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Utilisation of Public Financial Assistance for Innovation within High-technology Small Medium Enterprises in an Emerging Economy

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Abstract

Policy formulation and implementation for economic diversification by Governments in developing economies in in the late 1990s led to the emergence of high technology sectors within local economy. Features of these sectors are not only confined to the essence of research and development, but also highlight the importance of capacity building among local firms in developing economies. This study presents an in-depth case study of one of local firms in Malaysia. This study employs triangulation technique that provides insight into the contribution of government financial policy initiative to the development of innovation capabilities of a local firm. It identifies that the public financial assistance has been used by a local small and medium firm to enhance its innovation capabilities for new product development process of high technology products, in this context, bio-technology products. This study also found that this local firm is capable to proceed with invention (discovery of new technology) but it needs to improve its capabilities in the latter stage of innovation process. The study contributes to closing some of the gaps in research into public initiative support for innovation and subsequently into the development of high technology sectors. In particular, it identifies that the firm is able to improve its manufacturing and marketing capabilities which are applicable to exploit innovation potential.

Keywords: Financial assistance, innovation, high technology sectors, small and medium enterprises

1. INTRODUCTION

In light of finding a pathway to achieve better economic status (i.e. migrated into developed economy status), most of emerging economies continue to foster industrialisation with manufacturing sectors as their main strategies. These strategies have been complemented by intensified efforts to develop local high technology sectors (Siew-Yan & Zin, 2006; Mukhtar et al., 2016). However this plan was regarded as a fallacy by some, because it was solely influenced by avenues taken by governments in developed countries, especially Japan and South Korea (Jomo, 1994). Vogel (1991) suggests that the success story of Japan and South Korea in economic transformation could be explained by those countries' abilities to rapidly develop high technology sectors. Ali (1992) suggests it was challenging for emerging economies to repeat the success story of Japan and South Korea because the local firms in those countries were able to adopt, assimilate and innovate technology at greater pace than local firms in emerging economies. Despite the critics, Ali (1992) agrees that Malaysia as one of the fastest growing emerging economies could propel further economic development by focusing on development of the high technology sectors status although the process is difficult, timely and costly. High technology sectors are considered the fastest growing sectors and could fuel economic development within emerging economies by promoting innovation, technological competitiveness and creation of high-paid jobs (Walsh et al., 1995).

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From a wider perspective, the high technology sectors could foster the knowledge creation process within an economy, or *vice versa* (Fontes & Coombs, 2001). For emerging economies, the circle of knowledge creation and development of high technology sector is viewed as a prescribed formula for a country to make a leap to developed economy (Abdulai, 2004; Özcelik & Taymaz, 2008). In the Malaysian context, Shapira et al. (2006) indicate that the development of high technology sectors has been approached as the foundation for creating a knowledge-based economy. Yet, Atkinson and Ezell (2012) still cast doubts that emerging economies face a great challenge to promote high technology sectors. The process not only requires efforts to encourage local companies to utilise technology but also to support them to develop new technology into finished products or processes (Blanes and Busom, 2004). Lee and Gaertner (1994) explain that it is not a straight forward process. This notion has influenced governments' assertiveness to introduce a number of policies as part of strategies to develop local high-technology sectors (Aldridge & Audretsch, 2010). However, most strategies have concentrated on the promotion of research and development (R&D) activities. Indeed, R&D activities play a vital role in technology development by trying to resolve scientific and technological uncertainty (Hall & Lerner, 2010), but more efforts are required to commercialise the R&D outputs. The commercialisation process requires, among other things, rigorous safety testing and up scaling of the invented technology at a viable cost (Blanes & Busom, 2004). Lee and Gaertner (1994) describe the commercialisation activities as a time consuming and costly process. These factors place more challenges on local firms to succeed, hence reducing their interest in getting involved in high-technology sectors (Lerner & Kegler, 2000). Therefore, commercialisation activities are an aspect that is particularly challenging for those formulating policies in this area (Lerner, 1999).

