

THEORETICAL FRAMEWORK ON DETERMINANTS FOR TECHNOLOGY-BASED VENTURE CREATION AND GROWTH IN MALAYSIA

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ABSTRACT

The focus of this study will be on the technology-based venture in Malaysia that falls under the Small and Medium Enterprises (SMEs) group in Malaysia. The reason being for choosing SME for this study is due to the reason that most companies in Malaysia are SMEs as well as about 95% of Malaysian economic activities depend on the SMEs. They are the major income contributor for Malaysia. The determinants identified to be crucial for the technology-based venture creation and growth in Malaysia are business opportunity, financial resources, technology management, government support, business networks, and entrepreneurial drives/talents.

Keywords: Technology-based venture, venture creation, venture growth, business opportunity, financial resources, technology management, government support, business networks, and entrepreneurial drives/talents.

1.0 INTRODUCTION

Malaysia as one of the developing nation of the world, has transformed its economy from an agrarian economy into an industrialised multi-sector economy over the past two decades. Currently, the growth of Malaysian economy is primarily driven by exports of manufactured electrical and electronic products, which has led to a robust foreign exchange reserves and decreasing the nation's external debt. The importance of the technology-based venture as an economic engine of growth for a country is often cited in most technical or technology entrepreneurship literature today. From an economic perspective, the contributions of technology-based venture are reflected in terms of the country's economic growth that resulted from import and export activities as well as from employment activities (Karagozoglu & Lindell, 1998; Manecksha, 1999; Poon, 2004). However, from the marketing perspective, the contributions of technology-based venture are more in terms of product or service innovations that are marketable and create added value by enriching society lifestyles (Abetti & Stuart, 1986; Banting & Litvak, 1970; Freel, 2000). Yet, from the management perspective, technology-based ventures are seen as capable of managing resources effectively and efficiently in achieving the organizational goals and objectives (Raymond, 2003; Sullivan, 2000; Swiercz & Lydon, 2002; Wincent, 2005).

To ensure a sustainable growth and development of technology-based venture as a whole, it will be beneficial for policy makers to determine the underlying factors that are responsible for the successful creation and growth for such entities. Hence, this study is particularly directed to examine every aspect that lead towards the creation and growth of a technology-based venture in Malaysia. Since identifying the 'creation' aspects are not sufficient, factors that are responsible for the growth and performance of such technology-based venture in Malaysia will also be examined.

2.0 THE DETERMINANTS OF SUCCESSFUL TECHNOLOGY-BASED VENTURE CREATION AND GROWTH

The determinants of successful technology-based venture creation and growth were originally derived from previous research on entrepreneurial venture creation and growth by Montanari, Domicone, Oldenkamp & Palich, (1990), Timmons & Spinelli, (2004), Yamada, (2004), Neck, Meyer, Cohen & Corbett, (2004), Deakins & Freel, (2003), and Chell, (2001). All authors agreed that opportunities, resources and technology and government support are the important variable for venture creation and growth. In addition, Yamada, Chell, Deakins and Freel and Neck et al., seemed to agree that business network is also an important determinant for technology-based venture creation and growth even though Timmons and Spinelli and Montanari et al, do not explicitly discuss the importance of business networks in their findings. Entrepreneurial drive/talents is deemed to be important by all authors except Yamada, and Chell, as they also did not discussed this particular determinants in their studies.

Table 1: Comparison of Variables by Different Authors

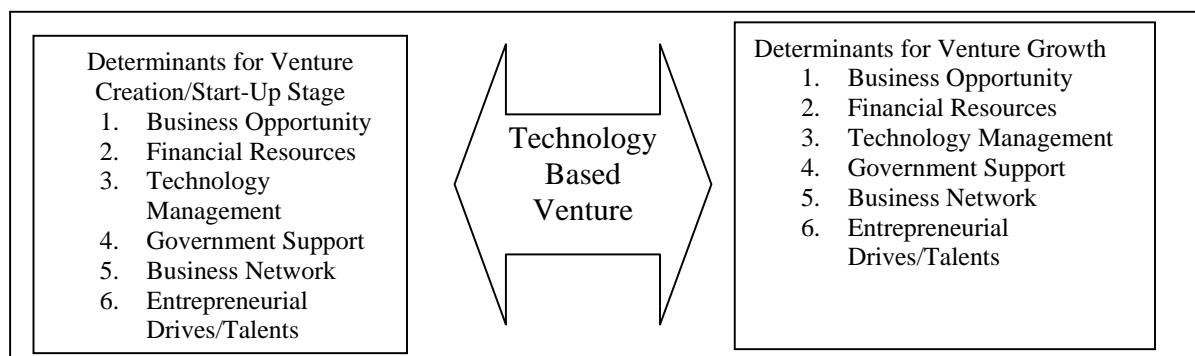
	Authors					
	Yamada 2004	Chell 2001	D& F 2003	T & S 2004	Neck 2004	Mont. 1990
Business Opportunity	√	√	√	√	√	√
Financial Resources	√	√	√	√	√	√
Technology Management	√	√	√	√	√	√
Government Support	√	√	√	√	√	√
Business Networks	√	√	√		√	
Entrepr.l Drives/Talents			√	√	√	√

