

Big Data to predict Malaysia's Digital Economy

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The big data economy is one of the most important phenomena of our time. The phenomenon is related to the production of a large stream of data from a variety of sources, and the analysis of this huge data to provide important insights to make better decisions and achieve an optimal economy. This paper attempts to assess the willingness of Malaysian companies to benefit from big data using the Enterprise Business Intelligence Maturity Model (EBIMM) as an assessment tool. Data were collected from a large-scale Malaysian institution using the EBIMM questionnaire. The results indicated that Malaysian companies are relatively ready for the big data economy. Up to 94% of organizations surveyed have reached a specified maturity level and have a decent level of capabilities and competencies to benefit from big data analytics. However, none of the organizations have reached the level of improvement, indicating the need for more investments in technology, talent and culture to enable Malaysia to become the regional hub for big data analytics.

Keywords:

Big Data in Malaysia, predict Malaysia's Digital Economy, Digital Economy

1. Introduction

Malaysia still faces challenges in implementing big data strategies as a result of fast-changing technology in the development of digital infrastructure, including data centers, according to the Shared Prosperity Vision 2030 (Siddhartha Raja, Richard Record . 2019).

The vision launched by Prime Minister emphasized the need to put together big data would also require heavy investments and close cooperation between the government and industries. In addition to this, there



is a need for expertise in the field of data analysis to support this initiative. At the same time, awareness to use data wisely and effectively are an important factor in ensuring data secrecy and easing delivery methods, and helping makes effective decisions.

Big data is among the main factors that contribute to changes in the way decisions and business transactions are made. The use of big data and technological availability, according to the document, has led to innovation growth, a boost in the quality of delivery, and added value to industries (Malaysia Digital Economy Corporation (MDEC), 2020).

This element is key in ensuring the implementation of the digital economy is realized in line with current global trends for the country's economic growth. It further stated that there are five proposed strategies to implement big data, including reviewing existing legislation and introducing policies for a holistic digital ecosystem (Siddhartha Raja, Richard Record, 2019).

Besides this, there are also proposals for a new business model to be introduced to develop sustainable digital infrastructure, including data centers as well as modules for advanced skills and workers skills retraining in industrial institutes and within the industries themselves (Al Jazeera and News Agencies. 2019).

2. PURPOSE AND RESEARCH QUESTIONS

Malaysia is Nurturing Data Analytics Talent, according to another report, global revenues for big data and business analytics will surpass US\$210 billion in 2020, amid a 20,000-fold leap in data volumes between 2000 and 2020 (Huawei Technologies. 2018).

big data will bring benefits such as better efficiency and productivity for Malaysia. With the vision of becoming a high-income, knowledge-based society by 2020, MDEC has spearheaded many ICT initiatives with a special focus on the data economy that will serve as the foundation for artificial intelligence (AI) initiatives. Besides promoting continuous learning as a vital aspect of Malaysia's digital culture, MDEC has spearheaded talent programmed to increase the number of data specialists in Malaysia from about 4,000 to 16,000, as well as the number of data scientists from 100 to 1,500, by 2020 (Ahmad Ashraf Ahmad Sharudin , 2020).



Private-public collaboration remains a cornerstone of Malaysia's strategy to grow the country's data analytics talent pool. This includes facilitating curriculum reviews by industry and partnering universities to offer data science courses at undergraduate and postgraduate levels.

In a 2018 report, Malaysia's progress was lauded for initiatives such as the ASEAN Data Analytics Exchange (Adax), a regional platform that brings together talent and development models and showcases the latest analytics technologies. Since its inception in 2017, Adax has helped to train 1,800 people from 298 companies across 19 industries as data practitioners, data managers, and data leaders. With the initiatives currently in progress, many organizations, both on the demand and supply sides of the big data analytics and AI ecosystems have benefited in terms of investment, talent, advice, and funding. *The Need for Big Data in Malaysia* (Huawei Technologies, 2018).

In an exclusive interview with the CTO of MIMOS, Thillai Raj, OpenGov Asia reported that for a country like Malaysia, with a population of about 35 million people spread over a vast geographical area, Big Data Analytics is critical to the delivery of efficient citizen services (Ahmad Ashraf Ahmad Shaharudin. 2020). By analyzing and harnessing vast amounts of data generated by people's daily activities, MIMOS has been able to map public health patterns, enhance safety and smoothen travelers' journeys. Big Data is transforming the Malaysian government's service delivery in new and powerful ways.

