MALAYSIAN INNOVATION ECOSYSTEM: A REVIEW OF THE LITERATURE

M.Y., Sulaiman[1], A., Abdullah[2] and N.A., Othman[3]

[1]Malaysian Industry Government Group For High Technology,
Prime Minister's Department, 63000 Cyberjaya,
Selangor, Malaysia.

[2]Faculty of Manufacturing Engineering,
Universiti Teknikal Malaysia Melaka, 76100 Durian Tunggal,
Melaka, Malaysia.

[3]Faculty of Technology Management and Technopreneurship,
Universiti Teknikal Malaysia Melaka, 76100
Durian Tunggal, Melaka, Malaysia.

Email: *[1]yusoff.sulaiman@gmail.com; [2]abuabdullah60@gmail.com;
[3]farrie.akma@gmail.com

ABSTRACT: The capability to innovate and to bring innovation successfully to the market will be a crucial determinant of the global competitiveness of nations over the next decade. Knowing the importance, Malaysia has started to prioritise its national agenda by embedding innovation as one of the major theme of its national economic model. Building a sustainable and supportive ecosystem is one of the keys to ensure an efficient growth strategy. By succeeding in building the sustainable self-reliant innovative system needed, the country aims to become a fully developed nation strategically positioned in the regional and global economic landscape. This paper provides a review of the literature on current status of Malaysian innovation eco-system. The paper concludes that innovation eco-system is essential to nurture innovation in organisation.

KEYWORDS: *Innovation Ecosystem, New Economic Model (NEM), Government Transformation Program (GTP), National Innovation System (NIS), Small and Medium Enterprises (SMEs).*

1.0 INTRODUCTION

Innovation is the heartbeat of modern economies. In emerging economies, innovation is a powerful engine for development and for addressing social and global challenges. Innovation is mandatory for organizations to survive in the high technology atmosphere of the 21st century. In today's globally competitive environment no firm, large or small, can survive without innovation. However, the paradox of innovation is that while it is driven by competition, it cannot flourish

without taking into account the environment in which one innovates. This means that the ecosystem must support and not repress innovation. The actors in the ecosystem must have access to the right conditions that encourage and stimulate them to innovate. This difficult balance can be achieved through co-operation. Innovation no longer depends only on how firms, universities, research institutes and regulators perform, but on how they work together. The success of any innovation-driven growth strategy depends on the ability to attract a large community of creative organisation and individuals from different fields. This includes education, entrepreneurs, and universities. The government too is an important component of the innovation eco-system. In the case of Malaysia, innovation is still at its early stage. Creating a high income jobs where the people can benefit from a competitive economy and a better way of life in the New Economic Model, three key principles emerged clearly; high income, sustainability and inclusiveness.

These three principals will drive Malaysia economic progress to become a fully developed nation; a competitive economy strategically positioned in the regional and global economic landscape, environmentally sustainable and a quality of life that is all inclusive and encompassing. The aim of this paper is therefore to provide a review of the literature on current status of the innovation eco-system in the context of Malaysia. It will explore the ways in which Malaysian government nurture innovation eco-system for the development of Malaysian economic growth.

2.0 INNOVATION DEFINED

There are likely as many definitions of "innovation" as there are experts. The term covers a broad spectrum of business activity and can be applied to new or improved products (as at Microsoft and Nintendo), processes (as at Toyota, Walmart, Procter & Gamble), experience (as at Disney, Google, Target), or business models (as at Hewlett Packard, Reliance, or Goldman Sachs). Table 1 presents various definitions of innovation from researchers, organisations and countries that are heavily involved in studying and focusing on innovation. These definitions take different perspectives, depending upon the needs of the organisation or researcher, and over time include more nuances, as the process becomes better understood.

Table 1: Innovation definitions

Innovation is "the commercial or industrial application of something new - a new product, process or method of production; a new market or sources of supply; a new form of commercial business or financial organisation." **Schumpeter,** ***Theory of Economic Development***
Innovation is the intersection of invention and insight, leading to the creation of social and economic value. **Council on Competitiveness**, ***Innovate America, National Innovation Initiative Report*****, 2004**
Innovation covers a wide range of activities to improve firm performance, including the implementation of a new or significantly improved product, service, distribution process, manufacturing process, marketing method or organisational method. **European Commission**, ***Innobarometer 2004***
Innovation success is the degree to which value is created for customers through enterprises that transform new knowledge and technologies into profitable products and services for national and global markets. A high rate of innovation in turn contributes to more market creation, economic growth, job creation, wealth and a higher standard of living. **21st Century Working Group**, ***National Innovation Initiative,*** **2004**
Innovation is the productive renewal in the form of new goods or services, new business models or markets, new processes or organisation of production, new competences or input sources. **Vinnova, 2004**
An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. Innovation activities are all scientific, technological, organisational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations. **OECD**, ***Oslo Manual,*** **3rd Edition, 2005**
Innovation - the blend of invention, insight and entrepreneurship that launches growth industries, generates new value and creates high value jobs. **The Business Council of New York State, Inc.,** ***Ahead of the Curve,*** **2006**
The design, invention, development and/or implementation of new or altered products, services, processes, systems, organisational models for the purpose of creating new value for customers and financial returns for the firm. **Committee, Department of Commerce, Federal Register Notice,** ***Measuring Innovation in the 21st Century Economy*** **Advisory, April 13, 2007**
Innovation means any idea or knowledge in whatever form which brings about changes in the form of product, service or process resulting in positive impact to the economy, business, public service delivery system, social well-being or the environment. ***Malaysia Innovation Agency (AIM) Act, 2010***

3.0 GROWTH THROUGH INNOVATION

3.1 The Role of Innovation on Country's Growth

Innovation is the engine that drives economies and country's growth [1]. Countries support innovation to ensure dynamic economic advancement and prosperity, to gain competitive advantage internationally [5], and to improve the quality of life of their citizens and those of other nations. The latter is fostered through international collaboration, especially in research and development.