Based on the summary of the various models found in the literature, it is evident that most of the earlier researchers have agreed that opportunities, resources, technology management, government supports, business networks and entrepreneurial drives/talents are important determinants (constructs or correlates) for technology-based venture creation and growth as can be seen in Table 1.

3.0 PROPOSED FRAMEWORK ON THE IMPORTANT DETERMINANTS FOR TECHNOLOGY BASED VENTURE CREATION AND GROWTH IN MALAYSIA

Figure 1 below, represents the theoretical framework proposed for the study.

Figure1: Proposed Theoretical Framework



3.1 IDENTIFICATION OF BUSINESS OPPORTUNITY

According to Meyer and Allen (2000), opportunity is an idea that has commercial value, whereas Fry (1993) defined opportunity as the possibility of making a profit by marketing a product or service. Zimmerer and Scarborough (2002) defined opportunity as a positive external option that a

firm can exploit to accomplish its mission, goals and objectives. Overall, the definition by Zimmerer and Scarborough (2002) is suitable to be adopted for this particular study because for technology-based venture creation and growth to be successful the entrepreneur must be able to identify opportunity as a positive external option that a firm can exploit to accomplish its mission, goals and objectives. Opportunity identification can be defined as the process by which an entrepreneur comes up with the opportunity for a new venture (Hisrich & Peters, 2002). In the next paragraph, a discussion on opportunity discovery that is used in identifying business opportunities for businesses is provided.

Wickham (2004) had come out with a method of identifying opportunities that is known as heuristic discovery. In heuristics discovery, the main ingredient for creativity is the heuristics aspect, in which there are two types: *analysis* heuristics and *synthesis* heuristics. The analysis heuristics is the cognitive strategies entrepreneurs adopt in order to gain and integrate new information about the world, to understand the patterns in this information and to spot market gaps. Whereas, the synthesis heuristics involves using a cognitive strategy to bring the ideas developed from analysis back together again in a new and creative way, generating a new perspective on customer needs and how they might be addressed. In short, the analysis heuristic is used to identify the opportunities, and the synthesis is actually creating innovations that will exploit those opportunities (Wickham, 2004). Opportunities can also be identified in various ways such as by being flexible, ability to embrace risk and by chance.

3.2 FINANCIAL RESOURCES

For the purpose of this study, financial resources refer to the availability of financial resources or capital in financing the technology-based venture in Malaysia. The financial resources are available through venture capital, government funds and self-funding. Venture capital is defined as high risk capital provided to growth ventures in exchange for significant ownership in the venture (Fry, 1993). Venture capitalist is known as the representative of a firm providing high-risk capital to growth ventures (Fry, 1993), however there is also other author that define the venture capitalist as individuals or firms that invest capital professionally (Meyer & Allen, 2000). From the above definition, the definition provided by the first author is much more accurate because it stressed on providing high-risk capital to grow a venture, in which that aspect is essential in every venture capitalist action. Other than that, a venture capital company can be defined as a private organisation that is for profit organisations that purchase equity positions in young businesses they believe to have high growth and high profit potential (Zimmerer and Scarborough, 2002). However, the following definition of venture capital company by Bank Negara Malaysia (2000) will be adopted by the study: *s a company that holds 70% of its investments in firms not listed on the KLSE; such firms should be involved in "risky effort" or in new technology and/or a product approved by Ministry of Finance (Bank Negara Malaysia Report, 2000).*

Government Funds

Government lending to businesses remained active as loans outstanding to businesses registered the third consecutive quarter of growth and keep on increasing at an annual rate of 1.5% as at the end of the second quarter of 2005. The lending within the business sectors mainly towards the SME and the loans outstanding to the SMEs expanding by 9% on annual basis at the end of the second quarter of 2005. Further, a higher number of SME accounts (21,421) had their loans approved during the quarter (Central Bank of Malaysia Report, 2005, pg. 5).

