THE DEVELOPMENT TECHNOLOGY BASED ENTREPRENEUR IN MALAYSIA

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Abstract

Realizing the involvement of small and medium-sized enterprises (SMEs) in the economic development, Malaysia has introduced a special Flagship Application that acts as a mechanism to realize the benefits of SMEs to the nation. The emergence of technological innovations has opened up to new opportunities and challenges to a nation's economic development. The knowledge regarding the background of Technopreneur Development Flagship Application could bring positive returns to the public at large especially SMEs. The importance of SMEs in contributing to the growth of the economy and the importance of information and communication technology (ICT) adoption has led to the introduction of the new Flagship Application as it aims at accelerating the development of these SMEs to become globally competitive companies.

Keywords*: Entrepreneurship, technopreneur, Malaysia*

INTRODUCTION

The manifestation of information technology among business community in the global market has encouraged Malaysia to secure information and communication technology (ICT) as a means of modernization of the business process. The advent of Internet and its related high tech industries has also introduced new avenues for entrepreneurship in Malaysia. It is not uncommon nowadays for multinational corporations or small and medium-sized businesses to adopt for the new technology as both categories of firms act as driving force in catalyzing nation's economic growth. In this world of accelerating economic globalization, advances in science and technology continue in the blink of an eye, and knowledge is recognized as a core competence in accumulating wealth (Lalkaka, 2002). From a business perspective, the shift toward increasingly automated business process and communication based on for instance the transfer of electronic data is designed to achieve greater efficiency and effectiveness in business processing (Hall, 2001).

Around the world, we can see that nations have embraced ICT as a means to enrich public and private sector processes, while providing citizens with easier access to these services (Fang, 2002). The emphasis on ICT has also boosted Internet penetration and literacy rates as well as

investments in research and developments. The emergence of technological innovations has opened up to new opportunities and challenges to a nation's economic development (Yunos, 2002). It is worth to mention that information technology has becoming an important fact to the business community as it helps improve the business processes (Abdul Aziz et al., 2011)

CONCEPTS OF TECHNOPRENEUR AND FLAGSHIP APPLICATION

In Malaysian perspective, the term "technopreneurs" means technology entrepreneurs, which are represented by ICT and multimedia SMEs, seed level ICT and multimedia companies and start-ups ICT and multimedia companies.[1] Hence, the introduction of Technopreneur Development as the new Flagship Application has demonstrated that the government has extended the opportunity especially among SMEs to participate in the local ICT market. By focusing on the technology-based SMEs, technological adoption and ICT advancement will act as channels to expand and accelerate the business as well as the people. This new Flagship Application bears vital importance to the growth and development of entrepreneurs in the knowledge-based economy. Besides, new structures and strategies are being explored and formulated to help technology-based SMEs grow and to offer a promising future within the global marketplace (Abdul Aziz et al., 2011). In this case, SMEs will be able to expand themselves to compete in this borderless world, at the same time create, and add value to their business in order to achieve sustainability.

Realizing the involvement of small and medium-sized enterprises (SMEs) in the economic development, Malaysia has introduced a special Flagship Application that acts as a mechanism to realize the benefits of SMEs to the nation. Being unique and distinguished from other countries, Technopreneur Development Flagship Application was introduced with the underlying objective to develop a robust SMEs sector in Malaysia to make strong contribution to GDP. Technopreneur Development Flagship Application acts as a mechanism to improve domestic productivity and provide access to new market as well as to increase innovation through information technology adoption. This Flagship Application is associated with the Multimedia Super Corridor (MSC) that was being developed in 1996 to help diversify the economy that will be able to transform Malaysia into knowledge-based society to meet the challenges of an ICT-driven future (Huff, 2002).

The background information regarding Technopreneur Development Flagship Application is important especially among the public. This is because in order to understand fully the development process, the origin of the Flagship Application could help in providing better understanding to the public, for instance on the reasons for the introduction of the new Flagship Application. The knowledge regarding the background of Technopreneur Development Flagship Application could bring positive returns to the public at large especially SMEs.

[1] Seed level companies- entities that have been incorporated within the past two years and have ideas or concepts that require funds for proof of concept; Start-ups companies- entities that may be in the process of setting up or have been in business for no more than two years and require first round funding capital for commercialization. These companies may not be generating profits yet.

