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DIGITALISATION OF MALAYSIAN AGRICULTURAL SECTOR

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INTRODUCTION

The expansion of agriculture is without a doubt the most significant period in modern human history. Agriculture is the science behind farming, which entails cultivating plots of land to grow crops for human consumption (Cambridge Dictionary, 2020). Agriculture played a key role in the evolution of a more sedentary or static human civilization.

The term "Neolithic Revolution" was coined in the 1920's by V. Gordon Childe, an Australian archaeologist and one of the twentieth century's foremost prehistorians (Balter, 2005). Agriculture, he asserted, was a watershed moment in the revolution because it gave early human colonies control over their own food supplies. He also asserted that, following the end of the last ice age over eleven thousand years ago, a warmer and less harsh climate compelled early humans and the few domesticated animals to migrate and congregate near fully developed rivers, oases, and other water sources. These activities laid the groundwork for most agricultural societies and early kingdoms, which grew to become great civilisations.

We have entered the next stage of human development, one of complete digitalisation. Digitalisation is a term that refers to the process of converting written material to a digital format (Collins Dictionary, 2020). Capital investment in innovation, manufacturing, efficiency, and advancements in digital technology has the potential to foster more fair and sustainable growth (Organisation for Economic Co-operation and Development, 2020).

Data analytics and networking advancements are enabling most businesses to fully use a slew of new digital applications, including smart appliances, shared mobility, and advanced manufacturing methods, such as 3D printing. In the not-too-distant future, systems will be able to forecast who will need specific commodities and deliver them at the most helpful time, location, and cost. This is all possible because of digitalisation. Numerous systems are already in place, supplying critical benefits to specific businesses in areas such as safety, production, accessibility, and long-term viability. Furthermore, it influences markets, businesses, and most importantly, jobs. There will emerge new business models, displacing century-old practices (International Energy Agency, 2020). It will be up to influential politicians, corporate executives, and other stakeholders to ensure a smooth transition of the industry into the next phase.

Most of the agricultural innovators' grand ambition is to enable the entire industry to advance or leap up the developmental value chain. This entails the application of a variety of technologies, ranging from Internet of Things-based agriculture to ultra-high-tech agriculture. This would entail the creation of a more sophisticated and integrated platform for farmers, the widespread use of advanced robotics, and the expansion of indoor farming (Loh, 2021). As a result, national plans and concurrent regulations must be implemented for the industry to achieve its goal of complete digitisation.

Malaysians have embraced digital technology fully, with the digital economy comprising cashless payments, e-commerce expansion, and ICT significantly adding to the country's GDP. While digital adoption is widespread among the populace, numerous firms and industries in Malaysia continue to lag behind. Agriculture is the most noteworthy of this, accounting for around 8% of Malaysia's GDP along with forestry and fisheries. Even though the industry employs approximately 11% of the population, it is extremely slow to adapt, with many farmers and businesses continuing to rely on old methods and reluctance to adopt digital solutions (Santiago, 2021).

Government authorities, on the other hand, have concentrated their efforts in recent years on modernising agriculture by encouraging young people to enter the field. Only in August 2021, an incoming Deputy Minister of Agriculture and Food Industry declared his intention to recruit university graduates to work in contemporary agriculture, naming Kelantan, Terengganu, and Pahang as places suitable for short-term crop cultivation. Bringing a younger generation of digital natives into agriculture would also accelerate the adoption of smart farming in Malaysia via machine learning, IoT, and AI solutions.

THE DIFFICULTIES

As is the case with any modern technology, digitising the entire agricultural value chain will create new opportunities for the process's primary stakeholders. Integrating such digital technologies into established farming practices, on the other hand, would introduce disruptions or risks that could jeopardise the entire endeavour. To begin, digitisation will increase overall efficiency. Farmers can use smart farming practices to collect data that can be used to further improve yields (Giesler, 2018). In this new era of farming, cloud computing is widely used to process data. These are the systems that automatically collect, analyse, and store data. These data are available on any mobile device. The advantage of a cloud system is that service providers can access the data sources. As a result, the farmer will have a wealth of information and pertinent recommendations at his fingertips. It is critical to emphasise that the farmer owns the data.