Government Loans

A study conducted on 115 women SME in Peninsular Malaysia, showed that most women entrepreneur rely on debt finance and non-bank sources for fund and a significant number of women SMEs have acquired government backed facilities to support their venture (Zarina, Ismail & Laila, 2001).

MTDC

Furthermore, in Malaysia, Malaysia Technology Development Corporation (MTDC) is incorporated on March 10, 1992 as a venture capital company under the Ministry of International Trade and Industry (MITI), its role is to encourage the development of technology-based ventures, by providing technology financing through venture capital and identifying and transferring emerging and strategic technologies to technology-based venture (Information Malaysia 2002 Yearbook).

Self-Funded

Most self-funded firms tend to be from an entrepreneur's vision, filling a need where the entrepreneur has specific skills or resources. Thus, as quoted from R.H Hamilton:

"The entrepreneur of the self-funded e-firm tends to be peripatetic, going to industry meetings in part to keep up with changes in technology and the marketplace but also to develop relationships that can be relied on for help and advice when challenges or difficulties arise"(Hamilton, 2001; 280).

It is also supported by other researchers, that most of the technology-based venture entrepreneurs have substantial financial resources, experience and track record of success (Jones-Evans, Steward, Balazs & Todorov, 1998). In Malaysia, most SMEs claimed that they are not getting enough help in securing venture capital financing, and most of them finance their companies with personal funds or loans (Lee, 2002). Availability of financial resources has been identified as an important determinant, which influences the decision to venture into technology-based venture as well as supporting the growth of these ventures.

3.3 TECHNOLOGY MANAGEMENT

Technology management as defined by National Research Council, USA (1987)) is as follows:

"The management of technology links engineering, science and management discipline to plan, develop, and implement technological capabilities to shape and accomplish the strategic and operational objectives of an organization. (As appeared in Chanaron & Jolly, 1999). As described by Chanaron and Jolly the management of technology deals with technology portfolio, in which the scope is much more broader than on R&D alone, but it also has to focus on other issues such as technology forecasting, scanning, creation and development, acquisition, exploitation, dissemination, commercialisation, transfer, implementation and withdrawal (1999). In the next paragraph, few studies on issues related to technology management are discussed in detail.

Related theories for technology management that will be discussed are the Theory of Technological Competence, Resource Dependency Theory. Technology Acceptance Model and Technology Adoption Model. *The Theory of Technological Competence* suggest that firms should possess technological competence in order to gain competitive advantage over their competitors and it is convenient for the firm to acquire advance technology by having technology transfer unless the firm can create their own technology. *Resource Dependency Theory* defined organization as an open system and are not sufficient, meaning that there are resources that can not be generated internally, and must mobilize other resources such as technological resource from other organizations in their environment if they are to survive (Khin & Muhammad, 2001). *The Technology Acceptance Model* is used to test the acceptance level of entrepreneurs in Malaysia on IT adoption. The study showed that if the system is easy to be used, then only the entrepreneurs are ready to adopt it, however, although the system might be easy to be used but it is not a guarantee that the entrepreneurs will use it (Ndubisi, Muhammad & Richardson, 2001; Ndubisi & Muhammad, 2003). *Technology adoption and change* had significant impact not only to the employees but also to the business operation. There is evidence from a study conducted in Thailand on textile and garment workers that showed most of them are facing what is known as socio-economic tension. This is due to new skills need to be acquired in order to operate new machines that had replaced some of the routine tasks (Islam & Swierczek, 2001).

In a study conducted on 52 SMEs that include Malaysian SMIs, foreign owned and joint venture firms, the result showed that linkages between foreign and local firms had increased local firm's technological capability (Abd Halim, Mohamed Saladin & Rosfadzimi, 2004). This situation is critical because success of technology-based ventures heavily dependent on the acceptance of the technology by the company and employees, thus such a problem should be addressed carefully. Other than that, innovation also plays an important role in the technology management process. Innovation is defined as creating wealth through meeting demand of the market and that explains why most founders of new venture are innovative (Sharifah, 2002). Definition provided by Fry (1993) is the most accurate definition that is the development of new product, processes, services, or strategies that have not previously existed, also, the transfer of creativity into marketable products. Hence, for this study the definition by Fry (1993) will be used. The innovation concept quo social and cognitive process has combined individual and social levels description and explanation, without pitting two against each other.