LITERATURE REVIEW

Entrepreneurs and Technology

As technological advance enables the economy to obtain more products and services, the innovations from entrepreneurs have resulted in the introduction and commercialization of a new product or process. According to McConnel and Brue (1999), technological advance is a three-step process of invention, innovation, and diffusion, which are explained below:

(i) Invention

It is the most basic element of technological advance. It is the first discovery of a product or process by imagination, ingenious thinking, and experimentation and the first proof that it will work.

(ii) Innovation

It is a second element of technological change, draws directly on invention. Innovation is the first successful commercial introduction of a new product, the first use of a new method, or the creation of a new form of business enterprise. Innovation can be in the form of product innovation or process innovation.

(iii) Diffusion

It is the innovation through imitation or copying. In this case, to take advantage of new profit opportunities or slow the erosion of the profit, new and existing firms imitate the successful innovations of others.

In this case, technological advance arises from intense rivalry among individuals and firms, which motivates them to seek and exploit new profit opportunities or to expand existing opportunities.

The Importance of Technology to SMEs

The emphasis on information and communication technology (ICT) has boosted investments in research and developments as well as Internet penetration and literacy rates. The emergence of technological innovations has opened up to new opportunities and challenges to businesses. Lalkaka (2002) defined technological innovation as the process that drives a concept towards a marketable product or service. This holds true as it contributes towards raising productivity and competitiveness (Lalkaka, 2002). In this regard, technological adoption and advancement act as channel to expand and accelerate the businesses as well as the people. Businesses will be able to expand themselves to compete in this borderless world, at the same time create, and add value to their business in order to achieve sustainability (Mohd Abdullah et al, 2014).

The rapid advancement of technology has encouraged small and medium-sized businesses (SMEs) to utilize the opportunity to establish, expand, as well as prosper their businesses.

Extensive involvement of SMEs in generating revenue to the nations have shown that they are capable of generating employment opportunities, mobilizing the local resources, creating a balanced and affluent society and playing a significant complementary role to large firms and eventually strengthening the economic development of the nation as a whole (APEC, 2001). However, the brisk movement of technology has not always been good for some. This is because those who are already strong are prospering and others falling behind. As such, it is important for SMEs to plan their business carefully so that the changes in the technology and environment will always bring in positive returns.

Entrepreneurs versus Technopreneurs

McConnel and Brue (1999) defined entrepreneurial ability as the human resources that combine the other resources such as land, labour and capital to produce a product, make non-routine decisions, innovative and bear risks. Entrepreneurship is a field studied by economist, psychologists, and sociologists whose paths rarely cross (Leibenstein, 1987 in Michail, 2000). Stevenson et al. (1994) in Suzuki et al (2002) defined entrepreneurship as the pursuit of opportunity with regard to resources currently controlled. Drucker (1985), a management theorist in Yarzebinski (1992) notes that entrepreneurs see change as the norm and as healthy and they always searche for change, respond to it and exploit it as an opportunity. In simple term, Drucker, (1985) believed that entrepreneurs act as agents of change and defined entrepreneurs as individuals that create a new market with a new customer.

This motion is supported by Schumpeter (1947), an economist in Miller and Garnsey (2000) that "…the entrepreneur and his function are not conceptualize: the defining characteristic is simply the doing new things or doing of things that are already being done in new way (innovation)…". These innovations can be in the forms of new products, new production methods, new markets or new forms of organization. Innovation is the tool all entrepreneurs utilize across their environments and exploitation of change is firmly rooted in innovation (Yarzebinski, 1992). Quite often, entrepreneurs form small new companies called start-ups: firms focused on creating and introducing a particular new product or employing a specific new production or distribution technique (McConnel and Brue, 1999). By adopting new technologies in an inherent organized, purposeful, systematic manner, the entrepreneur innovates (Yarzebinski, 1992). By looking at the various definitions of entrepreneurs, it can be said that entrepreneurism is well documented in the literature but less for technical entrepreneurs (Foo and Foo, 2000). The issues of entrepreneurship are receiving the attention of government especially in Asia. In fact, entrepreneurship in parts of South and South East Asia has recently undergone rapid revitalization (Burnett, 2000). For instance, the government of Singapore has fostered technology-based entrepreneurs or popularly referred to as "technopreneurs" (Foo and Foo, 2000). The term technopreneurs arose from within Singapore culture to describe entrepreneurs who combine entrepreneurial skills with technology.

