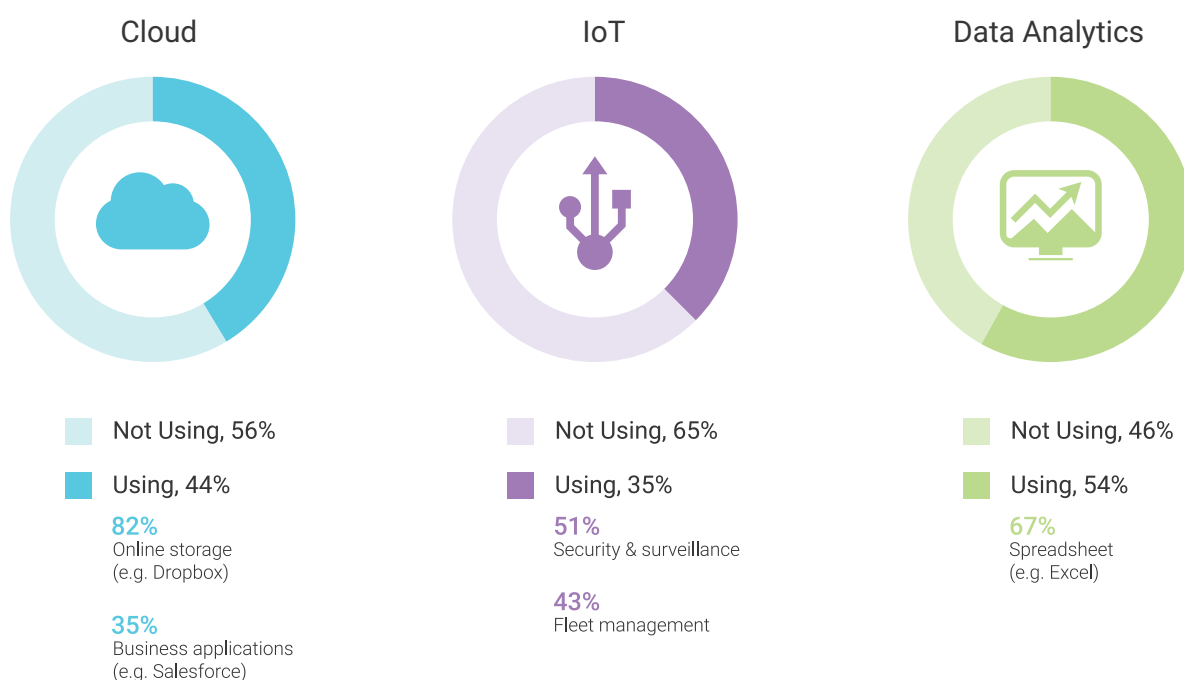
Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

Furthermore, the use of e-commerce is much lower at 44% of SMEs surveyed (see Figure 12). However, even with 44% SMEs reported using e-commerce, the transaction is not an actual e-commerce; they are only using social media to market their products or services and then are diverted offline to complete the transaction. About 90% of SMEs still accept payments through a separate online banking transaction and 70% through cash instead of through an integrated payment gateway. This means the transaction is still manual with physical intervention instead of a seamless e-commerce online transaction. This leads to SMEs maintaining an offline and online business model, which is unproductive. Also, the inventory management is done manually and offline leading to discrete sub-processes, which impacts the overall business transaction and customer experience.

The likely root cause of the one-third of SMEs who do not plan to use e-commerce to grow their business is that they feel that it is not necessary and they prefer the traditional sales channels, instead of having to maintain a 'digital twin' where they duplicate their online and offline sales processes. Maintaining two separate but parallel sales processes increases complexity to the business and impacts productivity, as employees are required to manage the online channel as well as to manually check for inventory, handle payments and fulfil orders through offline channels or the storefront.

In addition, this form of business is not scalable. Although there might be sales growth and some productivity gains from the online channel, much more could be achieved if they transform their business to integrate both offline and online channels with digital tools. This enables the retailer to scale their operations without having to increase their manpower, provide a seamless and satisfactory experience to their customers, reduce errors and delays in sales ordering to fulfilment from manual errors and collect information which they can later analyse to guide their planning and innovation.

Figure 13: Usage of ICT Tools by SMEs



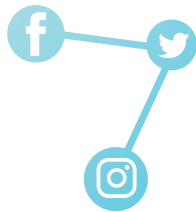
Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

Usage of digitalisation enablers such as cloud, IoT and data analytics are also not common among SMEs in Malaysia. Figure 13 shows 44% of SMEs are using cloud computing but most of them are mainly using cloud storage such as Dropbox to store personal documents, pictures and videos. They have not availed themselves to use cloud software as a service to drive software process improvements. A total of 35% of SMEs have deployed an IoT solution but these are primarily isolated building security and surveillance and fleet tracking solutions, not solutions that could be sold as a service to the market.

Over half of the SMEs said they are using some form of data analytics, but this turned out to be just excel spreadsheets instead of an analytics solution. The SMEs who are not having any data analytics stated that they do not feel data analytics is necessary for their businesses or that they are not familiar with how to collect and analyse data to benefit their businesses.

Further proof that SMEs are computerised but not digitalised is that they are mostly running standalone activities on segregated computers and are not transforming their operations with digital tools. Their activities are either social media marketing and communications or record keeping on office productivity applications. There is still a lot of human intervention and manual processes in between that are not truly productive nor does it enable the SMEs to collect data that is useful for analysis. Scaling the business will still require the hiring of additional staff leading to productivity stagnation. SMEs need to overcome this computerisation trap to transform their business through digitalisation so as to unlock the next level of productivity and unleash growth from new business models, products and services. Thus, SMEs need help to get out of the computerisation trap and cross the chasm to digitalisation.

Productivity Improvement reported by SMEs following Utilisation of Digital Tools



Social Media

+26%



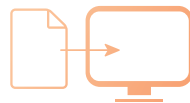
E-commerce

+27%



Data Management

+60%



Computerisation

Transformation



Digitalisation

Statistical analysis performed by the University Consortium of Malaysia involved in this project shows that SMEs using social media and e-commerce are seeing 26% to 27% higher productivity improvements. More importantly, SMEs using data management solutions are reporting a 60% benefit impact on their productivity.

Having data and using data is a critical step to being able to develop new products, identify new markets or transform the business. Without digitalisation, SMEs are not able to have data that connects its clients to its operation, and will be faced with a handicap when trying to decide what to sell next, and to whom and how to sell the products or services. Thus, it is important for SMEs to move from computerisation to digitalisation, as this can enable them to capture data through their value chain, which could benefit their product or service innovation as well as new business model development.



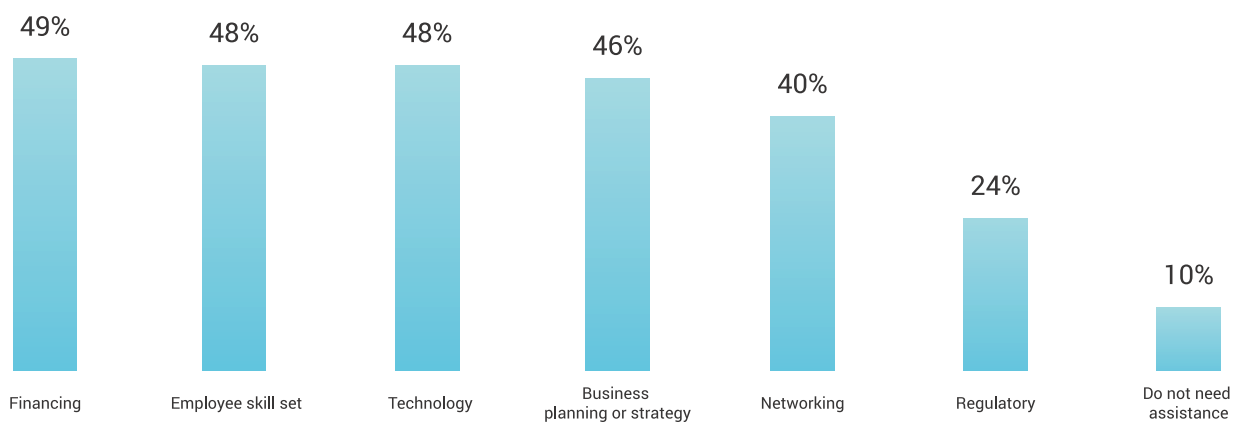
Crossing the Digitalisation Chasm

Technology adoption and innovation address key challenges for digital inclusion and unlocks the potential of each and every element of the ecosystem it transforms. The digitalisation of services and processes are the most important factors for a growing and sustainable SME ecosystem.

What is holding back the SMEs to move from computerisation to digitalisation?

Figure 14 shows the feedback received from the Malaysian SMEs regarding the challenges they faced to cross the chasm to digitalisation of their businesses.

Figure 14: Digitalisation Challenges faced by SMEs



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

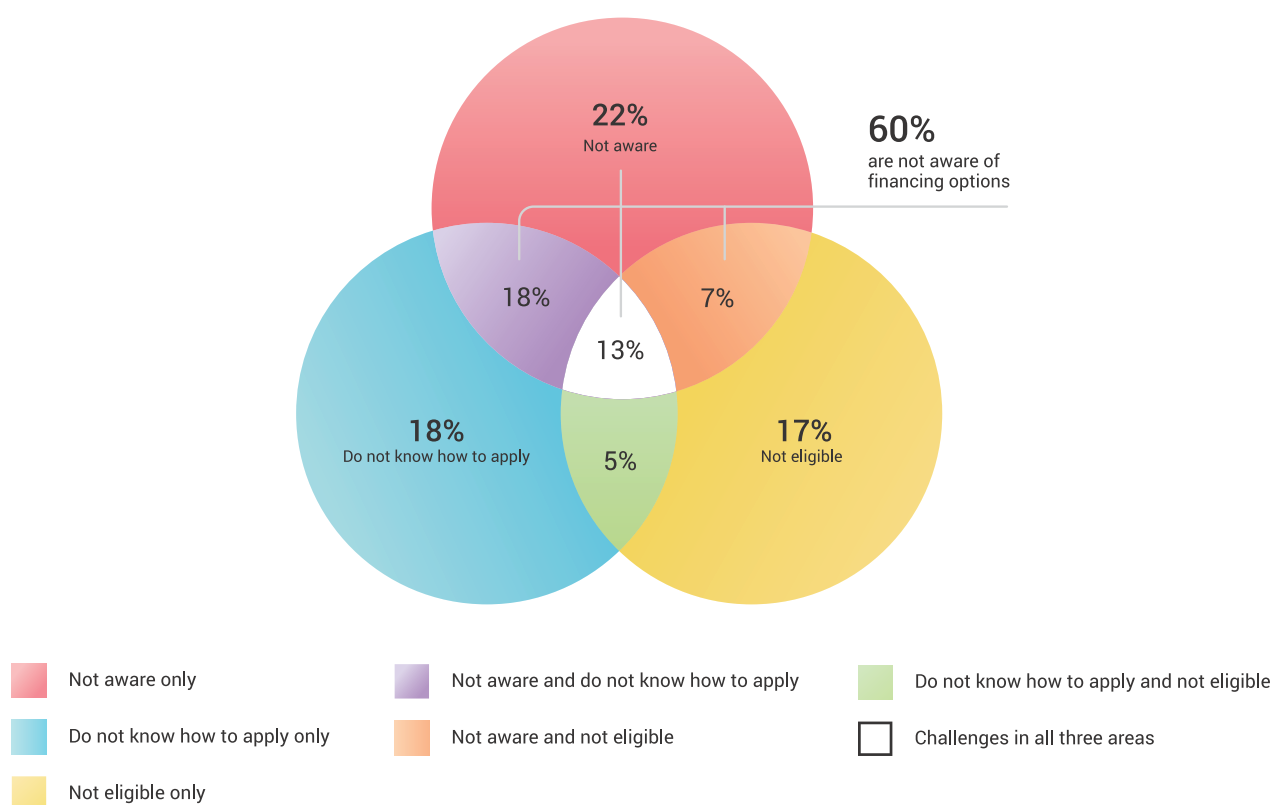
Financing

SMEs need to be made aware of the funding options available as well as the affordability of cloud computing.

Financing or funding is the top challenge faced by SMEs in Malaysia that affects its ability to digitalise. About half of the SMEs mentioned that this is their key hindrance, and 60% of these SMEs said that they are not aware of the financing options (see Figure 15). In addition, many SMEs also think that ICT is expensive. For example, 34% of the SMEs have the misconception that cloud

computing is expensive. There is a need to educate and inform the SMEs that there are funding options available for them to drive their digitalisation as well as make them aware that cloud computing has made more affordable business improvement applications, data storage and analytics.

Figure 15: SMEs' Challenges with Financing



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

Employee Skill Set

SMEs need to develop business and digital skill set to develop their digital business strategy.

Skilled digital talent is an essential component to enable digital revolution. The digitalisation of SMEs comes with a lot of challenges to many countries in terms of having the right skill set not just in the ICT sector but also across other sectors such as manufacturing, services, construction and agriculture. Slow adoption of digital technologies is the result of widening digital skills gap between the three different groups of SMEs, namely ICT Leaders, ICT Followers and ICT Laggards.