The role of self in innovation is to show how the self acts as a form of balancing mechanism between proactive drivers of the individual and the social or external forces that act upon the venture. The innovator implicitly “uses” role beliefs as balancing factors for conducting the venture where goals are enacted through a conception of who he or she is. Such a process would be social in the sense that the innovating self is being formulated as an inner audience, to which self emerges as agentive rather than just as a behavioural response to certain personal impulses or needs (Hellstrom, Hellstrom & Berglund, 2002). From the above discussion, it is undeniable that technology-based venture creation and growth are highly dependent on the ability of the technology entrepreneur to manage technology and innovation in their companies.

3.4 GOVERNMENT SUPPORTS/ASSISTANCE

Most SMEs in Asia look to their governments for assistance and, it is undeniable that most countries would adopt pro-enterprise policies to encourage entrepreneurship and development of SMEs. In terms of SME friendly environments, analysts view Malaysia, Japan and Philippines on a lower plan as compared with Taiwan, Hong Kong and Singapore (James, 2002). Hence, it showed that they perceived Malaysian government as not actively support or provide assistance to groom more SMEs in the country.

However, the government has initiated the incubator program, mentoring program and training program to assist new entrepreneurs. Besides that, MDC (Multimedia Development Corporation) in Malaysia had collaborated with Noble May Leadership Centre as a means to help IT firms to sell their products and services abroad (Min Keong, 2002). Technology incubator programs are run mainly to assist and groom more technology entrepreneurs in Malaysia.

Technology Park Malaysia is established to provide first-class infrastructures and services for technological innovation and R&D, to enable hi-tech industries to grow and compete in the global marketplace. In the early stage, technology entrepreneurs usually need desperately non-financial assistance such as management, business expertise and soft skills that could be provided by the incubator program. After a successful incubation period, technology entrepreneurs should then receive assistance from the venture capitalist community, who are willing to invest after the business model has proven to be a working model (Sharifah, & Rozana, 2002). In 2001, about 20 business incubators available in Malaysia, and MDC is hoping that the number will increase and hope that incubators have access to each other and also considering an integrated effort and programme to be conducted centrally. Other than that, MDC also expecting the incubators to be self sustaining and able to find a way to make money and have a business model to keep going, by which besides housing the start-ups the incubators must have management teams to provide business support services (Pardas, 2001).

Mentoring is one of the assistance programs for entrepreneurs and small business owners, in which the mentor will be coach, advisors and counselors, where as mentees will be entrepreneurs and small business owners (Bisk 2003). A research conducted in Ireland, it shows that technology entrepreneur prefers to have mentor from an unrelated business sector in order to avoid any “leakage” of the new technology. Mentee usually will seek advice from mentor, which is of general nature and lack of sectoral experience (Bisk, 2002). However, in a study conducted on SME who are in the First Business Programme that is a new-start support programme in UK, the findings showed that effective learning is well served through a mentoring relationship where clients are encouraged to engage in reflective learning and where “just-in-time” support is available (Sullivan, 2000). Besides that, Boussouara and Deakins, after conducting a study on 23 high technology small firms (HTSF) in Scotland believes that the development of mentoring during the early stage entrepreneurship process is essential and linking mentors to networks of high technology business who have good networking contacts are an assets to the mentoring process (1999). In Malaysia, Phaser Incubator Program had built mentor and mentee relationship between would be technology entrepreneur with successful technology entrepreneurs. Technology entrepreneurs were trained by successful entrepreneurs, in which it is similar to the mentor and mentee relationship in an effort to groom more successful technology-based venture. However, the success of the program is yet to be determined.

Although government have lined up few training conducted by SMIDEC (Small and Medium Industries Development Corporation) and other agencies in order to groom more SMEs in Malaysia, however without their participation those trainings are useless. There are studies conducted by

previous researchers on SMEs attitudes and behaviour on training, and the design and delivery characteristics of the training to be delivered to them (Johnston & Loader, 2003). The issues on SME attitudes and behaviour towards training is undeniably true, because they are quite sceptical on the value of the training, more responsive and ad hoc in their training decision and also usually, unaware of the training availability. Other than that, there should be sufficient understanding and close relationship between the providers and the SMEs, the flexibility of the training also essential for the SMEs because they are having tight schedule and finally, SMEs prefer informality in their training meaning they want to have experiential learning, they need feedback and social interactions. Those are issues that should not be ignored whenever training is to be conducted, or else the training might not get sufficient number of participants. Those are issues that were studied by Karen Johnston and Kim Loader (2003) on SMEs that attended training at University of Teesside, UK, during the period of October 1998 to June 2000. Thus, a study on SMEs in Malaysian especially those who are involved in technology based venture on their needs for training should not be ignored.