Various literatures use the term "technology-based entrepreneurs", "technical entrepreneurs", "high technology entrepreneurs" or even "high tech new ventures" to describe new business that combine entrepreneurial skills and technology (Florida and Kenney, 1988; Dahlstrand and Lindholm, 1999; Renko, Autio and Tontti, 2002; Oakey, 2003; Kakati, 2003). For instance, the United States emphasizes labels like high tech small firm or new technology-based firm for venture business while Japan legally recognizes new ventures as a firm that invest more than 3%

of total sales in R&D (Sung et al. 2003). Other example includes technical entrepreneur, who originally trained as professional engineers but instinctively taught him or her to become expert business managers (Oakey, 2003). Technology-based entrepreneur is a process and formation of a new business that involves technology and these "technopreneurs" use technological innovations and translate such technology into successful products or services. Based on this perspective, the culture of innovation as discussed in the earlier section was nurtured but in this case, it is more focused on technological innovation.

The social context in which the entrepreneur operates also plays an important role in nurturing the culture of entrepreneurship. One of the ways is through embeddedness, where entrepreneurs are being embedded within the social structure of the area they operate. According to Jack and Anderson (2002), being embedded within the area provided the entrepreneurs with intimate knowledge, contacts, sources of advice, resources, information, and support. By being embedded, it was easier to recognize and understand what was required and available. Hence, Jack and Anderson (2002) believed that being embedded in the social structure creates opportunity and improves performance of entrepreneurs because embeddedness enabled the entrepreneurs to use the specifics of the environment.

To make the creation process of technology-based entrepreneurs successful, a right and favourable environment is needed. For instance, to encourage the formation of technology-based entrepreneurs, business incubators are needed to act as the catalyst (Sung et al. 2003). Services offered by incubators such as office space and technical expertise are said as a means to promote the formation of new technology-based small business (Yunos, 2002). Other instance includes Silicon Valley that has become a role model for many countries as a successful entrepreneurial habitat for a New Economy (Suzuki et al. 2002). As such, entrepreneurs play a vital role in realizing the benefits of the activities or processes such as incubated business, new technologies transferred and new manufacturing lines. The talent that entrepreneurs have to innovate makes them important in making the activities a success. Thus, entrepreneurs can innovate provided the correct environment exists (Yarzebinski, 1992).

TECHNOPRENEUR AND FLAGSHIP APPLICATION IN MALAYSIA

Multimedia Super Corridor (MSC)

It is a piece of land, 15 kilometres wide and 50 kilometres long, that starts from the Kuala Lumpur City Centre (KLCC) and moves down south to the site of the region's largest international airport, the Kuala Lumpur International Airport (KLIA). Within this particular area, two new world-first intelligent cities have been developed: Putrajaya and Cyberjaya. Putrajaya is now become the government's administrative centre and Cyberjaya is reserved for research and development centres, Multimedia University and operational headquarters for multinationals to direct their world wide manufacturing and trading activities using multimedia technology. This corridor has the backbone of a high capacity (2.5 to 10 gigabit per second) digital fibre optic network.

MSC places government facilities, research centres, academic institutions, and corporations in the same stratum to create synergistic effects and to be a driver to economic growth and

technological development. The MSC was conceived specifically to help diversify the economy in addition to transform Malaysia into knowledge-based society to achieve Vision 2020. Table 1 indicates the vision of the MSC from 1996 to 2020 that can be divided into 3 phases.

Table 1 The Multimedia Super Corridor Vision: 1996-2020

Phase 1	**Phase 2**	**Phase 3**
1996-2003	2004-2010	2011-2020
Successfully create the Multimedia Super Corridor	Link the MSC to other cyber cities in Malaysia and world wide	Transform Malaysia into a knowledge society

Source: Multimedia Development Corporation

The first phase concerns with the creation of the MSC. This is where all the Flagship Applications are introduced. The second phase sees MSC being linked to other cyber cities in Malaysia and worldwide. The third phase sees the realization of Vision 2020 that will transform Malaysia into knowledge society.