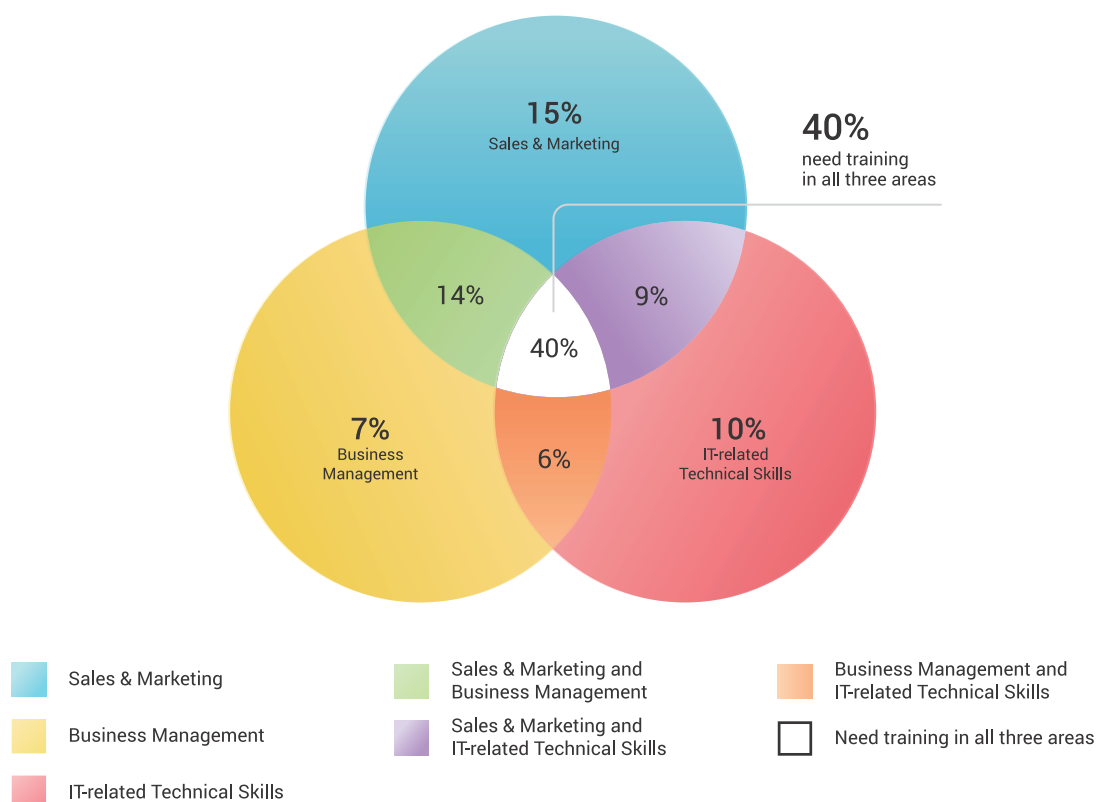
Many countries are putting substantial effort in the development of their ICT sector and being able to create a pool of qualified digital talent groups with the right competencies and skill set for the economy.

According to a recent study conducted by IDC regarding the future skill set of SME, employer or employee will not only need to master ICT skills alone, but also to balance them with interpersonal, problem solving and critical thinking skills, in order to navigate through an increasingly digitalised and automated world. Employees need to specialise and qualify themselves in order to get a spot in the local competitive labour market. As future trends indicate, demand from employer expectations will be higher especially in the ICT sector.

Neither only technical nor only business skills are enough. The actual market demands that employees mix both digital skills and business and technical knowledge.

About 48% of SMEs cited not having the right employee skill set is a major challenge for them. The top three skill set that SMEs said they need help developing is sales and marketing, business management and IT technical skills (see Figure 16). Digitalisation of SMEs is not just implementing a computer system to run a standalone process, it requires a rethink and redesign of the business processes, which includes management, operations, sales and marketing processes based on what ICT can enable. SMEs need help to develop the management and IT skill set that will help a retailer integrate its online and offline sales, that helps an F&B establishment transform its ordering to delivery, and resupply of its food services. It is not merely about installing a computer to handle cash payments. It goes beyond just setting up an IT department and hiring IT staff. The skill set that SMEs need help developing for digitalisation includes the use of digital tools for business that spans across sales, marketing, production, planning, finance, operations to IT.

Figure 16: Capacity Building Assistance Required by SMEs



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

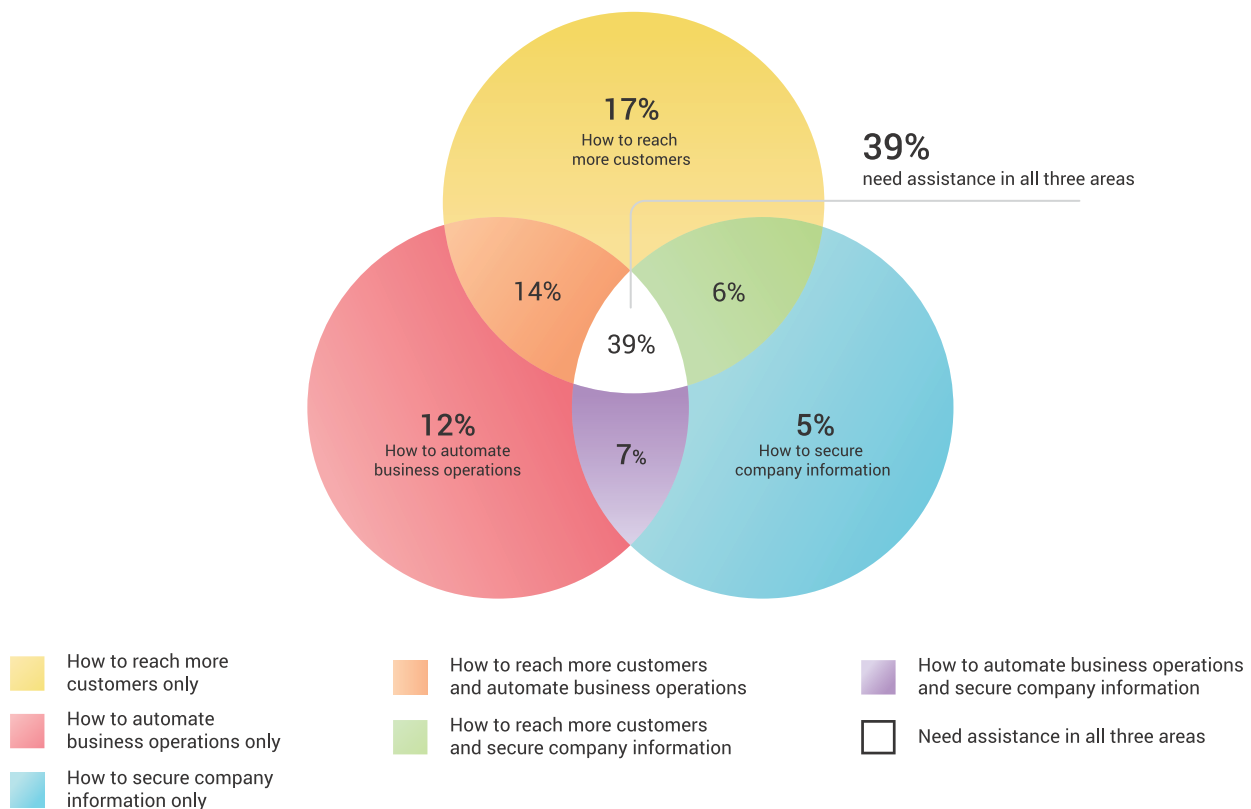
Technology

A. SMEs need to be educated about digitalisation and guided on how to leverage technology to transform their businesses.

SMEs in this Study responded that they need help on how to use digital technologies to reach more customers, automate their business operations and secure their company information (see Figure 17). Having the right business strategy are among the top three challenge of an SME with 46% of them citing this as a major challenge. As indicated earlier, there are SMEs who are also unsure of how social media marketing and e-commerce could benefit their company. Moreover, many of these SMEs are also not aware that cloud, IoT and data analytics could help transform their businesses. To illustrate, of those who are aware of cloud computing services, 42% of them do not know how to leverage cloud computing to transform their businesses. This clearly shows that SMEs need guidance and training on what digitalisation is and its

benefits, and to get them to move beyond just computerisation. They need to develop a digital mindset that looks at their business strategy based on what digital can enable, and not think of ICT as just an administrative or productivity tool. It is about the transformation of their business model, business processes and go-to-market strategy by digital technologies. They also need support on how to use digital tools, such as cloud-based software as a service, data analytics and IoT, to transform their business model, innovate new products and services. In the digitalisation of their businesses, many SMEs will need help from external consultants or transformation experts, or create an internal digital transformation unit to overhaul their businesses as it involves both ICT and business process change.

Figure 17: Technology Assistance Required by SMEs



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.

B. Improving broadband connectivity and affordability will enhance SME adoption of digital technologies.

Technology adoption and innovation address key challenges for digital inclusion and unlock the potential of each and every element of the ecosystem it transforms. The digitalisation of services and processes are the most important factors for a growing and sustainable SME ecosystem.

To ensure the accelerated adoption and usage of digital environment, three key strategic aspects need to be prioritised to drive the desired SME digitalisation:

- Having access to digital technology (including affordability and experience);
- Having the literacy and know-how to use the technology; and
- Being able to participate in and create the necessary digital environment with available technology.

Although 90% of SMEs have an internet connection, over half of them informed that the connectivity is too slow and expensive. A separate study by Huawei to assess the quality of internet speed throughout Malaysia by region showed that majority of the regions have an average connectivity of about 10Mbps or lower. This is below the goals of the 11th Malaysia Plan that aims to provide 100% of urban areas with 100Mbps speed and 50% of rural areas with 30Mbps speed. The slow speed and high price are affecting SMEs' willingness to adopt digital technologies such as cloud computing to transform their businesses. In this Study, 44% of SMEs indicated that poor broadband service is the main issue of not using cloud services, such as business applications in the cloud, data storage and cloud data analytics. Broadband quality and affordability, as well as access to affordable technology will be key fixes to help SMEs cross over from computerisation to digitalisation.

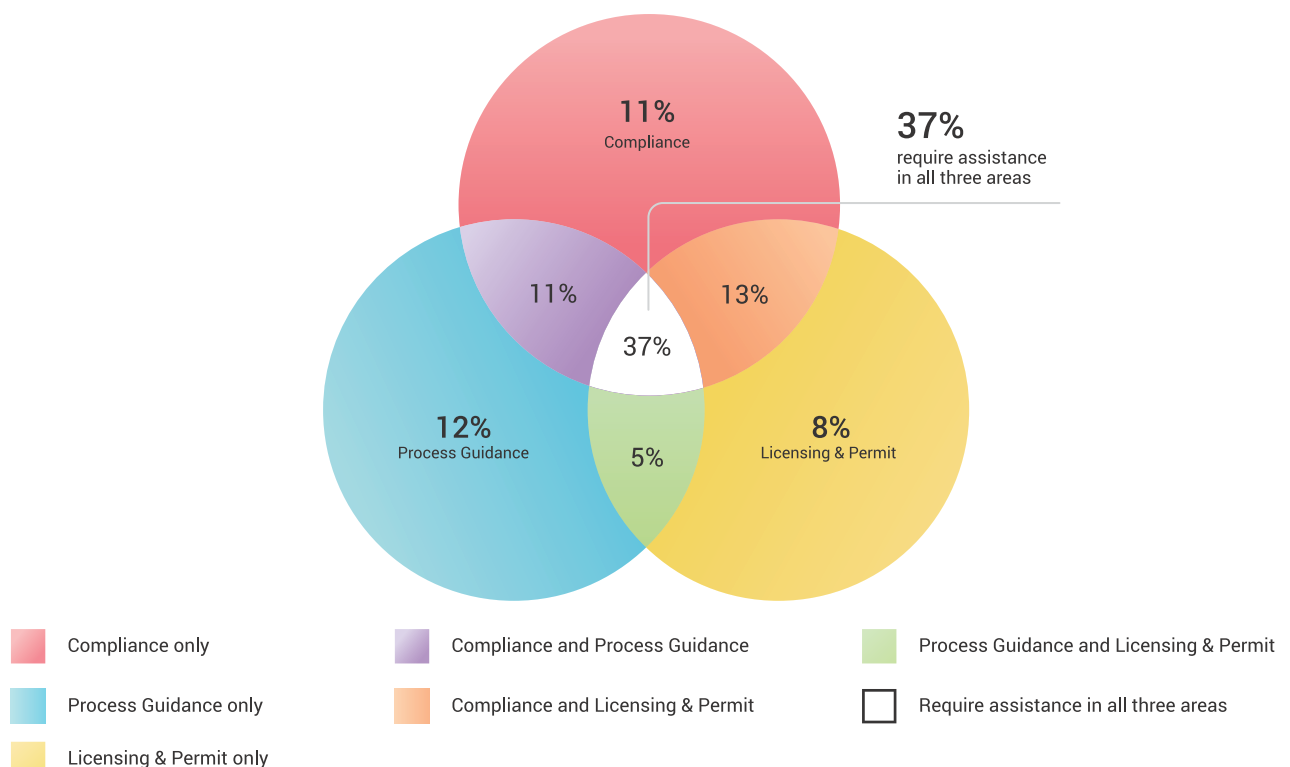
Regulatory

SMEs need help to meet regulatory requirements, many of which can be facilitated by digital technologies.