3. The Research Questions:

The Government of Malaysia recognized the opportunity, and challenge, provided by the digital economy to serve as a new driver of growth for the economy as well as a new source of fiscal revenue. The Bank Group was asked to provide independent analysis as to how Malaysia could best meet this challenge (Khan, Lina , 2016).

By leveraging the internet, smartphones, big data, the internet of things, artificial intelligence, and other technologies, Malaysia can increase productivity, spur innovation, and improve livelihoods. Digital technologies can drive economic growth in Malaysia through three chan-



nels. First, they can promote inclusion by enabling existing firms and entrepreneurs to serve markets that are currently underserved. Second, they can lower costs and increase efficiency for existing firms and entrepreneurs to make them more competitive. And third, they can encourage innovation and scale economies, allowing entirely new forms of business and entrepreneurship to emerge (Al Jazeera and News Agencies. 2019).

4. Case Study:

Malaysia is a country in Southeast Asia. The federal constitutional monarchy consists of thirteen states and three federal territories, separated by the South China Sea into two regions, Peninsular Malaysia and Borneo's East Malaysia. Peninsular Malaysia shares a land and maritime border with Thailand and maritime borders with Singapore (Khan, Lina , 2016), Vietnam, and Indonesia. East Malaysia shares land and maritime borders with Brunei and Indonesia and a maritime border with the Philippines and Vietnam. Kuala Lumpur is the national capital, largest city and the seat of the legislative branch of the federal government. The nearby planned capital of Putrajaya is the administrative capital; which represents the seat of both the executive branch (Cabinet, federal ministries and agencies) and the judicial branch of the federal government. With a population of over 32 million, Malaysia is the world's 44th-most populous country. The southernmost point of continental Eurasia is in Tanjung Piai. In the tropics, Malaysia is one of 17 megadiverse countries, home to a number of endemic species (Khan, Lina , 2016).

Malaysia has its origins in the Malay kingdoms which, from the 18th century, became subject to the British Empire, along with the British Straits Settlements protectorate. Peninsular Malaysia was unified as the Malayan Union in 1946. Malaya was restructured as the Federation of Malaya in 1948 and achieved independence on 31 August 1957. The independent Malaya united with the then British crown colonies of North Borneo, Sarawak, and Singapore on 16 September 1963 to become Malaysia. In August 1965, Singapore was expelled from the federation and became a separate independent country

5. THE RESEARCH DESIGN:

Top big data companies in Malaysia strive to deliver exceptional, customer-centric Big Data Engineering and Analytics solutions. As the big



data developers in Malaysia have years of experience in serving companies ranging from startups to Fortune 500 companies (Khan, Lina , 2016)), you can rely on them for a high-quality outcome. Moreover, as they have clients from across the globe, they understand different types of audiences. The extensive knowledge of the big data analytics firms in Malaysia enables them to guide their clients in the ever-changing market dynamics. If you don't know how to start research for such companies (Ahmad Ashraf, Ahmad Shahabuddin, 2020).

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By leveraging the internet, smartphones, big data, the internet of things, artificial intelligence, and other technologies, Malaysia can increase productivity, spur innovation, and improve livelihoods. Digital technologies can drive economic growth in Malaysia through three channels. First, they can promote inclusion by enabling existing firms and entrepreneurs to serve markets that are currently underserved. Second, they can lower costs and increase efficiency for existing firms and entrepreneurs to make them more competitive. And third, they can encourage innovation and scale economies, allowing entirely new forms of business and entrepreneurship to emerge (Department of Statistics Malaysia, 2018).

7. Methods:

The analysis began with an assessment of digital adoption using the framework from the World Development Report, with an emphasis on how businesses are using—but failing to fully exploit—digital technologies to communicate with customers, market goods, and meet other core business functions. A discussion of the ICT infrastructure on which the digital economy is built, including persistent challenges related to the affordability and quality of fixed broadband internet access that arise from high prices, market concentration, and an underperforming regula-



tory regime followed (Department of Statistics Malaysia, 2018).

The program also looked at the promise and challenges of digital entrepreneurship in Malaysia, highlighting the central role of government initiatives to date and what is required to fully empower the private sector. The final piece explored options for taxing the digital economy, including the impact of recent reforms to international standards (Lim Yin Sern, Teh Wee Vien, Loganantha Esparan, Bobby James, Karyn Chua Su Yin. 2017).