In tandem with the concept of MSC that aims to bring Malaysia to the world of developed country in year 2020, there are Flagship Applications that need to be fulfilled. The objectives of the Flagship Applications are among others to improve Malaysian productivity and competitiveness by creating the environment and infrastructures for the E-business, E-government, education system and other important areas. Originally announced in 1996, seven Flagship Applications served as focal point of the MSC. These are Electronic Government, Multi Purpose Cards, Smart Schools, Telehealth, R&D Clusters and E-Business (World Wide Manufacturing Web & Borderless Marketing).

These Flagship Applications are divided into two distinct categories:

(i) Multimedia Development

This comprises of Electronic Government, Multi-Purpose Cards, Smart Schools and Telehealth. These Flagship Applications are distinguished as multimedia development because they provide business opportunities and technology to facilitate the development of MSC.

(ii) Multimedia Environment

This category consists of Flagship Applications that provide best possible environment to support companies in MSC, which are R&D Clusters, Worldwide Manufacturing Webs and Borderless Marketing. The environment provides the location for companies to develop next generation multimedia applications as well as the location to place their operating hubs.

However, in year 2001, MSC have considered a new Flagship Application; Technopreneur Development to promote participation from Small and Medium-Sized Enterprises (SMEs) especially in technology-based activities. This is because to achieve the objective of MSC, the focus area will be on technology-based businesses that include ICT SMEs. Hence, this new Flagship Application concentrates on the production of critical mass of SMEs and entrepreneurs that involve in information and communication technology (ICT) and multimedia that will eventually lead to the success of MSC and the realization of Vision 2020.

TECHNOPRENEUR DEVELOPMENT FLAGSHIP APPLICATION IN 2001

Globalization and Eighth Malaysia Plan

One of the key objectives of MSC Flagship Applications is to provide business opportunities for companies to participate in. The most suitable types of companies are the Small and Medium-Sized enterprises (SMEs) as SMEs provide promising future in shaping nation's economic growth. Besides, SMEs are recognized as the greatest source of innovation as they are capable of creating and innovating creative ideas to participate in the new market or to penetrate an existing market. Hence, by having this new Flagship Application the development and growth of ICT SMEs to participate in the local and global market can be accelerated. In fact, the main objective of MSC is to drive the economic towards increased productivity through technology and high value-added economic activity.

The emergence of globalization and new technology has encouraged Malaysia to make full use of the situation by introducing this new Flagship Application. As nations interact and conduct business without borders, Malaysia has to put together the effort to make the country parallel with other nations. In pursuit of the effort, Malaysia has not left behind as the country has formulated various strategies to participate in the global economy. Besides, the nation has to utilize the technological advancement to its greatest advantage to ensure the growth of entrepreneurs in high tech industries. In fact, through the adoption of technology entrepreneurs can introduce new range of products and services to improve the contribution to nation's economic growth.

The year 2001 was chosen to introduce the new Flagship Application that is in line with the Eighth Malaysia Plan (2001-2005) and Nine Malaysia Plan (2006-2010) as well as Ten Malaysia Plan (2011-2015). Under this plan, the Malaysia government decided to boost the growth of SMEs in various industries with its various assistance programmes. Particularly, the government is encouraging more SMEs to venture into information and communication technology industry. Through the Ministry of International Trade and Industry (MITI) and its agencies, the government has provided SMEs with a number of assistance such as incentives, loans, and grants to encourage them in venturing into new technology. In fact, the Seventh and Eighth Malaysian Plan show a shift away from input-driven growth strategies to knowledge and technology-driven as the country realizes that the growth of future economy lies in technology advancement and not only massive output.

The Importance of Small and Medium-Sized Enterprises (SMEs)

Currently many national regimes plan various programs to their small and medium scale industries, as they believe that SMEs have a lot to offer. Extensive involvement of SMEs in generating revenue to the nations have shown that they are capable of generating employment opportunities, organizing the local resources, creating a balanced and prosperous society and playing a significant balancing role to large firms and eventually strengthening the economic development of the nation as a whole. In addition to that, SMEs in Malaysia form base for greater domestic participation in industry growth and create linkages between the entities. Besides, they are regarded as most imperative in the manufacturing sector of the economy. Today, in terms of employment opportunities and economic output, SMEs in the manufacturing sectors are considered the main contributors.

