



Agricultural Technology Incubation Program in Malaysia

Mohd Tarmizi Haimid, Nik Rozana Nik Mohamad Masdek and Rozhan Abu Dardak
Malaysian Agricultural Research and Development Institute (MARDI),
Persiaran MARDI-UPM, 43400 SERDANG, Selangor, Malaysia
E-mail: mth@mardi.gov.my

ABSTRACT

Small and Medium enterprise (SME) is important to Malaysia's economy. More than 900,000 SMEs were established in 2018, and the government aims to increase this to one million corporations by 2020. In order to increase the number of SMEs, the government creates many programs and initiatives that can encourage youngsters to be involved in the business. The government set up the agricultural technology incubation centers in 2009, as an expansion to the business incubation centers, which was started in late 1980s. The agricultural technology incubation center provides commercial-scale processing facilities, office space and supported with technological skills for young entrepreneurs to start their business. These facilities provide an ecosystem for young entrepreneurs to understand and experience the business before they can start their real business.

Keywords: Agricultural technology, incubator, Entrepreneurship, SME

INTRODUCTION

Small and medium enterprise (SME) is one of the backbones of Malaysia's economy. In 2018, SMEs contributes 38.3% of the GDP, valued around RM52.088 billion (US\$12.4 billion). Currently, more than 908,065 SMEs are in operation in Malaysia, and they represent about 98.5% of the business entity. The number of new SMEs in Malaysia is increasing every year at the rate of 4.5% per year. In 2018, SMEs provide 65% of job opportunities to the workforce in the country. Records of the Ministry of Entrepreneurship reveal that about 35% of SMEs in Malaysia is new, or have been established for less than five years. Under the new National Entrepreneur Policy 2030, the Ministry of Entrepreneurship aims to increase the number of SMEs to around one million corporations, which will increase their contribution to the national workforce to 80% in 2030 (Usahawan, 2019).

The government has introduced many programs, initiatives and incentives to encourage more people, especially the youngsters to be involved in business. The government also provides the proper environment that encourages youngsters to participate in agribusiness. The incentive and development program are inclusive, and covers the whole value chain. The type of entrepreneurship development programs implemented is aimed at supporting entrepreneur development by creating resilient and sustainable enterprises. It also aims to optimize performance and to create opportunities for entrepreneurs to continue or to grow their business through market expansion, innovation and productivity improvements. According to a report by SME *Integrated Action Plan* (SMEIPA) 2019, 14 ministries and agencies are involved in the development of SME, and in 2018, 153 entrepreneur development programs were created. This comes with a cost of RM13.7 billion (US\$3.26 billion) which has benefited 637,808 receivers (Usahawan, 2019).

On the other hand, there are many issues and challenges faced by young entrepreneurs, especially in terms of seeking financial assistance for business capital, innovation and technology that can be used to

manufacture new products so that they can compete with the established companies. The other issue is the technical knowhow and managerial skills that can be used in managing the organization efficiently and effectively. These issues and challenges are some factors that contributed to the failure of the business.

One of the programs introduced by the government as an effort to encourage youngsters to be involved in the business is through the incubation center. Even though this program was started in the 1980s, the focus was on the conventional business. This paper focuses on the development of the agricultural technology incubation program in Malaysia. It aims to provide an understanding to readers on how this program could improve the development of young entrepreneurs and finally increase the number of SMEs in Malaysia.

OVERVIEW OF BUSINESS INCUBATION IN MALAYSIA

An incubator can be described as an organization that creates a suitable environment for nurturing new or inexperienced ventures. A business incubator center is designed specifically to help new companies planning to venture into the business world which is also known as a 'start-up'. Business incubation is one mechanism to keep the entrepreneurship development survival rates high because it offers all the essentials needed during the vulnerable stage or the early period of their ventures (Grimaldi, 2005). Plant factories equipped with functional machines, which are able to be utilized with minimum rental, office facilities, advisory services, business consulting services, financial advisory services and a networking platform between entrepreneurs are among the facilities offered in a business incubation program.