For these reasons, this study aims to provide initial evaluation of the impact of a government financial policy initiative on the development innovation capabilities of local high technology SMEs. It seeks to this through an in-depth case study of a local SMEs that involved in bio-technology sector. It traces back to the background of the SMEs and examines its performance, both in quantitative financial terms such sales and profitability, and in qualitative terms focusing on the nature of the firm's capabilities to carry out innovation projects.

2. DEVELOPMENT OF HIGH-TECHNOLOGY SECTORS: A BRIEF REVIEW OF THE LITERATURE

The argument about the role of states in economic development has been intensified in the context of industry development. As experienced in the first wave of industrialisation prior 1990s, governments in emerging economies were again trying to rely upon policies to promote and develop high technology sectors. This move seemed applicable because high technology sectors are relatively new industries for emerging economies. Rasiah and Yun (2009) affirm this argument based on their observation that local firms ended-up becoming assemblers of high technology products that were designed and developed in more advanced economies. For Malaysia, policies to support high technology sectors are paramount in its pathway to becoming a fully developed industrialised economy[1] (Mahadevan, 2007). Most of the policies have focused on SMEs as they constitute 90 percent of local industry.

In most cases, discussion about government intervention for economic development focused on two streams. One stream stems from proponents of neo-classical thinking of economic development. In this stream, government interventions through policies are regarded as distortions. This suggest that market drives economic development (Wade, 2012). However, in certain circumstances where government interventions work, such policies are considered as market-friendly policies. Another stream draws upon the situation where market cannot perform its roles and government tries to overcome market failure (Amsden, 1989). In fact, this concept is derived from the experience of rapid growth of former top ranking emerging economies (e.g. Japan and South Korea) that emphasize the degree of autonomy enjoyed by key decision makers (i.e. policy makers) (Johnson, 1982; Johnson, 1995). In his early observation on Japan, Johnson (1982) believes that the Japanese have built their economy based on strong government intention and dependent on policy makers' discretion to channel resources of industrial development. Indeed, Johnson's observation is an appropriate case for application of government intervention for economic development because the country was a top ranking-emerging economy that managed to become an advanced developed economy. Despite the exceptional experience of top ranking emerging economies, Wade (2012) still casts doubt about the applicability of policies for economic development. Wade's concern might be substantiated because emerging economies are still struggling to become developed economies after the implementation of such policies to promote competitiveness within their local industries. This case becomes more prevalent when mid-ranking emerging economies like Malaysia try to embark on more radical industrialisation; into high technology industrialisation for economic development. The high technology

[1] A country that can achieve stable economic growth through technological and infrastructural advancement. Industries in this type of economy are the frontier in technological advancement.

industrialisation is known as a transition process from assembly-type manufacturing to high technology manufacturing. Nelson and Romer (1996) describes this process as a transition from simple, labour-intensive and low value-added industrial activities to those embodying more intensive use of human capital and technology.

For SMEs, high technology firms are characterised by mainly through R&D activities, and selling marketable products/services with a high degree of technology content. The degree of R&D activities within a firm is called R&D intensity. R&D intensity in this study is measured by innovation input factors, which are the R&D expenditures as a percentage of sales and by the human capital input, which is the number or percentage of scientists, engineers and qualified personnel in R&D of a firm (ENSR, 2002). In addition, firms belonging to some specific industry sectors characterised by being R&D intensive are considered altogether as high technology. Above all, high-technology industrialisation does not only require governments' commitment to encourage local firms to utilise technology but also to support them to develop new technology into finished products or processes (Kaufmann & Todtling, 2002). For Smith (2015), the process of developing new technologies and utilising them into products can be regarded as an innovation process . Figure 1illustrates the innovation process.