Additionally, as digitalisation advances gradually but steadily, the adoption of digital technologies may result in the emergence of a slew of new markets that did not exist just a few years ago (Giesler, 2018). Producers will be able to set up their own pipeline to direct their produce to more modern consumers, who are more demanding and sensitised. Consider a digital pasar (market) in which the consumer can contact the manufacturer directly. This enables direct communication between the client and the farmer, ensuring that the highest quality product is delivered to the client's home, be it dairy, vegetables, meat, or seafood.

While we recognise that digitising agriculture would help local farmers, we must also recognise that this strategy has some drawbacks. While massive amounts of data may be generated, ensuring that local Malaysian farmers have the necessary infrastructure to use and reap the benefits of digitalisation presents a challenge. Simply browsing the internet in rural areas reveals that the infrastructure needed for the next agricultural revolution has not been fully implemented. In 2020, at the height of the COVID-19 outbreak, rural students were forced to climb hills and trees, drive hundreds of kilometres to the next town, and even skip critical exams due to a lack of high-speed internet infrastructure (Lee, 2020).

A more pressing issue in Malaysia is rural farmers' lack of digital literacy. Digital literacy has been largely determined by socioeconomic status in the Asian region. Historically, this region's and, to a lesser extent, the world's young urban and suburban populations have been the primary users of technology. These groups have always been dominant due to their increased awareness of technological advancements and ability to afford new pieces of technology. While this is not always the case, when it comes to the urban poor, the broad consensus has generally been true.

THOUGHTS ABOUT THE FUTURE

While the process of digitalisation can be slow at times, the agricultural industry is currently undergoing a complete transformation. One innovation is the development of agricultural drones, which are used to optimise agricultural operations, increase crop yields, and check crop growth. Farmers who use this type of equipment will obtain a more detailed image of their fields through sensors and digital photographs. Employing an agricultural drone to collect data and optimise crop yields will eventually help farmers as population growth will undoubtedly increase demand for produce soon.

The sky is the limit with this technology as seen in the development of unmanned combine harvesters for use in Kedah's vast rice fields as well as their deployment on Cameron Highlands tea plantations. These technologies will undoubtedly propel this industry forward bringing attention to an industry that has previously been overlooked in this country. This is becoming increasingly critical as Malaysia strives to develop an agricultural economy capable of self-sufficiency (Free Malaysia Today, 2020)

STRATEGIES FOR A DIGITALLY ENABLED AGRICULTURE SECTOR

Farmers' days of toiling in scorching heat for extended periods of time are numbered. Technology has permeated the agricultural industry over the last few decades aiding farmers in their operations. Now, some agricultural fields are implementing modern technologies, such as the Internet of Things (IoT), big data analytics (BDA), and new artificial intelligence (The Sun Daily, 2020).

According to Dr. Karl Ng, director of Data Ecosystem Development at the Malaysian Digital Economy Corporation (MDEC), the injection of digital technical aspects into agriculture is expected to be effective soon. He noted that MDEC launched its Digital Agtech programme several years ago after visiting several agricultural regions across the country to gain a better understanding of farmers' circumstances. MDEC recognised that the issues confronting local farmers, which are primarily related to expenditures, monitoring, neglect, and workforce, could be addressed through the rapid implementation of such a programme.

The agricultural sector in Malaysia will continue to thrive and be prepared for future challenges with the aid and guidance of these key agencies, which have implemented policies such as Digital AgTech (Malaysia Digital Economy Corporation, 2020).

CONCLUSION

Clearly, digitalisation has had an impact on Malaysia's agriculture sector, presenting both opportunities and challenges for the livelihoods and lifestyle of local farmers. These possibilities and risks must be addressed directly if the sector is to thrive in the coming years. To achieve such wealth, both policymakers in Putrajaya and industry players, including farmers and business leaders, will need to implement critical policies and strategies. Only by addressing all these issues will agriculture in this country be able to grow into the powerhouse it can become. Agriculture, as we all know, is a critical sector that employs hundreds of thousands of Malaysians and supplies food for tens of millions more, and without it, this country would perish. This is amplified by Malaysia's projected population growth in the coming decades.

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