8. Results and Analysis:

Malaysia's digital economy now contributes one-fifth to GDP, Malaysia's digital economy is making large strides in its maturity, according to a new study by strategy consulting firm YCP Solidiance. However, with the future in mind, there is no room for complacency, and organizations of all sizes and shapes are advised to accelerate their digitalization plans.

The country's digital economy is estimated by YCP Solidiance to be worth over RM 270 billion, which equates to roughly 18% of Malaysia's gross domestic product (GDP). This makes Malaysia more digitally mature than many other countries in the Asia Pacific region, and also a digital step ahead of several Western economies (Huawei Technologies. 2018). Accelerated by the current Covid-19 crisis and resulting lockdown, which has abruptly lifted the need for digital shopping, working, and connection, the share of GDP coming from the digital segment is forecasted to reach 20% by the end of this year (Malaysia Digital Economy Corporation (MDEC), 2020).

Malaysia's progress builds for a large part on the government's digital strategy first launched over two decades ago. Since the inception of the Multimedia Super Corridor (MSC) in 1996 (Lim Yin Sern, Teh Wee Vien, Loganantha Esparan, Bobby James, Karyn Chua Su Yin. 2017), the Government of Malaysia has been persistently promoting the nation's digital agenda as evidenced through multiple public initiatives such as the National Strategic ICT Roadmap & Digital Malaysia (2008-2012), National eCommerce Strategic Roadmap (2017), Industry4WRD (2018) and the latest National Fiberization and Connectivity Plan (2019-2023).