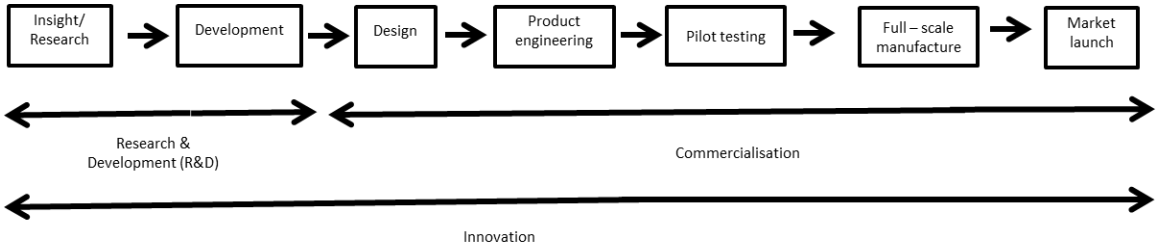

Figure 1: A generic model of innovation process
Source: Adapted from Smith (2015, p.90)

Figure 1 justifies elements that drives firms' innovativeness which are crucial for high technology industrialisation. Scholars agree that innovation is a complex process (Lee & Gaertner, 1994; Hindle & Yencken, 2004; Rasmussen, 2008). Lee and Win (2004) affirm it is not a straight-forward process but it is often simplified by the policy makers. In this process, Lee and Gaertner (1994) suggest there are two components involved: 1) technology development and 2) technology dissemination. In this sense, firms that plan to conduct innovation projects need to develop a set of innovation capabilities. The innovation capabilities has been classified into seven dimensions; (1) learning capability; (2) R&D capability, (3) resourcing exploiting capability, (4) manufacturing capability, (5) marketing capability, (6) organisational capability and (7) strategic capability (Guan & Ma, 2003; Yam et al., 2004; Wang et al., 2008). These capabilities are not only involve technological factors in a particular research field, but also bring organisation management, manufacturing, marketing and industry environment into consideration (Guan et al., 2006). In a discussion about national technical capabilities, Lall (1992) generalises the firm-level innovation capabilities into three categories: investment capabilities, production capabilities and linkage capabilities. This combination is considered as a special asset of a firm (Guan & Ma, 2003). Firms are expected to building on this asset in order to be competitive in high technology sectors. Another studies on innovation capabilities suggest that firms exhibit different capabilities in combination in order to contribute to the firms' technological innovation performance (Guan & Ma, 2003; Yam et al., 2004; Yam et al., 2011). In these studies, firms' innovation performance is determined based on technological innovation outcomes such as sales, innovation and product performance. Based on a survey conducted among companies in receipt support from the Chinese Government, Yam et al. (2004) found that R&D and resources exploiting capabilities are the most important innovation capabilities. Both type of capabilities are equally important because they can safeguard the rate of innovation and enhance sales growth among the surveyed firms. Under the same economic context, Guan and Ma (2003) suggest different findings. Their studies suggest that R&D together with manufacturing and marketing capabilities cannot lead to firms' sustainable innovation performance in export activities. Instead, they suggest the importance of other capabilities such as resource exploitation, learning, organising and strategic capabilities to enable a firm to acquire international competitiveness although they are classified as supplementary innovation assets.

Besides the mixed opinion on innovation capabilities combination, this study will seek the applications of those components within the innovation process under the Dynamic Capabilities (DC) framework (Teece et al., 1997). The main consideration is based the argument of DC concept that firms need to be progressive contingent to their internal factor such as resources and external environment factor such as competitor, customer and technology (McKelvie & Davidsson, 2009). The framework is applicable to this study because it translates the abstract concept of innovation into capabilities and resources. In addition, DC is also useful for this study because policy

interventions in emerging economies always considers the next big industries/sectors for economic development. In order to do that, emerging economies need local firms that are equipped with appropriate capabilities. Within the DC framework, firms are advised to have relevant capabilities and some of that capabilities could be in the area of innovation.