In short, government supports that include incubator program, mentoring and training also seen as an important determinants for successful creation and growth of technology-based venture in Malaysia.

3.5 BUSINESS NETWORKS

Networks are defined as voluntary arrangements between firms aimed at providing a competitive advantage for the participants (Fuller-Love & Thomas, 2004). There are few researchers who have come out with a definition of "entrepreneurial networks" that is it helps owner manager strengthen their business by providing access to scarce resources, that includes skills, information and knowledge (Macpherson, Jones, Zhang & Wilson, 2003).

In a study conducted on the behaviour of entrepreneur decision-making, it showed that personal networks and networking does take place (Taylor & Thorpe, 2004). By analysing both definitions, the first definition is much more appropriate to be applied for this research context. Although many SMEs had demonstrated an active network orientation, however network activity was more important in those small firms that were growing (Chell & Baines, 2000). It is supported by a study conducted in Sweden on 54 firms committed to SME networks from 2000 to 2002, it found out that the SME networks is characterised by membership firms with common goals and interdependencies (Wincent, 2005).

In addition, a study conducted in the UK on the attendees at the Personal Enterprise Show that were aged between 30 and 49, found that networking among like-minded people to be more beneficial than any business counselling session with a business adviser (Maniukiewicz, Williams & Keogh, 1998). However, according to a study conducted in Malaysia most Chinese entrepreneur have an established networks among family members, clans or dialect group in this country are involved in ICT business (Md Nor, Ezlika & Ong, 2004). In a study conducted on four New Zealand software ventures on internalisation processes, in which the industry is dominated by entrepreneurial ventures competing with leading-edge technology in international market. The findings showed that high-technology ventures international market choice and mode of entry are determined by interest of various network players. Influential network relationship may be both formal such as business contact and informal such as family. In short, entrepreneurial high technology ventures are willing to sacrifice some control over operations in order to supplement their marketing weaknesses and to gain market access (Coviello & Munro, 1995).

It is clearly showed that networks within a business community are extremely important factor in sustaining business. Besides that, two main factors identified on the reasons at the pre-start-up stage the networks is not given priority are due to the inability to understand the concept of networking and lack of true networking clubs or associations (Manukiewicz, Williams & Keogh, 1998).

It is important for technology-based venture to team up with a university based research and development center in order to gain access for technology transfer from the center. Malaysia has SIRIM and public universities that carried out R&D activities in producing new technologies or innovations for technology-based venture to commercialize. Nearly every year new inventions had been created and it will be beneficial for Malaysian technology-based venture to have a strategic alliance or network with SIRIM or any public universities research center to boost up their technological invention activities. It is supported by a study conducted in Australia that showed most

technology-based venture are weak in innovation system, and a researcher had identified a need for Australian company to adopt a business model practice by Yissum (research development company of the Hebrew University of Jerusalem) and Zemike (a venture capital company in Netherland). Yissum had unusual record of achievement in technology transfer, in which had a large source of applied research projects that are filing 30 to 40 patent applications per year and sometimes had promoted around 200 projects (Milton-Smith, 2001). This indirectly have given the university sufficient funds for R&D activities to be carried out at the university level because funds are flowing into the university from any company that are interested to buy innovation patents produced by the university (Milton-Smith, 2001; Jeffery, 2003).

Manufacturing networks, groups of firms combine forces to achieve competitive advantage are growing in small manufacturing firm in the United States. CEOs who develop shared trust and information technology does not play important roles for manufacturing networks. As for, joint production networks and resource networks the information technology will be adopted easily because it is important for coordination purposes (Scherer, 2003). Thus, this is one form of strategic partnership being build up by technology entrepreneurs via manufacturing networks, joint production networks and resource networks, in which groups of firms combine forces to achieve competitive advantage. It is inevitable for technology-based venture to apply business intelligent framework that scanned the economic, technological and social environment, to build strong reputation or image with internal networks, and establishing trust with networks (Raymond, 2003; Goldberg, Cohen & Figenbaum, 2003; Scherer, 2003; Bullington & Mullane, 2003).