The incubation program in Malaysia began in the late 1980s when there was a shift from production-based to be knowledge-based economy. This shift gave the needed push for local entrepreneurs, especially the small and medium enterprise (SME), to be more creative and innovative. Most SME entrepreneurs do not have a proper business space to start a business. There is also the issue of financial constraint for them to rent a place. Any available financial resource will mostly be invested in business development purposes. Incubation center is the perfect platform for SME entrepreneurs to start a business and save on start-up business costs.

SME Corporation Malaysia through its subsidiary, the SME Inc Incubator Sdn Bhd, is aiming for 200 entrepreneurs across the country to participate in the SME Incubation program. The participants would be selected through an interview session to ensure that the projects implemented would reach their target—the youth and people who belong to the B40 group. Participants will be guided by SME Inc Incubator Sdn Bhd, who will act as the coordinator, throughout the program. The program will provide a complete entrepreneurial ecosystem to enhance the skills of its participants. The projects that are being implemented are focused on the daily needs of the people. This directly contributes to the increase of food supply in the country, and indirectly contributes to long-term price stability of food products.

The government has setup an economic program known as a Technology Park Malaysia (TPM) as well as incubators under various agencies and ministries for the purpose of producing SME-based entrepreneurs equipped with technological know-how, creative and innovative values. The 'National Incubator Development Framework' was established in 2002, whereby the goal was to create innovative, competitive and competent SMEs to compete at the global arena. They shall be equipped with strong technical knowledge, innovative capabilities in terms of robust management and proficiency in their business venture. The program will play an inclusive role by creating job opportunities, producing quality products and services at competitive prices.

Currently, Malaysia has more than 106 types of incubation centers operating across the country, including the ICT, multimedia, advanced engineering, agriculture, food and biotechnology. About 92 of these incubators are funded by the government while the rests are from the private sector. Among them are the Standard and Industrial Research Institute of Malaysia (SIRIM), the Malaysian Technology Development Corporation (MTDC), Technology Park Malaysia (TPM), the Majlis Amanah Rakyat (MARA), the Malaysian Agricultural Research and Development Institute (MARDI), Kulim Hi-tech Park, Multimedia Development Corporation (MDeC), and the Incubator K-Ekonomi in Melaka. There are also collaborations between MTDC and university-linked incubators namely Universiti Teknologi Malaysia (UTM), Universiti Putra Malaysia (UPM), and Universiti Kebangsaan Malaysia (UKM) (Corps, 2017)

The Government intends to empower the development of incubators in Malaysia by promoting the SMEs' involvement in technology-based and innovative areas in line with the nation's aspiration to become a high-income nation (Usahawan, 2019). The end goal of each incubator program is to produce competitive entrepreneurs who are self-reliant and able to contribute to the country's economic development.

The development of agricultural technology incubation program

The SMEs involved in agriculture, and agrobased industry represent around 1% of the total SMEs in Malaysia. This figure does not represent the importance of agriculture as the source of food in Malaysia. The Ministry of Agriculture and Agrobased Industry aims to increase the number of SMEs involved in this sector. This is important because the value-added growth is significant, an increase from -1.9% in 2016 to 7.3% in 2017. The increase is merely because of the growth in the agricultural crops and livestock sub-sectors, including rubber and palm oil. These three sectors remain the largest contributor (80.6%) to the SME value-added in the agriculture sector. This is followed by fishing (16.1%) and forestry and logging (3.3%).