3. METHODOLOGY

The focus of this research is an in-depth study of a biotechnology firm. The firm is known as Bio 3, is one of the recipients of financial assistance from Malaysian Government. Using a single but in-depth case study provides a scope for investigation, which Yin (Yin, 2009) notes is one of the benefits of using case studies as a research design. Case studies are especially appropriate in research in which the objective is to examine social phenomena that are complex (Yin, 2009). Innovation and the process of developing firms' innovativeness are interrelated fields that are individually complex. Innovation process is often evolved and case studies are seen as a way to capture it. Case study approach also offer opportunities to look inside the firms and at their practices in particular. It is hard to pick this up from using surveys (questionnaires). Case study design also enables the researcher to look at the bigger picture. Besides that, case study also favours for the researcher to have a bit of contact with firms over a period of time which facilities multiple data collection techniques (i.e. interviews, archival data and observation). These techniques will give and in-depth and detailed picture of firms' practices and what they do for innovation. From here, the researcher could interpret why the firm operates in these ways.

This study employs triangulation technique which involves the application of several methods to collect data from different sources. Saunders et al. (2009) suggest the use of two or more independent sources of data or data-collection methods within one study is useful to ensure that the data could produce a more complete portrait of the situation. The primary data source is interview transcriptions and it is triangulated by the use of documentary and observation narrative. This technique provides a better representation and consistent insight of what actually happened in the firms as the data sources corroborated with each other. It also enables the strengths and weaknesses of the various methods to be counterbalanced and a more holistic picture of organisational environment to be developed.

4. CASE STUDY

Bio 3 was originally incorporated as a private company in 2004. The firm was founded by a married couple, Mr. Ss and Mrs Ah. Both founders hold PhD. Mrs Ah is the firm's main consultant and leading researcher. All of Bio 3's products are based on findings from the research she conducted for over 25 years in the field of biochemistry. Bio 3 is principally engaged in manufacturing, research and development and distributing of herbal products for health. In fact, Bio 3 was an expansion of a small-scale business run by Mr Ss on a part-time basis. Although it was small scale, the business had produced several products and market acceptance was good because customers were attracted to scientific developments in medicine discovered by Mrs Ah. Most customers got to know about the discovery after reading about her work in scientific journals and conference proceedings. Her scientific exploration of herbs made breakthrough findings which consequently won her several local and international awards. The products have been marketed in different forms and for different usages.

Products of Bio 3 have been consumed by customers as supplements and they are deemed beneficial in helping prevent certain illnesses. However, the products cannot have claim on that diseases unless proven by clinical trials. Furthermore, the trials have not been in the firm's plan because the process is time consuming and costly. The products also have reached customers beyond Malaysia such as in Middle Eastern countries. The products' sales have translated into mixed financial performance. Table 1 summarises Bio 3's financial performance.

Table 1: Bio 3's financial performance

Year Ended	Revenue (MYR)	Direct Cost (MYR)	Profit (MYR)	Fixed Asset (MYR)	Current Asset (MYR)
2007 (USD = MYR3.45)	0.02	0.17	(0.13) loss	0.51	0.58
2008 (USD1= MYR3.24)	0.63	0.94	0.03	3.16	0.54
2009 (USD1= MYR3.60)	1.63	1.68	0.38	4.21	0.32
2010 (USD1= MYR3.43)	0.72	1.21	(0.03) loss	3.29	0.14
2011 (USD = MYR3.06)	0.78	1.21	0.68	2.35	0.48

Source: Extracted from Bio 3's financial statements.
Note: Financial figures are in millions

4.1 Context of Public Financial Assistance to Bio 3

Bio 3 was awarded with a financial grant in July 2007. The approved amount was MYR4,000,000. The grant was approved for commercialisation of cream and lotion for relief of the symptoms related to skin diseases. The cream and lotion have been marketed as PsorCare Cream and PsorCare Lotion. The firm recorded MYR300,000 sales within the first six months of product launching.

4.2 Bio 3's Research Capabilities

Bio 3 has been dependent on its capacity to unveil herbal plants' potential in product development. The firm's capacity has been building on the founders' (i.e. Mr Ss and Mrs Ah) research skills and expertise. As stated earlier, both of them holds a PhD in a field related to Bio 3's core business. In fact, the firm was established in a way to exploit the duo's working and intellectual experience. Mrs Ah is known as a prominent researcher in the field of biochemistry. She has registered four patents, written several books on cancer and published and presented more than 100 papers in national and international journals and conferences. Most of Mrs Ah's discoveries were based on research carried out in collaboration a local public university.