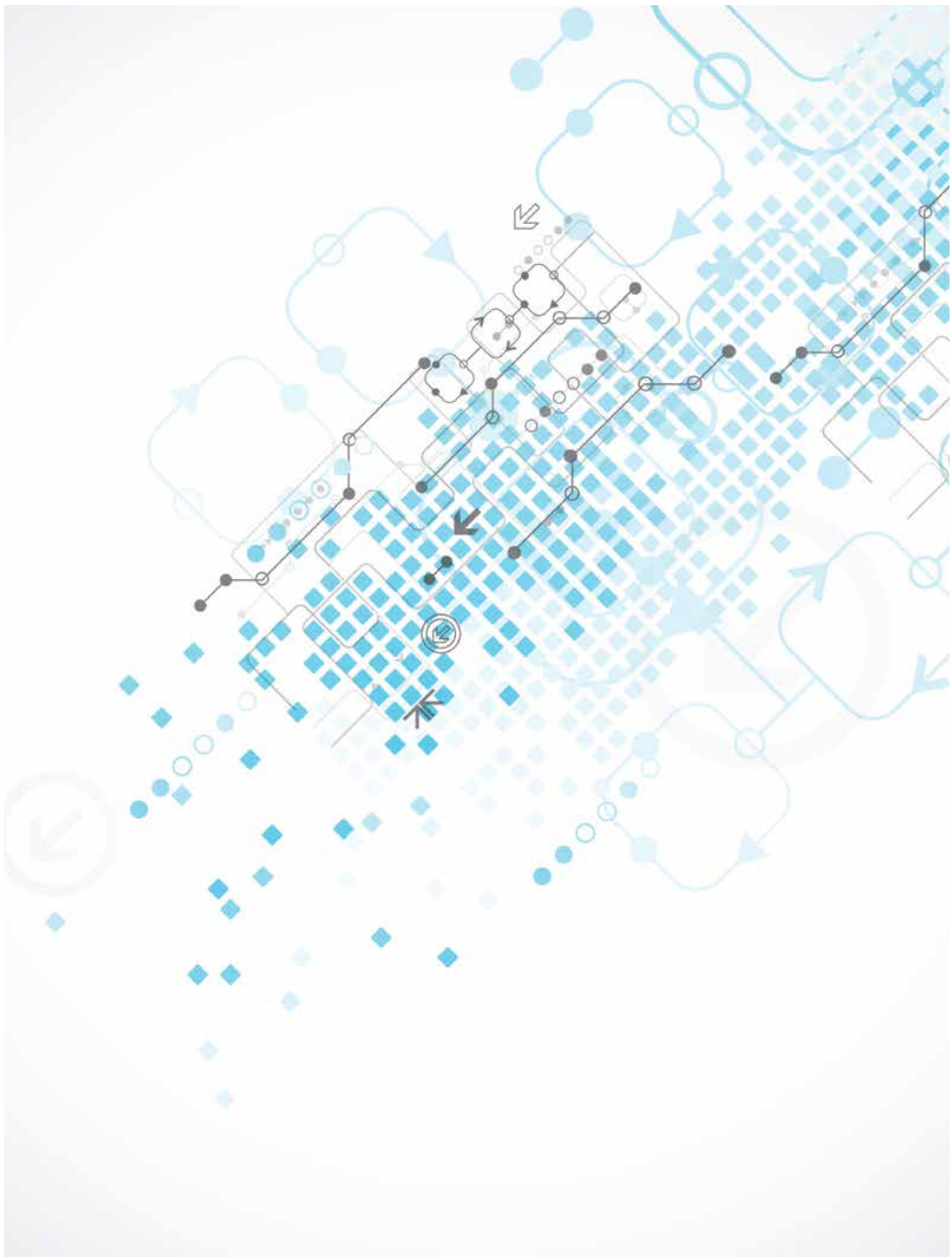
Over one-third of SMEs said that they need help with meeting regulatory obligations such as regulatory compliance related to their field, process guidance for their operations and meeting licensing and permit regulations (see Figure 18). These regulatory requirements often come from multiple agencies and takes time and resources to manage and comply. Considerable time and resources need to be spent by SMEs to monitor their suppliers,

staff and operations, to report their compliance performance as well as to show proof for licensing and permit applications. With digitalisation, many of these steps and processes could be automated and compliance submission and reporting could be simplified through the e-government portals. There is also a need to provide the SMEs with a one-stop platform that coordinates all their regulatory and compliance requirements.

Figure 18: Regulatory Assistance Required by SMEs



Source: Malaysia Digital SME Study 2018, SME Corp. Malaysia & Huawei Technologies (M) Sdn. Bhd.



Awareness and Participation in SME Programmes

There have been several ongoing SME programmes and initiatives to help SMEs to be more competitive and increase their participation in the digital and traditional economy. These programmes were run by SME Corp. Malaysia, Malaysia Digital Economy Corporation (MDEC) and many other Government agencies. However, only about 51% of the SMEs being surveyed are aware of these programmes and out of these only about half of them have participated in at least one of the programmes.

Awareness and Participation in SME Programmes

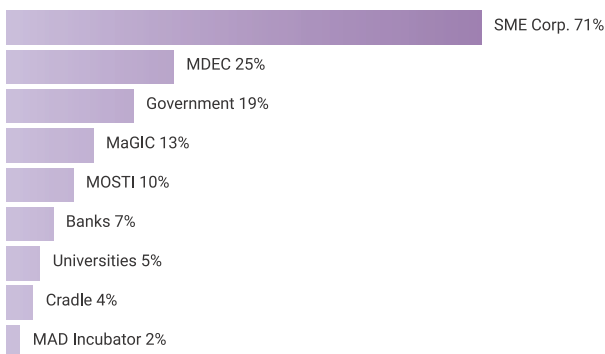
Awareness
(N=2,033)



Participation
(N=1,036)



Organisers
(N=535)



Reasons for not Participating in SME Assistance Programmes

Do not have information on the programmes	46%
Time of the programme not suitable	33%
Events are held in another city/state	19%
Insufficient funds to attend	16%
Does not cover my business area	15%
Not required for my business	14%
Lack of required digital infrastructure	13%
Only covers large scale enterprises	10%

SMEs are not participating in these programmes due to insufficient information on their objectives and benefits as well as the inconvenient timing and location. Therefore, a one-stop platform that connects SMEs with various Government agencies, programmes and initiatives will be beneficial to help increase the efficiency and effectiveness of disseminating awareness of these programmes to the SMEs in Malaysia. Moreover, these programmes could be run digitally through this one-stop platform to reach more SMEs in rural areas in the future.

SME Digitalisation Challenges

The digitalisation challenges faced by SMEs can be summarised in the following diagram.



Financing

SMEs, especially the microenterprises, are unable to afford the transformation journey while the larger ones may be unsure of the return on their investment. Financing support is needed to help them to mitigate the risk as well as lower the barrier to transformation.



Employee Skill

Lack of employee skill set and knowledge to drive transformation of their businesses into a digital SME versus just installing stand alone computers. SMEs lack the knowledge of what it means to drive digitalisation and the skill to make it happens.



Technology

Technology is the second most frequently cited support need. As can be seen from the earlier chapters, a large percentage of SMEs are not aware of the digitalisation tools or how to leverage the tools to drive their business transformation. SMEs informed us that while the majority of them have an internet connection, the high price and low speed connection is a hurdle for their digitalisation. The lack of reliable broadband access causes SMEs to still stick with their manual processes.



Business Strategy

Difficulty in developing a digital business strategy with technology and unable to get across to or afford digital technologies such as cloud, analytics or software to innovate and transform their business.



Regulatory

SMEs are unfamiliar with regulatory specifically on compliance, process guidance and licensing and permit.

Success Stories of Malaysian SMEs

Siti Khadijah

From a Housewife to Malaysia's Most Successful Woman Entrepreneur



Siti Khadijah, a leading prayer outfit brand in Malaysia was founded by Pn. Padzilah Enda Sulaiman and her husband, Ir Aminuddin Mohd Nasir. At that time, Pn. Padzilah was a full-time housewife and never had any business background. Started with a sewing machine at home in 2009, Pn. Padzilah created telekung that is comfortable and affordable, but her business was hindered by fierce competition from counterfeit products as well as poor quality products that are sold at a cheaper price range. Nevertheless, Pn. Padzilah persisted to discover different ways to sew telekung to add variety to her product offerings and tried to sell her products online in order to reach more people. Her business slowly ramped up and subsequently it became the success it is now.

The real breakthrough came when Siti Khadijah explored the use of e-commerce to expand its market reach. Apart from its own official websites (www.sitikhadijah.com, www.sitikhadijah.co.id and www.sitikhadijah.co.uk), the company also sells on online platforms such as Lazada and Fashion Valet. More importantly, Siti Khadijah's online store is fully integrated with back-end accounting and inventory system, which enables two-way flow of information; inventory levels are automatically updated across all channels and systems once the product is sold on an e-commerce website.

In addition, Siti Khadijah is active in promoting its brand and products on social media such as Facebook and Instagram. Being the first telekung producer to embrace digital technology, Pn. Padzilah is regularly featured in events, media and articles that seek to inspire digital transformation in local companies.

Awards and Achievements

- Finalist of Malaysia's Top E-commerce Awards 2018 by Invest Selangor
- Malaysian Superbrands 2018
- Brand Leadership Award 2018 by Brand Laureate
- Best Brand in Retail Muslimah Fashion 2018 by Brand Laureate
- Winner of Premier Award, Bank Islam-Utusan Shariah SME Award 2017
- Winner of Digital Marketing Award, Bank Islam-Utusan Shariah SME Award 2017
- Finalist in National Innovation Award 2016
- First Women Entrepreneur Award 2016 by SME Corp. Malaysia
- Enterprise 50 (E50) Award 2016 by SME Corp. Malaysia
- Four-star score rating under SME Competitiveness Rating for Enhancement (SCORE), SME Corp. Malaysia

Photobook

Made in Malaysia, Loved by the World



Photobook was established in 2005 in the living room of its founder, Mr. Mark Koay. It started as a 5-person team with a capital of RM1 million and has now transformed into a global leader in the photo-creation industry that bears its name, Photobook, with books successfully shipped to customers in over 100 countries. In financial year ending 30 June 2018, it has achieved USD20 million (RM80 million) in revenue and an estimated valuation of more than USD150 million.

Photobook allows users to personalise and create photobooks, home decors, photo gifts and stationaries according to their own

preferences easily on the web or on an application. Users have a wide range of designs, materials and add-ons to choose from on the website.

Southeast Asia is the main target segment for Photobook, with Malaysia being the largest market. Nevertheless, Photobook encounters challenges to expand its brand presence especially in Thailand, Indonesia and Vietnam due to language and logistics barriers. To overcome these challenges, the company is looking to form strategic partnerships and establish local offices in these respective markets.

Impact of Technology Adoption

Photobook has achieved phenomenal success by expanding into the global market aided by social media, mobile application and its own e-commerce platform.



Excellent Reach

There were more than **1.4 million** downloads on the Photobook's mobile application. It has over **350,000** followers on Facebook and are active on Instagram, Google, Twitter and Pinterest.

Platform diversity between iOS and Android leads Photobook to project **2 million** mobile application downloads by the end of 2018.



Growing Sales

It has printed over **4 million** orders and is expected to grow between **30% - 50%** annually.

Photobook is projected to record revenue of **US\$89 million** for fiscal year-end 30 June 2023 (compounded annual growth of **35%** from fiscal year-end 30 June 2018) with annual orders of more than **4.5 million** (1.3 million orders in fiscal year-end 30 June 2018).

In order to accelerate growth and expand into the global market, Photobook adopted a broad digital strategy that includes:

E-commerce Expansion

Photobook has expanded its services on multiple online channels on top of its website and mobile application. Photobook works with various marketplace players such as Lazada, Shopee, 11street, and Fave. Additionally, Photobook also works with various coupon aggregators such as Shopback, CupoNation, RetailMeNot.

Digital Marketing

Photobook employs various marketing strategies such as paid digital advertisement, onsite promotional activities, CRM marketing and multiple e-commerce platforms.

Cloud

Photobook uses cloud services for all workloads that involve end-user interaction, and a hybrid cloud architecture for its manufacturing systems. For example, it utilises a self-built cloud-based orchestration system that processes order data near real time into its financial, marketing, and manufacturing systems, as well as marshaling status related call-backs in the opposite direction.

Data Analytics

Data analytics is Photobook's key to understanding its customers (both existing and potentially customers). Photobook utilises various analytical tools to assist in decision making.

IoT

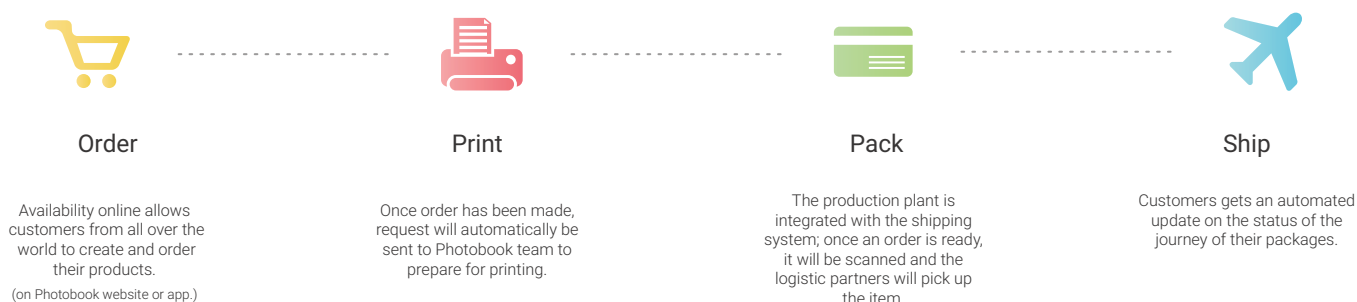
The company is experimenting with IoT to improve computer-human interaction, potentially leading to more efficient quality control and higher productivity.

Other Technologies

By working with potential technology partners, Photobook is looking to improve image enhancement using smart systems and utilising image recognition to build more advanced features to assist users in configuring and editing their orders

Automation

Integration between its production plant, shipping system and sales management system allows its logistics partners to make decision based on the production status. Customers are also kept in the loop on their orders.





INITIATIVES FROM OTHER COUNTRIES

Singapore Case Study

Czech Republic Case Study

Thailand Case Study

Spain Case Study

Initiatives from other Countries

Malaysian SMEs are not the only ones facing the digitalisation chasm. In this chapter, we will consider what other countries are doing to help their SMEs escape the computerisation trap and cross the digitalisation chasm.

Singapore Case Study

The Singapore Government has recognised the important role that SMEs play in the country's economy, employment and innovation. In Singapore Budget 2017, it was reported that the SMEs make up 99% of firms, employ two-third of the workforce and contribute to half of the Singapore GDP. However, the SMEs faced considerable challenges to remain competitive. About 70% of SMEs said manpower cost and 35% said cashflow were their main concerns. The SMEs are also concerned about being able to expand overseas and get access to good talents and technology to compete.