Figure (1) digital economy value and growth

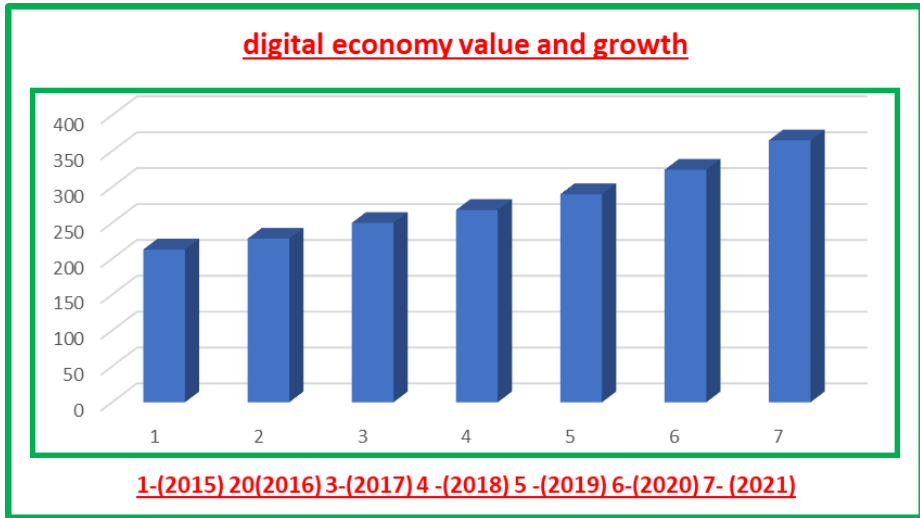


Figure (2) Ecommerce and ICT – Industry

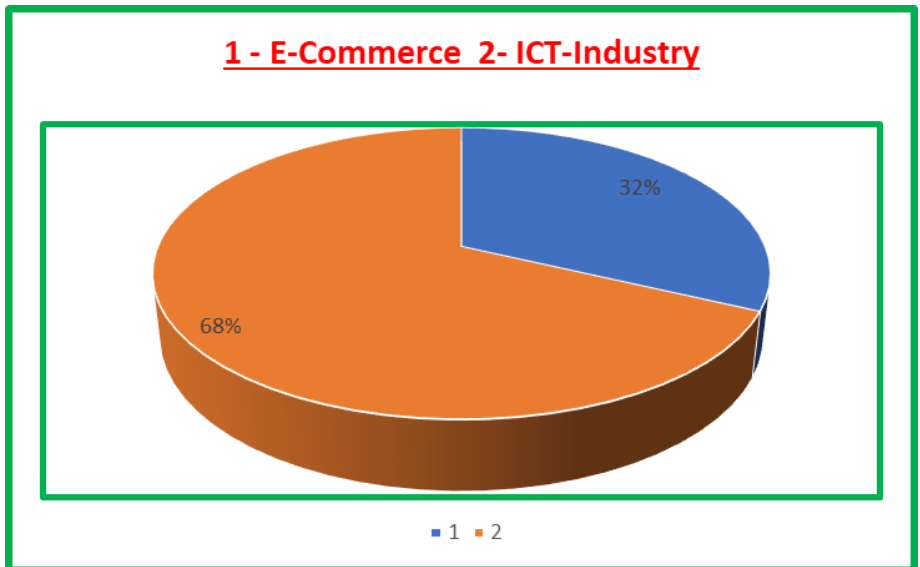
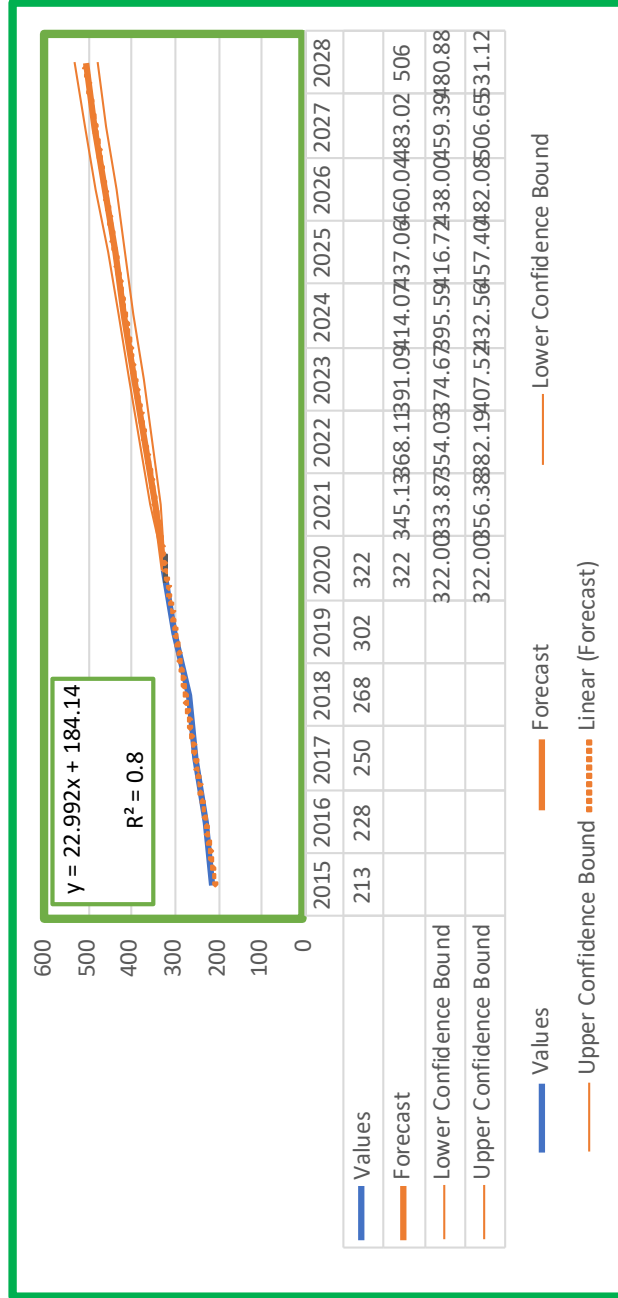


Figure (3) prediction of digital economy value and growth





It is noted in Figure No. (1) the values of (digital economy value and growth) for several years, starting from 2015 to 2021, which shows that it is constantly increasing as a result of the digital transformations that occur. While in Figure No. (2) it shows the difference between (Ecommerce and ICT – Industry) and their percentage (Siddhartha Raja, Richard Record, 2019). While in Figure No. (3) the prediction rate until 2028, it is noted that the prediction rate is constantly increasing, evidence of the proximity of the prediction line, and therefore it was noted that the value of the error square ($R^2 = 0.89$) is very close to the correct one, evidence of the accuracy of the data and analysis, and also we obtained the equation of the regression line (Lim Yin Sern, Teh Wee Vien, Loganantha Esparan, Bobby James, Karyn Chua Su Yin. 2017) :