Mrs Ah's has been involved in large scale research activities. In any one time, Mrs Ah handled several research projects and it is in the nature of the biochemistry field that each research project is related especially in empirical techniques. This has allowed multiple research outputs, which are then quickly transferred into finished products via Bio 3. Besides Mrs Ah as the firm's lead researcher, Mr Ss also conducts his own research but on a smaller scale compared to Mrs Ah. His research focus is on infamous local herbal plants such as *eurucoma longifolia* (or commonly known as *Tongkat Ali* in Malay) which is claimed to have medical value. It has been a refinement process of previous discoveries during Mr Ss' tenure in local research institute. His aims are to discover a single chemical compound in herbs that can be used by drug companies to develop medicines. This process has been carried out using proper laboratory equipment such as a gas chromatography (GC) machine. The refinement process in research activities has facilitated the discovery of other possible medical values of a well-researched herbal plant.

4.3 Bio 3's Production Capabilities

The firm is also deemed to have proper facilities for manufacturing. The firm has been carrying out the manufacturing activities on its own. The production started since Mr Ss and Mrs Ah were running the firm as a part-time business. From there, Bio 3 has been expanding its production activities by acquiring other warehouses in the near vicinity. At present, it has five premises. Besides physical expansion, the firm perceived the needs to acquire more machines to cater for market demand. Mr Ss discussed this challenge with his colleagues. One of his colleagues works with a government agency and suggested Mr Ss to apply for the financial assistance. Indeed, the firm treated the suggestion to approach the government agency for assistance as an opportunity to expand its production activities.

The fund was used to acquire new machines that lead to the firm's capacity and quality upgrading. There are two type of machine that were acquired using the financial assistance: 1) direct contact machines such as extractors and 2) heating machines such as boilers. One of the contact machine is a fridge dryer. The fridge dryer was acquired from the United States at a cost of MYR1.2 million. The fridge dryer has influenced the firm's production

significantly. Indeed, before acquiring the fridge dryer, the firm was dependent on conventional drying technique (i.e. using heat) by using an oven or drying them under the sun. The fridge dryer offers more effective drying mechanism by using sub-zero humid extraction at minus 60 degree Celsius. This mechanism preserves the substance of herbals that are sensitive to heat and subsequently improves their quality. The outputs of the fridge dryer are also consistent in terms of texture and quality. Another advantage of the fridge is in terms of its capacity. At one run the fridge can accommodate 25 kg of grinded herbals. It has been a significant increase because the conventional drying techniques could only accommodate 5 kg of grinded herbals.

4.4 Bio 3's Marketing Capabilities

Bio 3's products have been sold via direct sales (i.e. customer walking in or on-line ordering). The firm does not have dedicated retail outlets. However, its products are also made available in herbals shops by non-appointed retailers. The retailers purchased Bio 3's products in bulk for a discounted price and sell them in their shops. Although the firm did not have allocated budget for marketing, its products have reached the target market. In most cases, potential customers get to know the products after reading articles in newspapers. Interestingly, the articles were not in advertisement sections but included in the science and technology section. One reason is because most of the firm's customer have some kind of critical illnesses such as cancer, diabetes and skin disorders. So, they seek products like Bio 3's to cure that illness. The customer becomes more attracted because the products were backed-up by scientific research by an academician from a university. Bio 3 did not participate in trade exhibition. Yet, the firm has been able to attract other businesses as its customers. This is part of the firm's business-to-business approach. In most cases, the businesses learned about Bio 3 by referring to the firm's website.

The firm's website has been an important mean for interaction with customers. Most information about the firm, product and discovery is available on its website. After learning about the firm, the businesses became more convinced about the products based on their scientific evidence. In this case, the Japanese customer did not just purchase the product but conducted test on them. After the test was proven, the Japanese customer placed additional orders. This has provided products testimonials. These testimonials were posted on the firm's website and also have been highlighted as selling points by postings in newspapers and magazines.