As a result, the Singapore Government has dedicated much of its Government budget to help SMEs use digital technology, embrace innovation, scale up and scale out to go overseas. These initiatives are run by various agencies such as the Info-communications Media Development Authority (IMDA), Enterprise Singapore, National Framework for Innovation and Enterprise, National Research Foundation (NRF), Singapore National Employers Federation (SNEF), Skillsfuture and various other agencies.

Infrastructure and technology initiatives to help SMEs transform

- Building a next generation nationwide broadband network that is at least 1Gbps or more to connect all homes, shops, offices, public areas and institutions to facilitate the delivery of next generation services.
- Build a Smart Nation Sensor platform that makes it easier and cheaper for Government agencies, enterprises and SMEs to connect their IoT sensors and devices to this nationwide smart network to provide new digital services.
- Launch 23 Industry Transformation Maps to guide SME in developing their ICT roadmap and investments to transform their businesses.

Subsidies and rebates to help SMEs go digital

- Productivity and innovation credit scheme that provides up to 400% tax deduction for ICT expenditure, R&D and ICT training costs.
- Tax exemption for new startup companies up to 50% of SGD2 million of income.
- Tax deduction up to SGD150 thousand a year for business travel, overseas study trips and trade fairs to support SME overseas expansion.
- Up to 250% tax deduction for IP registration and R&D expenses.

Funding to support SME transformation and innovation

- Accelerator programme with funding up to SGD50 thousand each to build 500 Singapore-based startups over the next 5 years. The NRF and VCs come together to provide early stage venture fund to seed fund early stage high-tech SME startups.
- SEEDS Capital to fund up to SGD4 million to help SMEs commercialise and expand their technology products overseas.
- SME Working Capital Loan where the Government co-share 50% of the risk of loans to SMEs up to SGD300 thousand per SME.
- About SGD2.4 billion set aside for National Research Fund and National Productivity Fund to support SMEs R&D and productivity efforts.
- Enterprise Singapore offering up to 70% funding support for activities such as product development and innovation, as well as internationalisation.

Innovation lab and other support for SME new product development

- SMEs Go Digital Programme to help SMEs build digital capabilities. SMEs will get technology advice at each stage of their growth through the sectoral Industry Digital Plans. SMEs will also get in-person help at SME Centres and a new SME Technology Hub run by IMDA. SMEs that are ready to pilot emerging ICT solutions can also receive advice and funding support of more than SGD80 million.
- A* STAR research agency will provide SMEs with access to advance machine tools for prototyping and testing which may require costly specialised equipment under its Tech Access initiative.
- Innoleap programme to bring Government agencies and commercial companies including SMEs to join workshops and consultation for identifying industry pain points and developing digital solutions to solve the pain points.
- A* STAR Headstart Programme to allow SMEs to co-develop new products with A*STAR research agency and to enjoy royalty-free and exclusive licenses to develop and sell the technology products for 18 months.
- Open Innovation programme is a crowdsourcing platform that aims to match digital needs of businesses to solutions being provided by local ICT firms and SMEs.

Marketing and globalisation support for SMEs

- Enterprise Singapore offers up to 70% funding support for activities such as product development and innovation as well as internationalisation.
- International Partnership Fund of SGD600 million to help SMEs scale-up and go international including funding their overseas acquisition.
- IMDA accreditation programme to provide technology SMEs in Singapore with the proper references and guarantees so that they can bid for large projects overseas.
- Strategic Partners Programme to help SMEs get access to global technology partners to improve their technology capabilities or scale up their operations.

Technology skills development for SMEs

- Digital-maker programme to encourage individuals and SMEs to take up software development to develop more digital products.
- Skillsfuture for Digital Workplace provides funding to non-ICT individuals and employers with digital skills training. TechSkills Accelerator to support ICT professionals to acquire new digital skills.
- SNEF Digital initiative to provide masterclasses and workplace transformation programmes to support SME skills transformation.
- AI Singapore to support the training of data analytics and AI development capabilities.

Initial results show that the investment in technology to improve productivity have halved the number of SMEs that were facing difficulty finding skilled manpower from 50% of SMEs to 25% in 2017. This easing of the manpower crunch has enabled SMEs to focus more on driving revenue growth, shifting their mindset away from only back office productivity gains. The SMEs' focus, looking ahead, is on improving customer services, increasing marketing and promotional efforts, enhancing and introducing new products and services and expanding overseas. The biggest benefit from technology is increased revenue growth through applications such as e-commerce platforms,

data-mining of customers and enhanced sales functions. In 2017, about 60% of SMEs said they are getting revenue gains from technology compared to 48% in 2015. Looking forward to the future, the Singapore Government has started to develop plans for a next-generation nationwide broadband network that is at least 1Gbps to connect all homes, shops, offices, public areas and institutions to facilitate the delivery of next generation services and to build a Smart Nation Sensor platform that makes it easier and cheaper for Government agencies, enterprises and SMEs to connect their IoT sensors and devices.

Czech Republic Case Study

Czech Republic consists of 1 million SMEs (as of 2014), which contributes to 67% of total workforce and 55% of total value-added. In 2016, value-added and employment grew 3.4% and 1% year-on-year, respectively. While the growth of value-added is forecasted to continue to increase by 9% from 2016-2018, the growth in employment is however expected to remain flat. The SME development in Czech Republic is hampered by insufficient collateral for obtaining capital or loan, limited access to information on new technology and lack of innovation. The Ministry of Industry and Trade has introduced the Operational Programme Enterprise and Innovation (OPEI) to put in place initiatives to improve the SME environment in Czech Republic.



Operational Programme Enterprise and Innovation (OPEI)

Managed by the Ministry of Industry and Trade with financial support from the European Regional Development Fund (ERDF)

Financing

- Priority is given to new businesses (first time entrepreneurs) and SMEs with innovative potentials (e.g. technical innovations such as innovation in products and processes, non-technical innovation such as organisational or marketing innovation).
- Financing programmes specifically for start-ups and those in seed and development phases (<5 years), as these businesses often require large investment in equipment but are deemed too risky for regular banking products and at the same time venture capitals are limited in the country.
- Subsidy for high cost of patent, trademark and industrial property rights (IPR) protection to encourage innovative development.

Business Infrastructure

- Enhancement of existing industrial parks and conversion of brownfields to ensure sufficient supply of quality commercial real estate with suitable environment for SMEs.
- Consulting services on how to set up and run a business, how to innovate and increase competitiveness. In addition, these services will help to identify strength and weaknesses of management and performance and also suggest solutions to their issues.
- Assistance on analyses and study of global trends are also available to help the development of foreign trade.

Talent Development

- Improvement of education and skill development condition by acquiring or modernising training facilities and training aids or programmes (by Ministry of Labour and Social Affairs) for SME employees and employers.
- Training programmes include: introduction to new technologies, development of managerial skills, improvement of foreign language skills, etc.

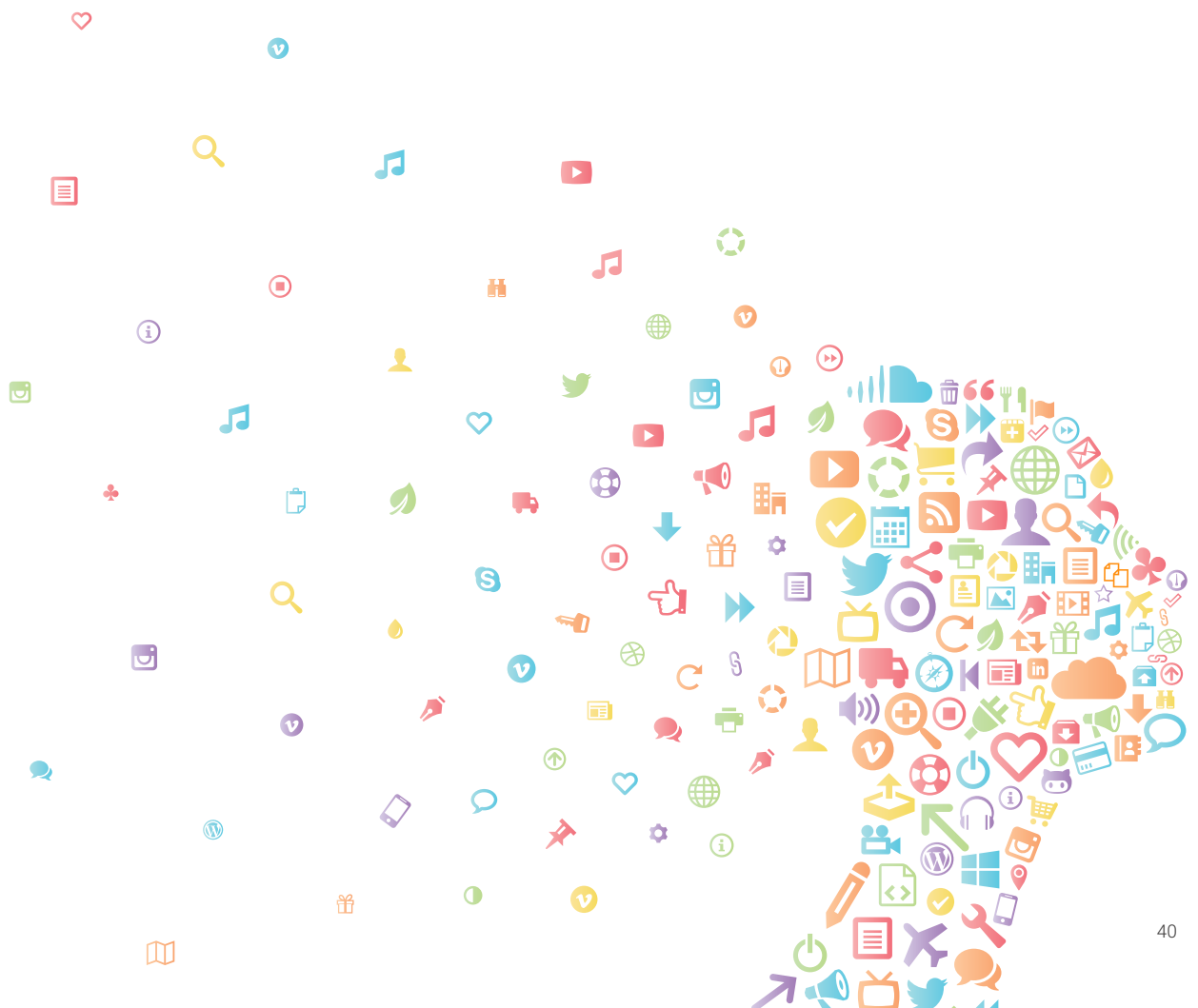
Environment or Ecosystem (Platform of Cooperation)

- Public-Private partnership of SMEs, scientific research firms and educational institutions at regional and national levels to share knowledge and information. This can also help to transform research results into practice and provide technical support post-implementation.
- Incubators and innovation centres equipped with machineries, facilities and talent for SMEs to seek assistance such as product testing, laboratory equipment, marketing workshops, etc. This is also to leverage the collaboration between research, educational institution, SMEs and the public sector to increase competitive advantage.
- Large firms are supported by financial aids to establish business incubators to help SMEs.
- EUR1 million is allocated to conduct pilot run for innovative projects.

Public Procurement Projects

- A guarantee for tender submission enables SMEs to participate in public procurement contracts without having secure funds to deposit a security.
- Special trainings are available to guide SMEs in public procurement law and regulations.

The Small Business Administration (SBA) shows that Czech Republic's performance on access to finance has shown an ongoing improvement since 2008 and is one of the four main areas where it performs above the EU average. Following the initiatives introduced by the public sector, Czech banks are more willing to provide loans to SMEs, and initiatives back by European Regional Development Fund has further facilitate SMEs' access to finance in the country.



Thailand Case Study

SMEs play an enormous role in Thailand's economy. The Asia Cloud Computing Association estimates 2.9 million SMEs in Thailand while the World Bank provides a more conservative figure at 2.7 million. They make up over 98% of all enterprises, with employees over 83% of the workforce, and contribute just under 37% of the nation's GDP.

The Government of Thailand and businesses have embarked on a variety of technology centric initiatives and plans in recent years. The Government established the Ministry of Digital Economy and Society in 2016 and commissioned a four-phased National Digital Economy Masterplan to be achieved over 20 years:

- Laying the Digital Foundation;
- Achieving Digital Inclusion;
- Moving to Full Transformation; and
- Achieving Global Digital Leadership

Several other technology initiatives by the Government are Digital Thailand, Thailand 4.0 and a special economic zone (SEC) called the Eastern Economic Corridor (digital park, University 4.0).