Table 2 SMEs as a Percentage of Total Manufacturing Firms

Year	Percentage of Total Manufacturing Firm
1963	99.6
1968	99.0
1981	97.7
1985	64.0
1995	84.0
1999	91.1
2000	92.0
2001	92.7
2011	94.2

Source: Hashim, Mohd Khairuddin and Wafa, Syed Azizi (2002)
Ministry of International Trade and Industry (MITI)

The figures in Table 2 indicate that SMEs formed a major portion of the total number of manufacturing firms since the 1960s. In 1963, SMEs comprised of 99.6 per cent of the total manufacturing firms. The table shows the percentage of SMEs to the total number of manufacturing firms from 1963 to 2000. SMEs operate in all industries and they differ greatly in their nature and importance from industry to industry. As such, in terms of number of business units, SMEs are the most common form of enterprises in the Malaysian economy.

Small and Medium-Sized Enterprises (SMEs) Contributions to Economic Growth

In order to determine the relative economic importance of SMEs, it is essential to measure the percentage of the economy's total output and services (Gross Domestic Product) that come

from SMEs. In this regard, besides the increased in percentage of total manufacturing firms, SMEs also show significant contributions to Gross Domestic Product (GDP).

Table 3 SMEs Contribution to GDP

Year	Percentage of Contributions to GDP (%)
1991	20
2000	40
2020	50

Source: Ministry of International Trade and Industry (MITI)

Figures in Table 3 show the SMEs contribution in 1991 and their projected contributions in the year 2000 and 2020. From the table, it can be seen that the government has projected 50 percent contribution to GDP by the SMEs in 2020. This is because the SMEs development is considered critical as it makes strong contribution to GDP. As the government considered SMEs important, it is worth to develop and nurture these SMEs to become world-class enterprises that are able to drive the local economic growth.

In 2002, the SMEs' contribution to the total share of manufacturing output was 28.5 per cent (2001: 29.5 percent) and the contribution to total employment was 30.7 per cent of total manufacturing employment (2001: 30.5 percent). As a result, SMEs' contribution to output has increased at 2.5 per cent compared with 2001. Besides that, amidst external uncertainties, the GDP in 2002 expanded by 4.2 per cent supported by the growth in services, mining and the manufacturing sectors. In particular, the manufacturing sector grew at the rate of 4.1 per cent during the period. This strong performance of the manufacturing sector is the result of the strengthening of domestic demand and stronger performance of export-oriented industries. This holds true for electrical and electronics industries, which have ICT products and services among its output as this sector contributed 40 per cent share to total manufacturing output. However, the SMEs' contribution was only 5.3 per cent indicating domination of large companies and multinational corporations (MNCs) in the industry.

The new Flagship Application bears vital importance to the development and growth of entrepreneurs in the knowledge-based economy. Besides, new structure and strategies are being explored and formulated that will help technology-based SMEs grow and offer a promising future within the global marketplace. In this case, SMEs will be able to expand themselves to compete in this borderless world, at the same time create, and add value to their business in order to achieve sustainability. In fact, the importance of SMEs in contributing to the growth of the economy and the importance of ICT adoption has led to the introduction of the new Flagship Application as it

aims at accelerating the development of these SMEs to become globally competitive companies. MSC has put start-ups and local companies as its key drivers that will eventually lead to the creation of output to improve national productivity and competitiveness that will eventually lead to economic growth and wealth creation.

CONCLUSION

The findings indicated that the introduction of this new Flagship Application was associated with globalization and Eighth Malaysia Plan whereby the government has decided to create and nurture technology entrepreneurs. Under the Eighth Malaysia Plan, the government has decided to boost the growth of SMEs in information and communication technology industry through its various assistance programs. Besides, the findings demonstrated that the government has placed equal opportunities for technology-based entrepreneurs and ICT SMEs to participate in the local ICT market as the government realized the importance of SMEs in growing the nation. In addition to that, it is evidenced by the commitment put by the government to support entrepreneurial activity around the country by having various "farming" programs such as incubation programs and communication programs for technopreneurs to grow. This study might be extended in several directions. Future research could comprehensively examine the effectiveness of the development process by comparing the technopreneurs who undergone the process until graduation with the technopreneurs who do not go through the process. With this comparison, it is easier to evaluate the progress and effectiveness of the programs such as incubation system and funding to start-ups companies. In fact, the extended research could examine the influencing or contributing factors to assess the effectiveness of the programs by developing reliable and valid measures of the dependent variables in order to devise and empirically test measures of venture success

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