4.3 Other Capabilities

Bio 3 started its quest for innovation based on Mr Ss's and Mrs Ah's research expertise. This has been integrated with unmet clinical needs amongst people that have illnesses. Besides that, the firm sees the importance of acquiring more and new knowledge on herbals. Indeed, research by Mr Ss and Mrs Ah is an important element for this purpose. However, the firm also sees knowledge updating amongst its employees. Although the employees are not highly qualified, they are experienced in manufacturing, which is important in production of herbal products. Therefore, the firm sends its employees to short courses. One of the regular training places is Forest Institute of Malaysia (FRIM). Courses in FRIM focus on presenting the latest information on herbal plants that have medical value.

Bio 3 also has been trying to diversify its business into more upstream activities. This includes production of single compound that can be used as raw materials in the pharmaceutical industry. Indeed, research on certain plants such as ginger has uncovered that potential. The firm owns appropriate laboratory equipment for chemical analysis. However, the firm's plan for upstream activities has been hindered by lack of human resources. Bio 3 is a small firm with fewer than 10 employees. This factor has led to slow decision-making within the firm although there is potential for the firm to expand.

5. CASE ANALYSIS

In efforts to support local high technology sectors, the target group (i.e. local bio-technology based SMEs) are expected to experience improvement in their resources and also their ability to carry out a new product development process. Innovation process process entails firms' ability to utilise resources and translate them into a set of capabilities. This study shows evidence that firms have experienced improvement in capabilities that are closely related to the innovation process. It means that firms are better at doing innovation and these capabilities are being part of the organisation. Most of the improved capabilities are not in research development (i.e. exploration phase of innovation process) but in capabilities applicable to the exploitation phase of innovation process. This finding implicitly concurs with a study by McKelvie and Davidsson (2009) which has also established the same relationship. However, McKelvie and Davidsson propose a relationship based on discrete capabilities that could be considered independently. Instead, this study identifies the influence of resources to

interrelated capabilities to bring high technology products into market. This means, capabilities in the exploitation phase are made up of reciprocal activities such as production, selling and NPD activities.

This study also establishes that in the innovation process, the local bio-technology based SMEs were able to utilise the financial assistance in several ways. For example, the case studies show that firms decided to proceed with products certification in order to uplift the market potential of high-technology products. In the certification process, firms were able to increase their ability to establish external linkages with certification bodies. This could be considered as indirect type of impact of the financial assistance because firms managed to proceed with certification after being able to improve their manufacturing activities. This is consistent with a study by Aldridge and Audretsch (2010) that looks at applicability of a R&D fund to innovation projects. However, their findings were rather focused on measuring innovation in terms of spending on research activities that eventually produce intellectual properties such as patents. Thus, the findings of this study complement Aldridge and Audretch's work by highlighting that the key innovation capabilities reside in manufacturing activities, as this seems to be critical for exploitation of the innovation potential. The main rationale for this occasion is due to the fact the firms are high-technology SMEs. The SMEs are deemed to have significant research capacities because they are being managed by technical personnel such as scientists and pharmacists. Yet, they are lacking of production facilities, which influences their manufacturing capacities in terms of scale and scope. Now, firms are able to manufacture products at industrial scale and differentiate them as well. The investment in production facilities is timely and reflects firms' judgement in terms of giving their highest priority to the production stage of the innovation process because they have finalised the R&D elements of the products.

The impact of the funding on firms' innovation process reflects the desirable outcomes of the programme despite government support initiatives have been extensively scrutinised by researchers (Kaufmann & Todtling, 2002). The main argument of Kaufman and Todtling (2002) is on inability for that type of support to reach its target; in this case producing innovation. The findings of this study suggest that the funding has been targeting at innovation projects and it has been contributing to firms essentially producing innovation. Therefore, firms were able to upgrade their innovation capabilities because in every case study, firms have used the funding to improve, enhance and upgrade their innovation capabilities. It means that firms are more capable of commercialising research as the result of direct usage of the funding. Innovation within the firms produced new high technology products. Most the products are incremental innovation and there is possibly one product leaning towards radical innovation. The incremental innovation entails products that were developed by existing technology and thus are not totally new because they were discovered elsewhere in the world. Furthermore, the discovery of those technologies was not based on scientific and structured techniques. Instead, it was based on continuous testing for improvement of existing products that were available in the market (e.g. Industrial 1 and Industrial 4). In fact, the testing was carried out based on the knowledge and skills of technical employees of that firm (e.g. engineers and inventors). However, this achievement is significant to the firms because they are relatively new to the technology. More importantly, the products have been sold and have reached their target market.