Thailand 4.0

Concrete efforts by the Government under the Thailand 4.0 banner includes:

- Plans to set up a national digital trade database
- National Agricultural Information System (NAIS)
- Implementation of Precision Agriculture (PA) and Precision Livestock Farming (PLF) Agriculture assisted by digital technologies to such as IoT (sensors and imaging devices), robotics, automation and farm management software
- Provision of e-commerce solutions and smart supply chain solutions to farmers
- Creation of five smart cities within 10 years that will be home to 5,000 certified digital workers, a digital industry hub and an innovation park

Publicly Driven Initiatives

Thailand Digital Policy 2017-2021

The Government is working on:

Infrastructure

- Deploying broadband to all villages
- Setting up the Digital Thailand Infrastructure Fund
- Providing free Wi-Fi at 10,000 locations and 2,000,000 students
- Building 10,000 online community stores via digital community centres

Human Capital

- Providing digital skills training to 8,000 people of disadvantaged groups and elderly
- Providing online vocational contents to 700,000 students in vocational schools
- Training digital literacy to 600,000 citizens
- Providing Massive Open Online Courses (MOOCs) for public both in education and non-education settings
- Piloting a digital package (Internet and e-Learning) in 20 of the most marginalised schools to bridge the digital divide

Commercial

- Fostering 1,500 digital startups, SMEs and Micro SMEs
- Coaching 15,000 SMEs to trade online and standardising 100,000 product items
- Piloting smart farms for organic product traceability
- Producing 1,600 digital farmers
- Building Tourism Thailand Open Platform (B2B) linking to global platforms for Tourism SME

2016 SME Tax Amnesty and Electronic Financial Records

Tax evasion is a substantial problem for the Government in Thailand and a tax amnesty programme was approved in 2016 to encourage businesses to start paying taxes properly. The programme was a success with an estimated 400,000 SMEs of the 2.7 million SMEs in Thailand participating in the tax amnesty programme. The Government had only targeted for 100,000 SMEs. One aim of the programme is to encourage SMEs to maintain only one set of account. This can be achieved through an electronic integration

of the financial system of the company, banks and authorities. Currently, there are SMEs that maintain more than one financial account to evade tax. Therefore, the Government plans restrict banks from granting credit to companies that have their financial records approved by the authorities. The upcoming requirements may push SMEs to leverage on many e-commerce technologies such as online marketplaces and e-payment system and digital banking to feed electronic data directly into their accounting system.

Government Sponsored National Financial Systems

Another set of Government initiatives that supports the SMEs to go digital and paperless involves the implementation of a few national financial systems. These initiatives include:

- Electronic fund transfer based on national identification system
- Electronic system for filing tax related documents (e.g. receipts and invoices)
- Government e-payment system
- Social welfare disbursement system
- Incentive scheme to encourage the use of debit cards (including tax incentives)

Commercially Driven Initiatives

DATC' s Precision Agriculture (PA)

Precision Agriculture

DTAC is one of Thailand's largest telecommunication service providers and a subsidiary of Telenor Group, a Norwegian telecommunication giant with a global presence. Among several collaborations that they have with Thai authorities and business is their Precision Agriculture project. They have partnered with the Thailand's Department of Agricultural Extension (DOAE) and the

National Electronics and Computer Technology Centre (NECTEC) to develop a PA solution where they will provide the wireless internet connectivity and cloud computing services. These services will support the array of sensor that will be installed at up to 30 farms across the nation.

Alibaba National E-commerce Platform and Smart Digital Hub

Alibaba Group formed a partnership with the Government in December 2016 to develop the e-commerce landscape, build a national e-commerce platform, and provide training for up to 10,000 IT professionals and application developers. The firm has plans to invest USD320 million in the nation with projects,

such as a Smart Digital Hub to facilitate trade between Thailand, China, Laos, Myanmar, Cambodia and Vietnam, training for entrepreneurs and small businesses on using e-commerce and online tourism platforms and operations of its regional e-commerce platform, Lazada.

Digital Telecommunication Infrastructure Fund

High-speed and reliable connectivity serves as the backbone to a digital economy. Without the ability to transmit data between people and devices, digital services will come to a halt. A private Digital Telecommunication Infrastructure Fund was set up in 2013 with the aim for reducing the Government's financial commitment and provide more capital to accelerate the development of the nation's telecommunication networks.

The fund's net asset value is over USD4 billion and has resulted in:

- 6,000 telecommunications towers
- Over 13,000 kilometers of fiber optic cable

The effects of the combined efforts of the Government, international organisation and businesses in developing the digital landscape have begun to bear fruit. A report by the Thailand Board of Investment (BOI) estimates that digital-enabled companies will contribute up to 25% of the GDP by 2027. This rise in prominence of digital technology in businesses, also referred to as the 'digital economy', is supported by the high internet penetration rate and large pool of social media users in the country.

About 70% of the population is using smartphone (48 million users), an increment of 10% from 2016 to 2017. Additionally, 67% of the population is using the internet and social media penetration rate respectively (46 million users), an increment of 21% from 2016 to 2017.

Thailand saw a 22% increase in spending on digital advertising in 2016 to USD281.2 million. This comes at no surprise as their e-commerce market is valued at USD72 billion and ranked as the largest consumer-to-consumer market in the world by PWC. The effects of digital transformation in Thailand are not confined to SMEs within the technology industry. The adoption of PA in farms brought dramatic improvements to yield. For example, a project by Rangsit University increased yield by 27% for rice farmers in the Kanchanaburi province within 2 years of testing a PA solution.

Trade has also seen improvement with the integration of digital technology into commercial activities. Electronic Transaction Development Agency estimates the size of Thailand's e-commerce market to be USD2 billion in 2017 and to grow to USD3.5 billion in 2018. The retail segment of e-commerce alone is expected to grow to USD3 billion by 2020 and a sizable addition by online travel. The rise in mobile and internet penetration rates, logistics and e-payment contributed to the popularity of e-commerce in Thailand.

Overall, the economy has been enjoying growth over the past two years. This growth comes as the Government and business have been focusing on a variety of technology initiatives and plans. The World Bank reports that economic growth in 2017 exceeded market expectation at 3.3%. Merchandise exports grew 6.6% and the agricultural sector expanded 7.7%.

Spain Case Study

SMEs account for almost all the businesses in Spain representing 99.9% of all enterprises. SMEs employ over 70% of the nation's workforce and contribute a little over 60% of the nation's output (GDP). SMEs in Spain are still reeling in from the effect of 2008 global economic crisis and coping with a struggling manufacturing sector. Digitalisation is one of the efforts taken up by the Government and private organisations to revitalise the economy. The ongoing digital initiatives in Spain are also part of the overall effort of the European Union (EU) to promote the adoption of digital technologies, improve trade within the economy's single market system and achieve greater standardisation between EU members.

Connected Industry (CI) 4.0 is an initiative that began in 2015 and the objective to digitise and enhance the competitiveness of Spain's industrial sector. It is spearheaded by the General Secretary of Industry and SME with the involvement of public organisations, private entities, academia, scientific communities and trade unions. The initiatives are carried out through five working groups. These working group are tasked with training and skill development establishment of digital innovation hubs, promotion of industry 4.0 digital enablers, securing the involvement of the public administration and participating in standardisation of practices and regulations.

Digital Accelerators and Advisory Services

IoT Innovation Hub, Salamanca

- IoT Innovation Hub, Salamanca is a member of a network of over 450 Digital Innovation Hubs (DIH) across the European Union
- Provides technical advisory to SMEs that want to adopt IoT into their business processes
- Assist SMEs in applying for funding for their IoT adoption projects
- Publicly available laboratory to test IoT solutions
- Provides training in digital skills and advance degrees through collaboration with the University of Salamanca. Programmes are targeted at SME employees

Red.es Digital Advisors Programme and Digital Transformation Office

- Red.es is public business entity under the supervision of the Ministry of Energy, Tourism and the Digital Agenda
- Approved two programmes worth EUR10 million in October 2017 to promote digital transformation
- The programmes will provide assessment of a company's digital maturity, vendor list for companies providing digital services, advisory service on the integration of technology with business processes and creating an ecosystem of digital entrepreneurs

Infrastructure Improvements

BANDA ANCHA I+D+i

- Plan to improve the availability and quality of high-speed internet in Spain
- Expansion of high-speed networks above 100Mbps and above 30Mbps
- Expansion of access points to high speed networks

Infrastructure Improvements

GRANDES PROYECTOS I+D+i TIC

- Programme to encourage the development of emerging technologies such as cloud computing, high performance computing, robotics, automation, IoT and smart cities
- Project value under the programme ranges between EUR1 million to EUR 10 million

PROYECTOS IMPULSO TECNOLÓGICO

- Programme to encourage the adoption of technologies with low maturity and high transformation potential
- Project value under the programme ranges between EUR200,000 to EUR1 million

SME Industry Development

AMETIC Committee Industry 4.0

- One of the working groups under CI 4.0 platform with the focus on 're-industrialising' Spanish businesses through the adoption of emerging technologies such as IoT and Industry 4.0 principles
- Among the initiatives of the 83-member committee are the creation of a technology development plan, skills development plan, networking session for companies and advocacy of legislation and regulation for Industry 4.0

Access to Funding

Funding for Digital Transformation Enablers

- Spain has allocated EUR37 billion for the European Structural and Investment Fund up to 2020. One of the objectives of the fund is to provide SMEs better access to financing
- EUR2.89 billion is allocated to technological development and innovation
- EUR478 million is allocated to improve access to information and communication technology
- EUR269 million is allocated to improve SMEs competitiveness

Funding through the Ministry of Economy, Industry and Competitiveness

- EUR309 million for development of talents specialising in research, development and innovation
- EUR493 million for funding in industrial excellence including the adoption of technology in businesses

Digital Skills and Competence Framework

- Based on the European Union's 'DigComp 2.0' framework
- Improving digital competency of teachers
- Promoting massive open online courses (MOOC)
- Promoting digital skills such as coding and data analytics
- The Torres Quevedo programme provides funding to cover expenses related to the hiring, training and mobility of staff involved in R&D&I projects for a period of three years

Digital Transformation will generate 1.25 million jobs in five years, among highly qualified jobs (e.g. Science, Technology, Engineering & Math, STEM). The European Commission cites the adoption of digital technologies such as big data and the Government's focus

on research and development as some of the factors that helped the information and communication sector of Spain recover. SME value-added grew by 7.7% in 2017 in the information and communication sector





RECOMMENDATIONS

INNOVATE

- Assist SMEs to think like an innovative digital SME

FACILITATE

- Assist SMEs on their digitalisation journey

ACCELERATE

- Assist SMEs to accelerate digital transformation of their businesses

ENGAGE

- Create an Innovation Centre to provide SMEs with an ecosystem that engages all stakeholders to drive digital transformation

Recommendations

In order to spur more SMEs to embrace digitalisation, we will need to address the SME mindset and drive for change, help equip them with the skill set and resources including finance and provide them with affordable technology they can use. These are the challenges they mentioned above. We recommend the following three-pronged approach to help driving SME digitalisation.

- **INNOVATE: Assist SMEs to think like an innovative digital SME**

This is to address the challenges faced by the SMEs in adopting an innovative mindset, creating a digital strategy, building a data culture and acquiring digital skills and capabilities to be an innovative digital SME.

- **FACILITATE: Assist SMEs on their digitalisation journey**

This is to help SMEs overcome their financial and regulatory barriers to start their digitalisation programmes from getting on board, to sustaining the digitalisation efforts and commercialising their digital products and services.

- **ACCELERATE: Assist SMEs to accelerate digital transformation of their businesses**

This is to provide the necessary IT tools and technology platform to help SMEs accelerate their digitalisation efforts and break into new levels of innovative products and services.

INNOVATE



Help SMEs build an innovative mindset, data culture, digital skills and business

- Educate SMEs on the need for digitalisation and its benefits
- Change SMEs' mindset to think beyond computerisation to digitalisation
- Help SMEs to get started on their digitalisation journey through developing a transformation strategy
- Support their change management process from traditional to become a digital SME
- Drive cultural change in their organisation to become a data-centric organisation

FACILITATE



Help SMEs run their digitalisation programme towards becoming a digital SME

- Financial assistance to help SMEs embark on their transformation
- Incentivise larger enterprises to partner with SMEs in technology sharing
- Help SMEs to comply with security and regulatory requirements

ACCELERATE



Build the technology platform to accelerate SME transformation

- Increase broadband speed coverage and affordability
- Develop cloud-based innovation platform to provide affordable access to technology

► INNOVATE: Assist SMEs to think like an innovative digital SME

In order to help SMEs get the right digital mindset and start on their digitalisation journey, SMEs must first be made aware of the computerisation trap and encouraged to adopt a digitalisation outlook. We need to overcome the SME ignorance as well as any entrenched resistant culture in order for the SME to make digitalisation an ongoing and embedded strategy in their company. To foster the technology adoption in SME, it is essential for policymakers to understand the technology trends and changes across the industries in order that they can provide innovative programmes for the SMEs to assist them in their business transformation.

The following are our recommendations:

1. **Conduct regular workshops, seminars and online training to increase SME awareness and understanding of the following:**
 - Digitalisation, what it is and that it is not computerisation with examples of digitalisation, SME case studies and benefits for the company
 - Digital tools use cases that can help SMEs to enable business growth, examples of how newer technologies like digital commerce, cloud computing, data analytics and social marketing could apply in their business context and the value it created
 - Developing new products or services using digital tools, what is possible and how digital tools will make it easier and faster to innovate
2. **Groom SME management or leader to lead digital transformation initiatives in their organisations and to run change management workshop with ongoing consultative support to help the SMEs to:**
 - Develop a digital culture and innovative mindset through a digital leadership programme, and to overcome entrenched old mindsets
 - Obtain step-by-step advice on deploying digital technology to transform their businesses for growth and productivity
 - Invite SMEs that are successful in digitalisation to share success stories and potential innovative business models, lessons learnt, be role models
3. **Provide advisory services on how to develop a long-term digital transformation strategy based on their industry sectors. Digital transformation starts with business transformation enabled by digital technologies. Thus, SMEs will need consultative help to review their business models, current operations and practices, and get an outside in view to transform.**
4. **Provide self-enablement training through the Massive Online Open Courses (MOOC) on a learning cloud platform, an e-Learning programme that enables SMEs to understand and familiarise themselves with digital facilities provided to them, and to help their staff acquire digital skill set.**
5. **Digital talent up skilling to acquire digital capabilities:**
 - Non-technical: Focus on leadership, digital transformation strategy, business strategy, industry induction programme (to learn from successful SMEs in China or other countries)
 - Technical: Provide certification training on networking, IoT, big data, cloud, programming, etc.
6. **Help SMEs hire Chief Information Officer (CIO) or a digital transformation unit to oversee their company-wide digital transformation efforts. Provide wage offset for hiring of CIO or local SME consultancy to run transformation, e-commerce or digital marketing programmes for the company.**
7. **Tap into existing programmes such as Business Accelerator Programme (BAP) by SME Corp. Malaysia, Digital Transformation Acceleration Programme (DTAP) by MDEC, Technopreneur by MIMOS and other new programmes (e.g. Industry 4.0).**

► FACILITATE: Assist SMEs on their digitalisation journey

In order to get SMEs to start their digitalisation journey, we need to help them get over the initial financial barrier on top of the mindset change mentioned earlier. This is a start to get the SMEs on their journey from which we expect that the benefits from digitalisation in terms of revenue and profit growth will fund the ongoing transformation of the SMEs.