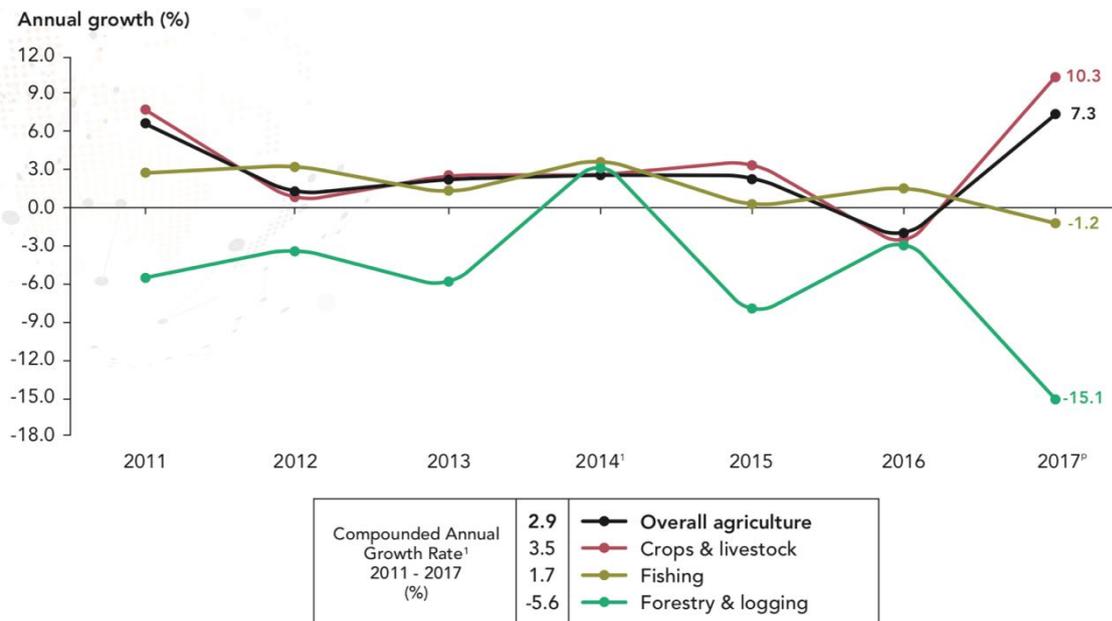


Fig. 1. SME Value-added Growth of Sub-sectors in the Agriculture Sector (%)
 Growth based on 2014 New SME Definition versus 2013 New SME Definition (redefinition effect has been eliminated) p: preliminary
 Source: Department of Statistics, Malaysia

In today's hi-tech world, agriculture entrepreneurs need to be prepared and to increase their competitiveness so that they can actively participate in the global value chain as well as in the Industrial Revolution (IR) 4.0 and digitization. This is a challenge that new entrepreneurs will have to face because of their lack of capital to invest on research and development. It is almost impossible for them to catch up with the new era without the support of the government. The business incubation programs initiated by the government will encourage the growth of entrepreneurs to be involved in this sector. The Malaysian Agricultural Research and Development Institute or MARDI has been mandated to lead the development of the agricultural technology incubation program. This is in line with its functions as a government research institution, which is to generate and transfer technologies in the field of agro-food commodities, engineering, biodiversity, biotechnology and food processing. The output of the research by MARDI has successfully generated many crop varieties and clones, animal breeds and its management practices for almost 50 years. Besides the scientific researches, MARDI also provides technical or advisory services to entrepreneurship development in many industries.

MARDI has officially started its agricultural technology incubation program on 28 February 2009 as one of the strategies to increase the effectiveness of its technology transfer initiatives to local entrepreneurs who are keen to venture into a modern agricultural business. This program is a part of the Eighth Malaysia Development Plan (RMK-8). The MARDI Technology Incubation Center is defined as a new technology pilot plant equipped with the latest machinery and equipment on a commercial scale. This center aims to produce graduates or incubatees that have the strength and knowledge in all business aspects, including technological expertise, together with financial and marketing skills. It provides young entrepreneurs with opportunities to learn technical skills, and hands-on training on handling machines and equipment for pre-commercial processing. Entrepreneurs or incubatees are also exposed to relevant standards and certification in the agrobased industry.

MARDI has set up five agricultural technology incubation centers in Kedah, Melaka, Terengganu, Sabah and Sarawak, respectively. The five incubation centers provide machines and facilities for different

business activities. The incubation center in Kedah specializes in manufacturing brown rice-based products, while the one in Melaka specializes in the manufacturing of essential oil-based products. The incubation center in Terengganu operates machines and technologies related to sweet potato and potato-based products, while that in Sarawak specializes in the processing of modern rice seeds. Finally, the technology incubation center in Sabah specializes in the production of seafood-based products. In general, participants who are participating in the incubator programs must go through a 3-month session on incubation. Those participants may later apply to participate in the actual MARDI incubator program according to the time frame set by each incubator center. Additionally, incubators will have to pay a sum of RM3,000 (US\$937.5) as a security deposit and a monthly surcharge of RM300 (US\$93.75) during the overall duration of the program.