Altogether, there is a definite pattern among the case studies that firms wanted and planned to use funding from the financial assistance for production activities. It is quite remarkable because there is anticipation that within a financial policy initiative to improve innovation, beneficiaries (i.e. firms) tend to allocate part of fund to research activities (Hall & Lerner, 2010). This is based on the notion that firms might be weak in the early phases of the innovation process. Therefore, it is expected that firms might address their deficiencies in the exploitation phase of the innovation process by investing more in research activities (e.g. employ more scientists or researchers). Correspondingly, findings of this study highlight that the financial assistance is a programme which is not solely meant to support the entire innovation process. Indeed, the financial assistance is a focused programme to support innovation in terms of capacity upgrading. This means firms allocated funds from the financial assistance to upgrade their production facilities. By doing this, firms have the ability to manage the manufacturing activities and have extra managerial resources for other activities such as marketing.

6. CONCLUSION

This study also found out that there is a definite pattern where firms planned and wanted to utilise the financial assistance for a NPD process. In some respect, this is surprising because in most cases, there is tendency for policy initiatives aimed at improving innovation to result in, firms allocating the funding into research activities (i.e. in the exploration phase of the innovation process). The main rationale is because firms might face limitations in their research capabilities. However, this study offers substantial findings that the SME is quite good at inventions (discovery of new technology) but they need to improve their capabilities in the later stages of the innovation process that relate to manufacturing and marketing activities.

This study shows that the financial assistance works positively in uplifting innovation capabilities among indigenous high-technology firms. There is substantial evidence that a government support programme for high technology sectors within an emerging economy has generated impact of enhancing innovation capabilities in NPD processes. These capabilities are related to manufacturing, selling and product improvement activities within innovation process. The innovation process is meant for development and production of new high technology products. In this sense, there is a possibility that the impact that is related to manufacturing activities is more prevalent because the firm views the manufacturing elements in terms of scale and scope as the bottleneck in innovation processes. It means that once this obstacle is removed, the high-technology small firms could proceed with other activities such as selling and product improvement activities. In other words, the financial assistance has been directly targeted to enhance of the firm's manufacturing capabilities but at the same time indirectly addressed other capabilities related to NPD process. These capabilities are particularly relevant in the exploitation phase of the innovation process (i.e. bringing products to the market). This study also revealed that in an ideal world, innovative firms should have a complete set of capabilities. It highlights there are a lot of assumptions on how to make products successful. In this context, this study suggests that the limiting factor is not the production capability.

Besides innovation capabilities, firms were also found to be better able to enhance their dynamic capabilities. This is because firms are better able to respond to the demands of a dynamic and rapidly changing environment. For example, when firms could establish external linkages with their customers. The linkages with customers through market research allow firms to sense the latest market demand for particular products. In this sense, this study shows a policy that works remarkably well on the enhancement of innovation capabilities in NPD processes. In the first instance, the money went specifically to enhancing manufacturing capabilities. However, when this study considers the case study in more depth and detail, the financial assistance did help to enhance manufacturing capabilities but additionally, firm has significantly developed innovation capabilities. This is because, aside from the manufacturing capabilities, firms also managed to develop and enhance their marketing and NPD capabilities. This study argues that the financial assistance is a public initiative that helps firms to innovate. It developed and enhanced firm's capacity to innovate. Therefore, this impact can be considered as a spill-over impact of the financial assistance along with enhancement of firms manufacturing capabilities within innovation process for production of new high technology products.

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