1. Consolidate all financial and funding programmes under a one-stop portal for SMEs to easily find the financial resources and support their need for the digitalisation initiatives.
2. Provide tax relief or financial rebate support to help SMEs get started on their digitalisation journey:
 - For using advisory or consulting services from local consultancy to transform their businesses, thereby building demand for local consulting SMEs as well helping SMEs to get started on their transformation programme
 - Assign SME Transformation ambassadors who can help SMEs locate and tap into existing financial assistance in various Ministries, e.g. reimbursement grants from SME Corp. Malaysia
 - Grant funding for purchase / lease / subscription of IT solutions / equipment for 3 years
 - Provide tax incentives for cloud providers to provide free cloud services for 3 months and then ongoing affordable cloud services to SMEs
 - Tax relief for development of applications to serve the market to mitigate concerns on ROI and risk of failure
3. Tax relief for international and large companies to collaborate with SMEs to develop digital products and services as a form of digital mentoring and IP sharing.
4. Introduce policies to incentivise the digitalisation of SMEs - Mid-term review of the 11th Malaysia Plan, SME Masterplan 2.0 and the 12th Malaysia Plan.
5. Support successful SMEs overseas market expansion. Financial support for overseas market expansion and promotion by leveraging on eTRADE, GoEx, mid-tiers programmes, etc.
6. Consider policies to reduce red-tape for an SME to introduce a new service (e.g. simplify the licensing and permit requirements, bring all the reporting and permitting applications into a consolidated online service for the SMEs).

► ACCELERATE: Assist SMEs to accelerate digital transformation of their businesses

In order to accelerate the digitalisation of SMEs, we need to ensure that SMEs have access to digital technology (including affordability and experience), SMEs have the literacy and know-how to use the technology, and being able to participate in and create the necessary digital environment with available technology. In order to achieve this end, we propose the following:

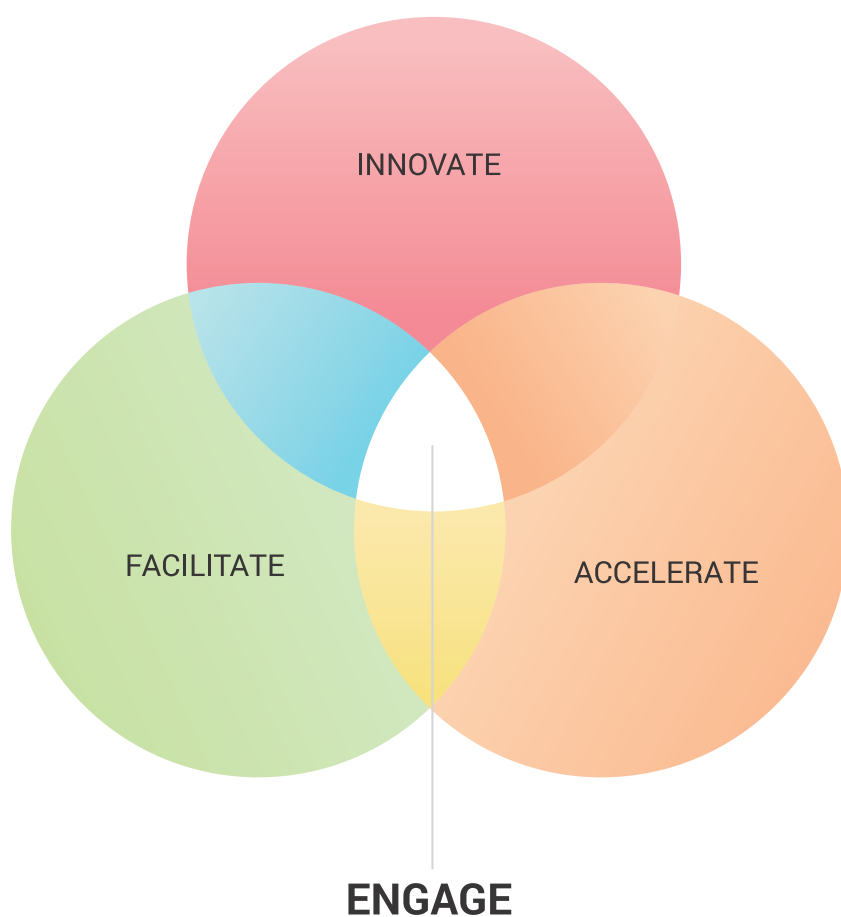
1. **Leverage the 11th Malaysia Plan to prioritise SME connectivity and realise the goal of 100Mbps for all urban areas and 30Mbps for half the rural areas through an access synergy comprising fiber, copper and wireless networks. There is already a national intent, we need to push through to realise this intent.**
 - Strengthen the broadband infrastructure by streamlining and improving underlying fiber, copper infrastructure for end-to-end access improvement for fixed line
 - Work with the Ministry of Communication and Multimedia Malaysia (KKMM) and the Malaysian Communications and Multimedia Commission (MCMC) to liberalise fixed network infrastructure development
 - Support KKMM on the Connect the Unconnected (CTU) initiatives, considering wireless as an innovative technology to provide infrastructure for areas that are not economically effective or unreachable by wired infrastructure
 - Network synergies to drive affordability and experience (2x speed, ½ price); to share the usage of existing public infrastructure like poles, building, towers, to deploy broadband networks
2. **Propose to build future ready infrastructure on quality fiber backbone and sites.**
 - Introduce renewable energy (e.g. solar) to reduce utility cost on broadband implementation
 - Develop blueprint to deploy infrastructure supporting future services like IoT network
 - Maximising existing infrastructure value by enabling reuse.
3. **Singapore for example while digitalising also had issues including:**
 - SMEs unable to afford expensive networks deployment for their transformation
 - Better broadband (access, speed and affordability) to adopt Next generation technologies such as AR/VR
 - SMEs lacking ideas for a long-term roadmap
4. **To address these issues, Singapore Government along with other ecosystem stakeholders acted upon:**
 - Next generation nationwide broadband network that is at least 1Gbps to connect all homes, shops, offices, public areas and institutions to facilitate the delivery of next generation services
 - Smart Nation Sensor platform that makes it easier and cheaper for Government agencies, enterprises and SMEs to connect their IoT sensors and devices
 - 23 Industry Transformation Maps to guide SMEs in developing their ICT roadmap and investments to transform their businesses



► **ENGAGE:** Create an Innovation Centre to provide SMEs with an ecosystem that engages all stakeholders to drive digital transformation

SMEs cannot undertake digital transformation on their own, the ecosystem facilitated by the Government needs to assist them with a collaborative facility where SMEs can tap-in for necessary support in areas including skill development, funding, regulation, technology and e-commerce. This environment can also bring SMEs together under an umbrella where SME-to-SME transactions can also lead to institutionalisation of best practices within Malaysia.

To this end, we recommend the development of an Innovation Centre to provide SMEs with an ecosystem that will ENGAGE all stakeholders and synergise the areas of INNOVATE, FACILITATE and ACCELERATE to drive digital transformation among Malaysian SMEs.



The ecosystem synergies are key to approaching SME digitalisation in an effective manner. Thus, the following attributes are proposed for the Innovation Centre in order to achieve the goal of accelerating Malaysian Digital SME.

1. **A one-stop centre run by a cross-agency dedicated team that acts as a bridge to align the digitalisation, funding, and support programmes from various ministries and agencies to support the SME transformation.**
 - A one-stop centre for all programmes, financial assistance, training needs, industry collaborations, policy guidance, market development and relevant Government bodies coordination to ensure that the SME development initiatives are accessible to each SME, and that informs the SMEs on the various SME development and transformation programmes and initiatives. This is to provide a concerted effort across various ministries and agencies to coordinate various awareness, promotion and workshop programmes for SME digitalisation.
 - A best-practice and knowledge centre that connects SMEs to various programmes from different ministries that could help with their transformation, where all the information, support and assistance for the SMEs can be found in spite of the different owners and funding sources of those initiatives.
 - One that provides a single online portal where SMEs can access all relevant records, sign up for training programmes, access online courses, apply for technology or financial support, submit documents and register their businesses or permits.
2. **A centre where SMEs can find the necessary advisory services that provides them with help on developing a digitalisation strategy, change management and cultural or mindset shift.**
 - One that links local consultants and advisory firms with local SMEs needing help to drive their digitalisation. The additional benefit is that it also helps grow local professional services SMEs.
 - One that provides experts from key industry sectors that are able to help SMEs develop a transformation roadmap based on the industry sector they belong to. These could be retired or freelancing CIOs or CTOs looking for freelance opportunities to become short-term digital transformation leaders for the SMEs.
 - One that develops transformation programme kits for quick and easy deployment on a pay-as-you-use basis. SMEs are able to take advantage of the business applications and modules available through the Innovation Centre or adopt an end-to-end integrated cloud solution package for their industry to facilitate their transformation. Local consultancies can provide service to help SMEs migrate their businesses to this solution platforms.



3. **Platform that recruits local ICT SMEs to develop and market their applications for the non-ICT SMEs to adopt, thereby building demand for ICT SMEs as well as meeting the needs of non-ICT SMEs**

- Business applications for specific industries (e.g. F&B) or for specific business functions (e.g. manufacturing execution) can be developed by local SMEs for adoption and use by non-ICT SMEs
- Applications can be linked together to provide an end-to-end solution that SMEs can adopt with limited customisation, or be integrated into their existing systems
- These applications are cloud based and pay-as-you-use to make them more affordable. SMEs can pick from a menu of applications through the Innovation Centre. Local consultants can be trained to provide advice to local SMEs on how to redesign their businesses to be digitally enabled by these applications or to support their integration

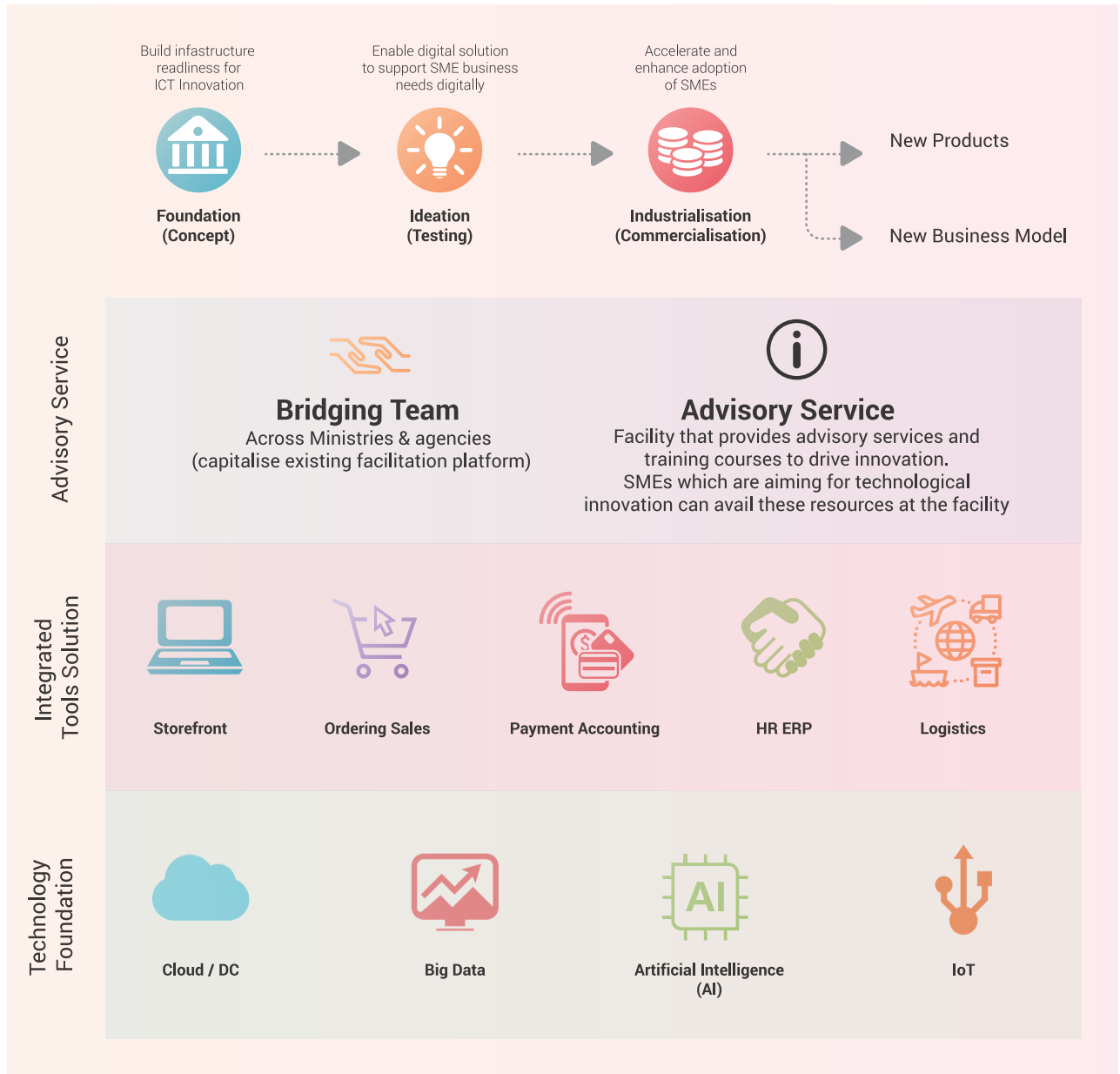
4. **The Innovation Centre will play a central role to ensure that the adoption of technology is available as a service to SMEs rather than technology development left to SMEs themselves. It will be the core platform for SME innovation**