In short, we can conclude that business networks do influence technology entrepreneur in their decision making, as a source of information, as a means for international or foreign market entry strategy, technology transfer and a way to establish strategic partnership with potential suppliers and distributors.

3.6 ENTREPRENEURIAL DRIVES/TALENTS

As defined by Getley (1979), entrepreneurial drive is the combination of creativity, hard work and determination to succeed which is combined with an ability to work with people and motivate them to cooperate towards achieving the aimed progress. Entrepreneurial drive usually stems from the creative drive in combination with the determination to achieve progress, tenacity and also preparedness to take risks. Thus, for most technology entrepreneur having all those elements are essential in coming out with new innovation and technology in order to ensure the survival of their technology-based venture. In a study conducted on 324 UNITEN students in Malaysia, the finding showed that factors that are significant for driving them to be entrepreneur are the need for achievement, motivation, change, competitiveness, image, conviction, social context (university) and entrepreneurial intention. Surprisingly, money and a person need for flexibility are not factors that will drive them to be entrepreneur (Kamariah, Yaacob & Wan Jamaliah, 2004).

Need for achievement can be defined as the personality characteristic of having a high need to achieve personal goals (Fry, 1993), and high achievement drive is defined as a strong desire to succeed that is found among individuals who are highly goal oriented (Hodgetts & Kuratko, 2002). Other than that, in a study conducted on 20 SMEs in Malaysia the finding showed that there is significant relationship between entrepreneurial drives and performance of a company (Haron & Mohamed Dahlan, 2004). Internal locus of control is defined as the belief that individuals are in control of their own destinies, rather than in the hand of fate (Fry, 1993). Most entrepreneurs are having high internal locus of control will differentiate them from the rest of the population, in which those entrepreneurs expect their personal achievements and the course of their lives to depend more on their own actions and permanent features rather than upon external factors such as luck or other people's help (Diaz and Rodrigues, 2003). In order to better understand this topic, the next paragraph will further illustrate the locus of control in relation with the TSL model.

A Thought Self-Leadership Model discusses on the entrepreneur strategies and performance. This model has 5 constructs, which are self-dialog, mental imagery, beliefs, thought patterns and self-efficacy perceptions (Neck, Neck, Manz & Godwin, 1999). From the TSL model, it showed that the self-dialogue, beliefs/assumptions and mental imagery would indirectly shape the entrepreneur thought patterns that will influence the self-efficacy of the entrepreneur. This self-efficacy will influence the entrepreneur intention that will be shown on the entrepreneur performance whether on

his/her autonomy, innovativeness, risk taking, pro-activeness and competitiveness. This model is consistent in the findings on a study conducted in Malaysia on Malay and Chinese entrepreneur. Chinese entrepreneur believes on power control over people that would mean that they are more excellent entrepreneur because individual with highest decision making authority in the organisation has the capacity to manipulate people and resources better in achieving goals (Md Noor, Ezlika & Ong, 2004). Thus, this TSL model had portrayed the locus of control of an entrepreneur and those factors that might influence the action of the entrepreneur in general.

4.0 CONCLUSION

SMEs are the major income contributor for Malaysia because about 95% of Malaysian economic activities depend on SMEs. Thus, in order to ensure a sustainable growth and development of technology-based venture as a whole, it will be beneficial for policy makers to determine the underlying factors that are responsible for the successful creation and growth for such entities. The determinants that are found to be important for the successful creation and growth of technology-based ventures are business opportunity, financial resources, technology management, government support, business network and entrepreneurial drives and talents.

Having the business opportunity alone is not sufficient to ensure the creation and growth of technology-based venture in Malaysia successful. However, having the right business opportunities, having sufficient financial resources, with the right government supports, the right business network and the right technology will indirectly boost up the entrepreneurial drives and talents of the technology entrepreneurs to be more innovative and creative in sustaining and developing the business venture. Hence, without having identified the right business opportunities, without sufficient financial resources, without the right technology, without the right government support, without the right business networks, it will be difficult for the entrepreneurs to have the drives and talents to move forward.

Thus, by analyzing and studying these variables will enhance the contribution of this study towards the identification of determinants for technology-based venture creation and growth in Malaysia. Hopefully, the number of failure rates of technology-based venture will be reduced and the number of new technology-based venture in Malaysia will be increased in the future.

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