The objectives of the agricultural technology incubation program are as follows:

1. To accelerate the commercialization process of selected technology generated by MARDI;
2. To develop innovative and competitive technology-based SME companies and entrepreneurs;
3. To support and accelerate the development of the agricultural industry;
4. To provide opportunities for MARDI researchers to be involved in the development and commercialization arena;
5. To develop a spin-off company network that contributes to the continuous innovation process of MARDI technology; and
6. To build smart partnerships between entrepreneurs and technology generators.

The MARDI technology incubation center offers four services as follows:

1. Technical service: This is a practical guide to the handling of procedures and the quality assurance of the final product. It is also to understand the research and development for product diversification purposes.
2. Physical infrastructure, pioneer plant factories and office facilities: This includes a shared office space for administrative services, and access to specific facilities such as the laboratories and testing facilities.
3. Legal and intellectual property management services: This service provides assistance in the management of technology licensing rights to entrepreneurs as well as helping corporate affairs. The interests of the intellectual property rights of both parties will be protected.
4. Business development and product marketing services: Incubator personnel will develop a business plan for the specific product being produced and assist in forecasting future product development within the same line. Networking will be set up through a business forum or smart partnerships to strengthen the incubatee's future business network including international business opportunities.

IMPACT OF THE AGRICULTURAL TECHNOLOGY INCUBATION PROGRAM

One of the most important impacts of the program is the employment opportunities created to general public as a result of the business activities. It is one of the more inclusive steps expected by the government in the Malaysia Development Plan. In addition, incubator participants cum entrepreneurs can also stimulate the development of new supporting industries. There will be a spill-over effect as a result, that also promotes inclusive action from its production activities.

In terms of knowledge, incubatees can enjoy the benefits of acquiring formal and informal knowledge. Formal knowledge includes the training and reading materials provided by the incubator, while the informal knowledge is the experiences shared by the incubator manager. Most of the successful incubatees acknowledged that both types of knowledge were very helpful to them in their production operations and business advancement.

Additionally, successful incubatees also recognize that the spirit of pursuing continuous knowledge is important in order to ensure the continuity of their business. This is because in the era of globalization today, business entrepreneurs need to increase the level of reading and business-related knowledge from time to time due to the significant changes that are happening especially in the field of information technology. Smart businessmen taking advantage of the rapid development of information technology will successfully maintain their business identities in the market. Knowledge can also create competitive advantage. Indeed, knowledge can help entrepreneurs to be creative and innovative in order to continue and sustain their businesses in the marketplace both domestically and internationally.

A total of 375 participants have benefited from MARDI's Incubation program (MARDI, 2017). Some of the entrepreneurs have successfully involved in the business and marketed their products in the domestic as well as international markets.

CONCLUSION

The development of the agricultural technology incubation program is beneficial to young entrepreneurs who are planning to venture into the production of food-based products. The facilities and expertise provided are in line with the needs of entrepreneurs in their initial stage of learning and gathering technical knowledge. The role of the technology incubator program is very important in the context of the technology transfer produced by scientists in government research institutions to be disseminated to society.

Despite its achievement, the incubation program still has room for improvement, especially in terms of marketing and financial management, need to be emphasized in the future to ensure survival of these programs. In addition, the structure of the selection system and the incubation period need to be reviewed based on the quality and potential of the incubatees rather than focusing on the quantity of the participants needed. These are important considerations to be taken into account, to produce creative, innovative, and competitive entrepreneurs in the market. Hence, the success of producing qualified incubatees to be turned into successful entrepreneurs would mirror the pride and success of MARDI through its Incubator-Incubatee program.

REFERENCES

- Bergek, A. &. (2008). Incubator best practice: A framework. *Technovation*, 28(1–2), 20–28.
- Department of Statistic Malaysia (2018). Business Report 2018. Malaysia
- Grimaldi, R. . (2005). Business incubators and new ventures:an assessment of incubating models. *Technovation* 25 (2), 111-121.
- MARDI. (2017). MARDI's Annual Report and Financial Report.
- Lalkaka, R. (2002). Technology business incubators to help build an innovation-based economy. *Journal of Change Management*,3(2), 167–176.
- Usahawan, K. P. (2019). Dasar Keusahawan Nasional 2030. Kementerian Keusahawanan dan Kooperasi, Malaysia

Date submitted: August 3, 2019

Reviewed, edited and uploaded: September 20, 2019