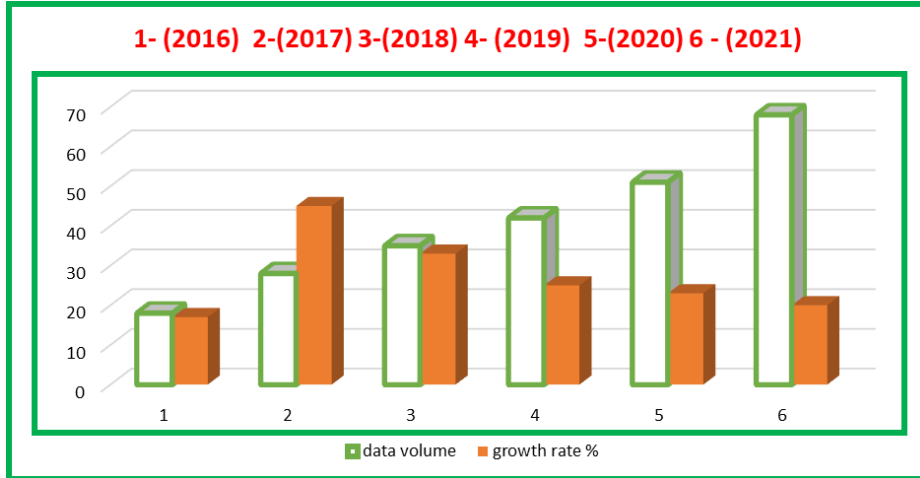
$$(y = 22.992 x + 184.14) \dots\dots\dots (1)$$

To confirm this, Figure No. (4) was made, which indicates the value of (relation between data volume and growth rate) until 2021 (Malaysia Digital Economy Corporation (MDEC), 2020).

A report released by Statista in August 2019 shows that by 2021, the revenue size of global big data market will reach \$76 billion, an increase of about 36.33% compared with the expected level in 2018 and doubling the revenue size in 2016. With the maturity of the market and the development of emerging technologies, the big data market will grow steadily in the future (Siddhartha Raja, Richard Record, 2019), with a growth rate of about 18%. It is predicted that the overall revenue size of the big data market will increase by about \$9 billion each year in the period from 2018 to 2022, with a compound annual growth rate (CAGR) of about 18.73% (Lim Yin Sern, Teh Wee Vien, Loganantha Esparan, Bobby James, Karyn Chua Su Yin. 2017).



Figure (4) relation between data volume and growth rate



Conclusion:

Two critical components of the digital economy are infrastructure and data. High quality digital infrastructure is necessary to support the increasing requirements of data processing and data transfer involved in digitalization (Lim Yin Sern, Teh Wee Vien, Loganantha Esparan, Bobby James, Karyn Chua Su Yin. 2017) . Government standards, such as the Mandatory Standards for Quality of Service, have a key role to play in ensuring that reliable infrastructure exists to support the digital economy and the digitalization of firms. Further research on these standards and current demand could help set minimum standards that are appropriate for different locales and sectors of the economy (Lim Yin Sern, Teh Wee Vien, Loganantha Esparan, Bobby James, Karyn Chua Su Yin. 2017).

Data analytics can uncover consumption patterns, optimal pricing strategies and hidden consumer preferences. Access to market research and proprietary user data may give larger firms an advantage in the digital economy. Allowing open access to government data, such as population demographics and geographical price trends, may allow SMEs to engage in data analytics without the high overhead costs of proprietary



market research. Research suggests that open data benefits academic research³⁰; additional research could assess the impact of open data on the digitalization of firms (Malaysia Digital Economy Corporation (MDEC). 2020).

The digital economy presents an abundance of opportunities for Malaysia, but it also surfaces tough challenges. Firms of all sizes across all sectors stand to benefit from digitalization by increasing productivity and becoming more efficient and competitive. Nonetheless, lack of technological knowledge, organizational silos and costs remain barriers to digitalization.

The digital economy can bring about inclusive free market competition or exclusive dominance via a monopolistic economy. In the best case, perfect competition will lower prices and increase product quality. In the worst case, monopolistic firms could arbitrarily set prices and have unfettered access to user data. By extracting user information and engaging in anti-competitive activities, platforms could dominate the digital economy, leaving SMEs behind. Thus, it is crucial that inclusive policies be put in place to encourage digitalization by firms of all sizes and to close the digital divide between firms in Malaysia (Lim Yin Sern, Teh Wee Vien, Loganantha Esparan, Bobby James, Karyn Chua Su Yin. 2017) .



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