- Providing guidance and support to SMEs to explore and look for innovative products and services, and even new business models enabled by digital technology
- Providing a platform for the upscaling and commercialisation of the SMEs' digital products, services and new business model
- Providing a robust infrastructure to enable a testing environment for all existing and future SME digital products and services in an affordable manner as it makes available different applications, compute or storage facilities, data analytics and IoT functionalities

5. **Cloud-based platform as the underlying technology platform to provide affordable access to digital technology and facilitate the operations of the Innovation Centre**

- The SME programmes, best practices knowledge depository and the recommended initiatives for SME transformation are most efficiently deployed and executed through a cloud platform. Cloud infrastructure offers flexible and cost-effective alternatives to run application and, store and manage large data sets
- Cloud analytics to provide SMEs with affordable analytics capabilities to enhance their data management and insights generation. Cloud infrastructure coupled with big data analytics leads to an intelligent system able to identify accurate requirements and feedback for customer experience management laying the foundation for the future adoption of AI by SMEs
- Platform for future IoT deployment by more advanced SMEs
- Predefined set of business applications grouped by industry sector (e.g. F&B and hospitality suite, manufacturing suite, etc.) that makes it easier for SMEs to convert their entire business processes to digital and not piecemeal

Innovation Centre





ESSENTIAL GUIDANCE

For policymakers

For SME businesses

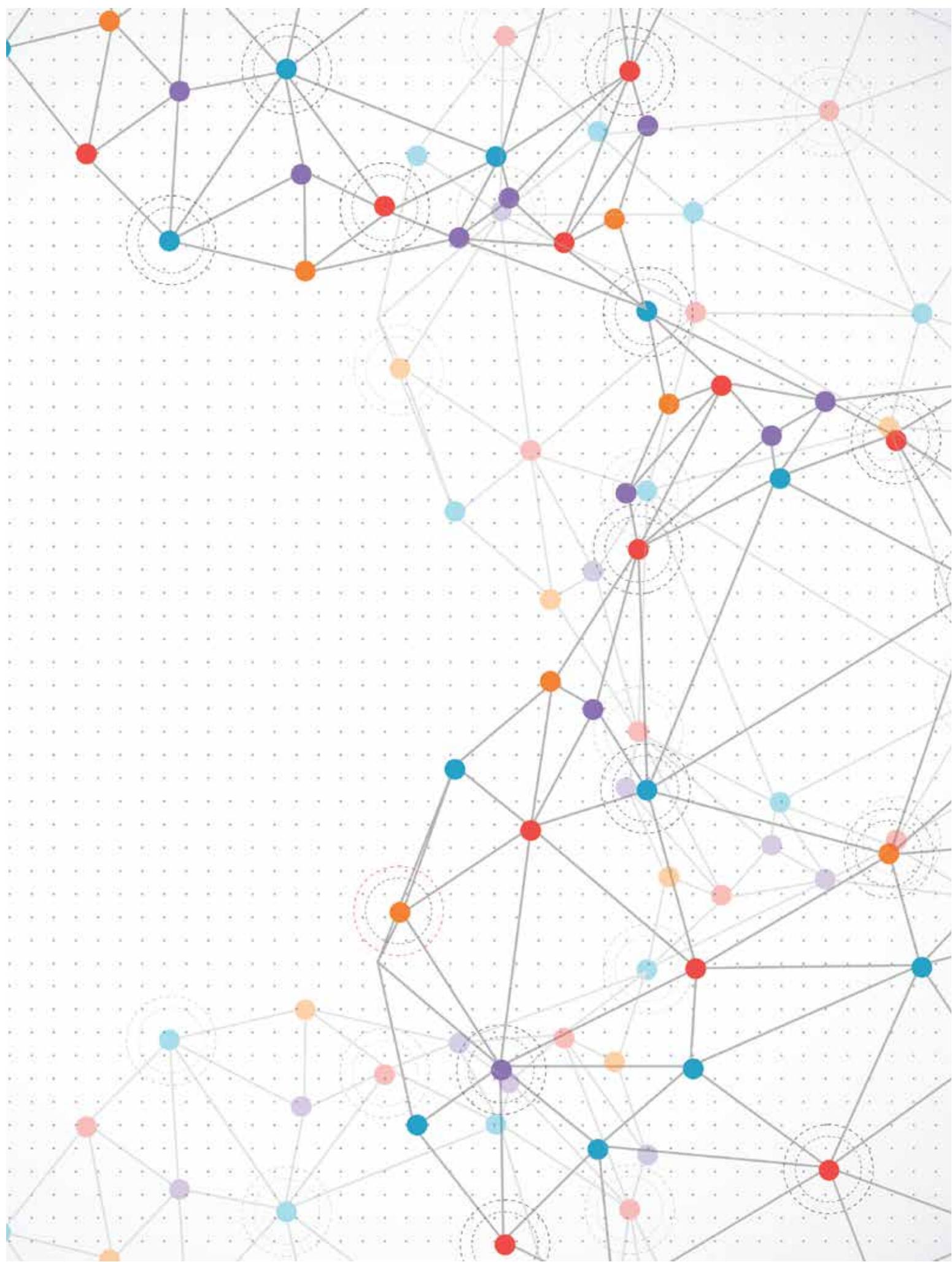
Essential Guidance

For Policymakers

- Policymakers need to shift their efforts from SME computerisation initiatives towards SME digitalisation progressively. A new paradigm is needed to go beyond just computerisation towards digitalisation. Appropriate funding needs to be allocated towards digitalisation and a national effort needs to be made to drive SMEs to the next level of innovation and productivity.
- For effective realisation of the recommendations, it is recommended that SME Corp. Malaysia to establish an office for the digitalisation of SMEs comprising members from SME Corp. Malaysia and related agencies to oversee the implementation of the initiatives and the Innovation Centre.
- As different Ministries and agencies have overlapping programmes in support of the SMEs, representatives from these organisations should discuss and map out their programmes to identify overlapping areas for rationalisation as well as gaps in the SME programmes for additional action.
- Policymakers should be determined and intentional in taking steps to improve the broadband coverage, quality and affordability across urban and rural areas to meet the goals of the 11th Malaysian Plan.
- Data is the lifeblood of future economies. Policymakers need to ensure that the necessary initiatives are in place for SMEs to perform data analysis of their businesses and markets, with the necessary policies in place for the commercial use of the Public / Private Cloud, Big Data and AI services, with safeguards on privacy and confidentiality.

For SME Businesses

- Educate yourself and be informed of digital transformation and what it means for your company. Do not be satisfied with computerisation, but start exploring and making moves towards beginning your digitalisation journey.
- Approach SME Corp. Malaysia and be informed of all their ongoing programmes, workshops and funding initiatives that benefits the SMEs. Participate and be engaged with Ministries and agencies that have initiated programmes to help SMEs such as yourself.
- Invest in enterprise software that has an impact on the overall business, take advantage of cloud services like software as a service that is affordable. Consider developing mobile applications to take advantage of the large pool of mobility devices out there for improving staff productivity and market reach or engagement.
- Start creating and collecting data in your organisation. Invest in cloud analytics to gain insights from the data for your product innovation and strategic business expansion.
- Keep a look out for the Innovation Centre when it starts. Sign up, join in, transform and get ahead.



APPENDICES

Appendices

The following appendices contain supporting information to the Whitepaper. This section explains the methodology and terminology used in the Whitepaper in further detail.

Appendix A: Study Methodology

- Objective of the Study
- Project Team
- Research Methodology
- Project Timeline

Appendix B: Profile of SMEs in Malaysia

Appendix C: Overview of Digital Transformation and Terminology

- Big Data
- Cloud
- Social
- Mobile
- Internet of Things (IoT)
- Next Generation Data Security
- Augmented Reality (AR)
- Virtual Reality (VR)
- 3D Printers
- Cognitive/Artificial Intelligence (AI)
- Robots

Appendix D

- List of Terms

Appendix A: Study Methodology

Objective of the Study

The objective of this Study is to create an enabling environment to drive SME digital transformation of their businesses in order to increase their GDP and employment contribution to the Malaysia economy. The Study seeks to understand SMEs on various dimensions including their business outlook, ICT maturity and adoption of digital technologies. The Study also seeks to understand the mindset of SMEs especially in relation to their appetite and pro-activeness in embracing the digital economy.

Project Team

The project was carried out in collaboration between representatives from the Government, the academia, technology industry experts and market intelligence providers. Parties that provided input into this Whitepaper include:

SME Corporation Malaysia

SME Corporation Malaysia (SME Corp. Malaysia) is a Central Coordinating Agency under the Ministry of Entrepreneur Development that formulates overall policies and strategies for SMEs and coordinates the implementation of SME development programmes across all related Ministries and agencies. It acts as the central point of reference for research and data dissemination on SMEs, as well as provides advisory services for SMEs in Malaysia. SME Corp. Malaysia also assumes the role of the Secretariat to the National Entrepreneur and SME Development Council (NESDC), which is chaired by the Prime Minister of Malaysia.

Huawei Technologies Co. Ltd

Huawei is a leading global information and communications technology (ICT) solutions provider. Driven by responsible operations, ongoing innovation and open collaboration, Huawei has established a competitive ICT portfolio of end-to-end solutions in telecom and enterprise networks, devices and cloud computing. Huawei's ICT solutions, products, and services are used in more than 170 countries and regions, serving over one-third of the world's population.

International Data Corporation (IDC)

IDC is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. With more than 1,100 analysts worldwide, IDC offers global, regional and local expertise on technology and industry opportunities and trends in over 110 countries.

Ministry of Education (Higher Education)

The Malaysian Ministry of Education, Higher Education department with a mandate to govern tertiary education institutions. These institutions are one of the main components in the national education ecosystem. They generate first-rate thinkers, scholars, masters, skilled and semi-skilled manpower in accordance with their respective roles.

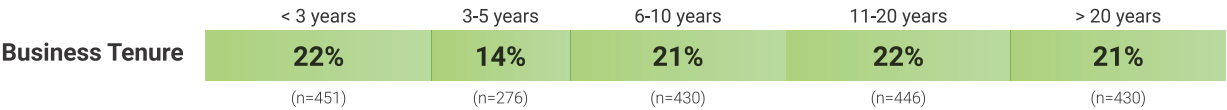
University Consortium

The University Consortium is a consortium formed under the advisory of Industry Relations Division of Ministry of Education (Higher Education Department) (MoE) in 2018 as academic and research consultant team to undertake research and development consultancy for industry. The university consortium, advised by MoE consists of seven experts from six universities; namely Universiti Teknologi Malaysia (UTM), Universiti Putra Malaysia (UPM), Universiti Utara Malaysia (UUM), Universiti Malaysia Terengganu (UMT), Universiti Malaysia Sarawak (UNIMAS) and Universiti Malaysia Sabah (UMS).

Research Methodology

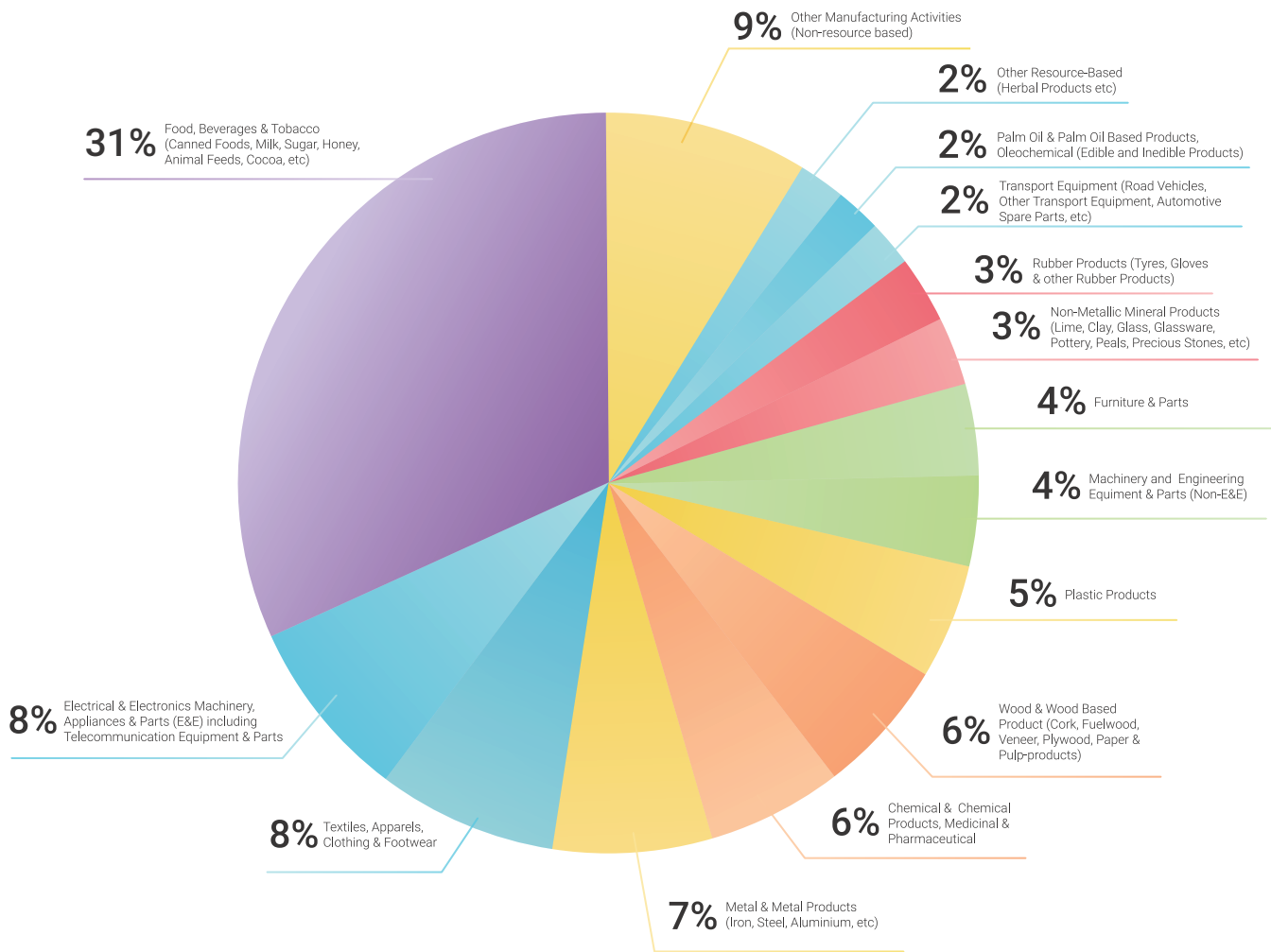
Primary research was performed for this Study in the form of surveys. These surveys were conducted over email, phone and face-to-face medium. A total of 2,033 SMEs were surveyed in this Study.

In order to obtain a representative sample of SMEs in Malaysia, the surveys were distributed to SMEs that are located in different regions, of different sizes and of different tenures. Companies in West Malaysia and Sabah & Sarawak were surveyed. Additionally, companies at vastly different maturities from those younger than three years and those in operations for more than 20 years made up the sample in this Study. The chart below summarises the distribution of the sampled companies.

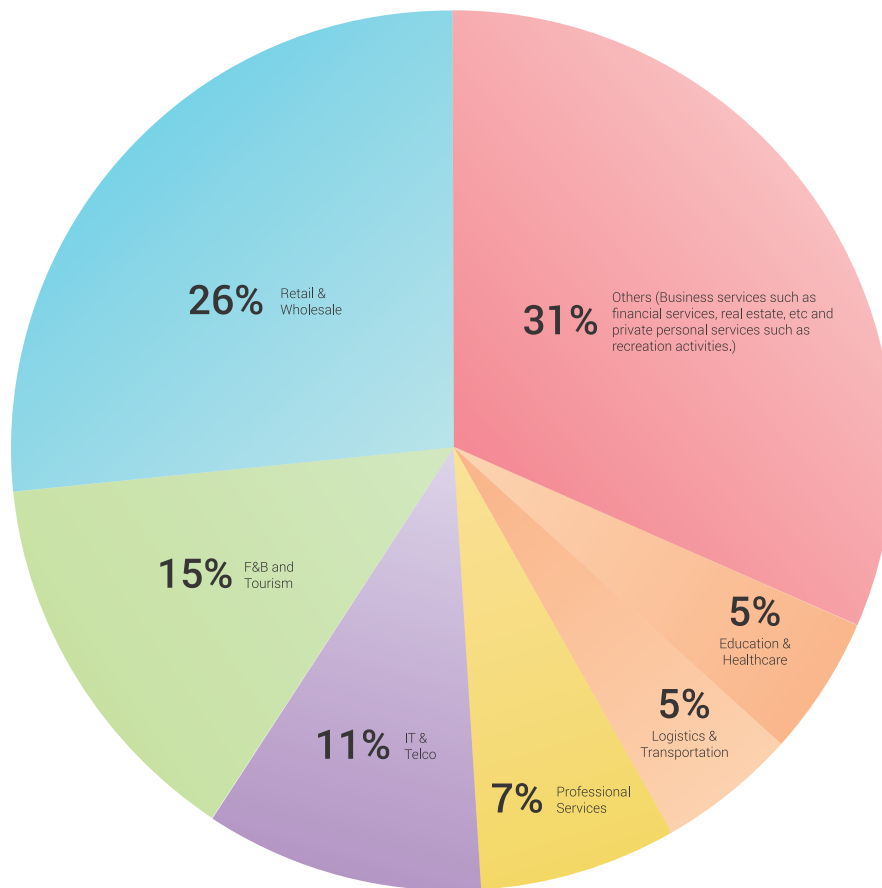


SMEs in Malaysia conduct business in various industry verticals. The sample of SMEs included in this Study represents a wide range of industries including those within the manufacturing and service sectors. The diagrams below summarise the distribution of sampled companies according to their business activities.

Breakdown of Manufacturing Sector



Breakdown of Services Sector



Preliminary results of the Study were shared with various stakeholders including related Government agencies, industry associations and representatives from SMEs. Feedback from the stakeholders along with analysis performed on the research data provided greater clarity on the IT and digital maturity of SMEs in Malaysia. Key areas of the analysis include:

- ICT adoption rate of SMEs in Malaysia;
- Drivers and barriers of digital transformation;
- Assistance required by SMEs; and
- Gap analysis & recommendations on bridging the gaps.

Project Timeline

The Survey was conducted over six weeks from May to June 2018. The results of the research and Whitepaper was developed in the subsequent two months.

Appendix B: Profile of SMEs in Malaysia

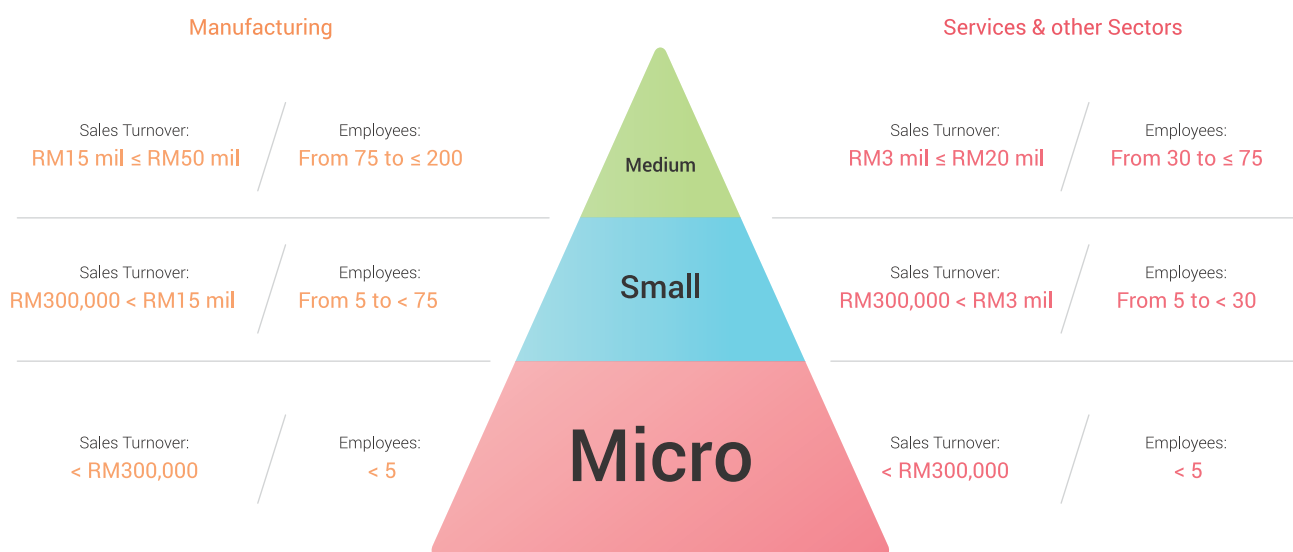
SMEs are the backbone of the Malaysian economy. There is a total of 907,065 establishments classified as SMEs, which represent 98.5% of all enterprises in Malaysia. Of those establishments, 2.3% are medium enterprises, 21.2% are small enterprises and 76.5% are microenterprises. SMEs contributed 37.1% to overall GDP in 2017 and accounted for 66.0% to total employment. Majority (89.2%) of SMEs operate in the services sector with the remaining in other sectors such as manufacturing, construction, agriculture and mining & quarrying.

In terms of geographical location, a large number of SMEs are concentrated in the Klang Valley region, with 19.8% and 14.7% of SMEs are located in Selangor and Kuala Lumpur respectively.

The current definition of SMEs in Malaysia was adopted in 2014 and it is mainly based on sales turnover and number of full-time employees of the enterprise. There is also a distinction between SMEs in the manufacturing sector and the services sector due to the differences in the nature of their businesses. The following definitions are used by SME Corp. Malaysia:

For manufacturing sector, SMEs are defined as firms with sales turnover not exceeding RM50 million OR number of full-time employees not exceeding 200.

For services and other sectors, SMEs are defined as firms with sales turnover not exceeding RM20 million OR number of full-time employees not exceeding 75.



Under the SME definition, all SMEs must be entities registered with Companies Commission of Malaysia (SSM) or other equivalent bodies. It however excludes:

1. Entities that are public-listed companies on the main board
2. Subsidiaries of:
 - Public-listed companies on the main board;
 - Multinational corporations (MNCs);
 - Government-linked companies (GLCs);
 - Syarikat Menteri Kewangan Diperbadankan (MKDs); and
 - State-owned enterprises.

Appendix C: Overview of Digital Transformation and Terminology

Digitisation refers the process of changing from analog to digital form. Digitalisation is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business.

Digital Transformation is a customer-centric business strategy. It employs new technologies and business processes to better deliver products, services, and experiences to customers and business partners.

Businesses can accelerate their Digital Transformation by leveraging on 3rd Platform technologies. At the core of 3rd platform technologies for Digital Transformation are the Four Pillars, namely: Big Data & Analytics, Cloud, Mobile and Social. These four technologies are important, foundational elements in a digital enterprise that can disrupt the market and successfully adapt to a new, Digital Transformation-focused economy.

The following list contains the definition of these technologies:

Big Data

New generations of technologies and architectures designed to extract information economically from very large volumes of a wide variety of data by enabling high-velocity capture, discovery and or analysis.

Cloud

Business and consumer products, services and solutions delivered and consumed in real time over the Internet. Public cloud computing is characterised as being open to a largely unrestricted universe of potential users; designed for a market, rather than for a single enterprise. In contrast, private cloud computing is designed for, and has access restricted to, a single enterprise (or extended enterprise); it is an internal shared resource, not a commercial offering, whereby the enterprise's IT organisation is the 'vendor' of a shared or standard service to its users.

Social

Social businesses are organisations that apply emerging technologies such as Web 2.0 and social media. Technology adoption is accompanied by organisational, cultural and procedural changes to improve business performance. A social business centres on the idea of "people as the platform" as they acknowledge that people and businesses intersect in a variety of ways.

Mobile

A conglomeration of mobile technologies and solution that brings new possibilities of how business gets done. The use of mobile technologies transforms key processes all the way from the shop floor to the top floor and from the back office to the end customers.

Digital Transformation Accelerators

In addition to the four pillars of Digital Transformation, IDC has identified six technologies that, when combined with other 3rd Platform technologies, empower businesses to propel Digital Transformation within their organisations. These Innovation Accelerators can aggressively propel growth and are necessary to bind organisations' strategic and tactical elements together to deliver enhanced digital experiences .

The following list contains the definition of 3rd Platform Innovation Accelerators:

IDC's 3rd Platform Innovation Accelerators

Internet of Things (IoT)

Network of uniquely identifiable end points (or things) that communicate bi-directionally without human interaction using IP connectivity.

Next Generation Data Security

Recognition of the direct link between mastery of data and the ability to protect it.

Augmented Reality (AR)

AR is a mixed-reality experience developed by augmenting real world environment with digital information such as virtual objects or computer-generated environment. The experience is usually assisted with different sensory and motor controllers reflecting on human senses such as visual, auditory, and haptic feedbacks.

Virtual Reality (VR)

VR includes purpose-built devices, worn on the head and over the eyes, which completely obscures the wearer's vision of the outside world, creating an all-inclusive virtual reality.

3D Printers

Technology which enable the creation of objects and shapes made through material that is laid down successively upon itself from a digital model or file.

Cognitive or Artificial Intelligence (AI)

Set of technologies that use deep natural language processing and understanding to answer questions and provide recommendations and direction.

Robots

Robots are defined as machines that can perform tasks based on current state and sensing, without human intervention.

Appendix D: List of Terms

The list below contains the acronyms and abbreviations used in this document along with its corresponding definition.

Abbreviation	Definition
A*STAR	Agency for Science, Technology and Research (Singapore)
AI	Artificial Intelligence
BOI	Board of Investment (Thailand)
CEO	Chief Executive Officer
CIO	Chief Information Officer
CTO	Chief Technology Officer
CTU	Connect the Unconnected
DATC	Total Access Communication Public Company Limited (Thailand)
DOAE	Department of Agricultural Extension (Thailand)
E-commerce	Electronic Commerce
ERDF	European Regional Development Fund
EU	European Union
EUR	Euro (currency)
GDP	Gross Domestic Product
HR	Human Resource
ICT	Information and Communication Technology
IMDA	Info-communications Media Development Authority (Singapore)
IoT	Internet of Things
IP	Intellectual Property
IPR	Industrial Property Rights
IT	Information Technology
MOOCs	Massive Open Online Courses
NAIS	National Agricultural Information System
NECTEC	National Electronics and Computer Technology Centre (Thailand)
NRF	National Research Foundation
OPEI	Operational Programme Enterprise and Innovation (Czech Republic)
PA	Precision Agriculture
PC	Personal Computer
PLF	Precision Livestock Farming
PWC	PricewaterhouseCoopers
SBA	Small Business Administration
SEEDS Capital	Investment partner for Startups linked to the Singapore Government
SEZ	Special Economic Zone
SME	Small and Medium Enterprises (including microenterprises)
SNEF	Singapore National Employers Federation
STEM	Science, Technology, Engineering and Math
USD	United States Dollar
VC	Venture Capital (type of company)
YoY	Year-on-Year





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