Innovation is already an important driver of growth in some countries. Firms in several OECD countries now invest as much in intangible assets, such as research and development (R&D), software, databases and skills, as in physical capital, such as equipment or structures. Much multifactor productivity (MFP) growth is linked to innovation and improvements in efficiency.

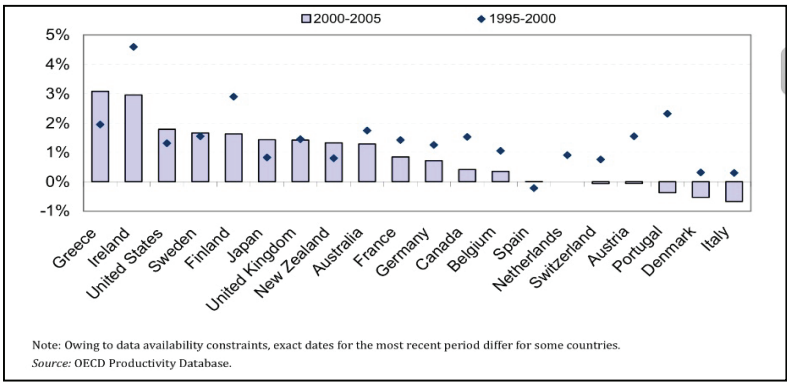

Figure 1: OECD Multi-Factor Productivity Growth, 1995-2000 and 2000-2005

Figure 1 shows that preliminary estimates indicate that in Austria, Finland, Sweden, the United Kingdom and the United States, investment in intangible assets and MFP growth together account for between two-thirds and three-quarters of labour productivity growth between 1995 and 2006, thereby making innovation the main driver of growth. Differences in MFP also account for much of the gap between advanced and emerging countries. This suggests that innovation is also a key source of future growth for emerging economies.

This economic challenge coincides with increasing political pressure to meet various challenges, such as climate change, health, food security, or access to clean water, many of which are global in nature or require

global action. These challenges cannot be dealt with by any single country and require better co-ordination of effort by countries and through both supply and demand-side interventions.

Innovation is crucial for solving such problems in an affordable and timely manner. In the absence of innovation, addressing climate change, for example, will be considerably more costly. Moreover, innovation driven growth makes it easier for governments to make the necessary investments and undertake the policy interventions to address these challenges.

3.2 Innovation and SMEs

Today, small and medium-sized enterprises (SMEs) form the backbone of most of countries' economies. In Europe, SMEs represent 99 percent of all businesses, providing jobs to more than 100 million people. In Asia, SMEs constitute the essence of many industries as they tackle with the present global economic meltdown. In different parts of the world, entrepreneurships have been assimilated in the mainstream to carry out proper intervention strategies in development.

Having understood the importance role of SMEs in contributing the countries' economies, it is therefore essential to understand why SMEs should adopt innovation strategies. Today's model company is not just the firm that delivers the best deal on the table; consumers are even more impressed by organizations with a great sense of creativity on innovative products and services. In the highly dynamic market, consumers will certainly demand for efficient products, services and processes across all sectors, and the player that fails to keep up with the pace is doomed to lose its competitive advantage. Innovation offers SMEs a huge opportunity to save costs, expand to new markets, create new jobs, and reduce pressure on the competitive environment. Beyond boosting a firm's corporate image and profits, riding the tide of innovation enables SMEs to maintain a high level of legitimacy given the emergence of an array of innovation requirement imposed by governments and international organizations.

Innovation is still a new phenomenon yet it is expanding quickly across many countries. The greatest challenge among governments is how to spur enabling innovation factors that allows SMEs to easily explore and pursue their innovative ideas. The forces of technology and global competition have created a revolution that encourages organisation to seek new ways to reinvent themselves. Greater emphasis is now being placed on organisational innovation [2].

4.0 INITIATIVES PROMOTING MALAYSIAN INNOVATION

4.1 Malaysian Science, Technology and Innovation Governance

This section briefly reviews the conceptual models of innovation systems that will form the basis for the development of innovation indicators in this paper. Figure 2 illustrates the Malaysian Science, Technology and Innovation Governance. The innovation drive is led by the Prime Minister who is the promoter, motivator and marketer of Malaysian innovation outcomes. The Science Advisor to the Prime Minister provides regular advice and inputs to the Prime Minister on matters and issues pertaining to science and technology. The Science Advisor chairs the National Science and Research Council (NSRC) that prioritise R&D activities in the public sector and universities, encourages public-private-academia collaborations, and endorses new STI-related policies and acts, amongst others.

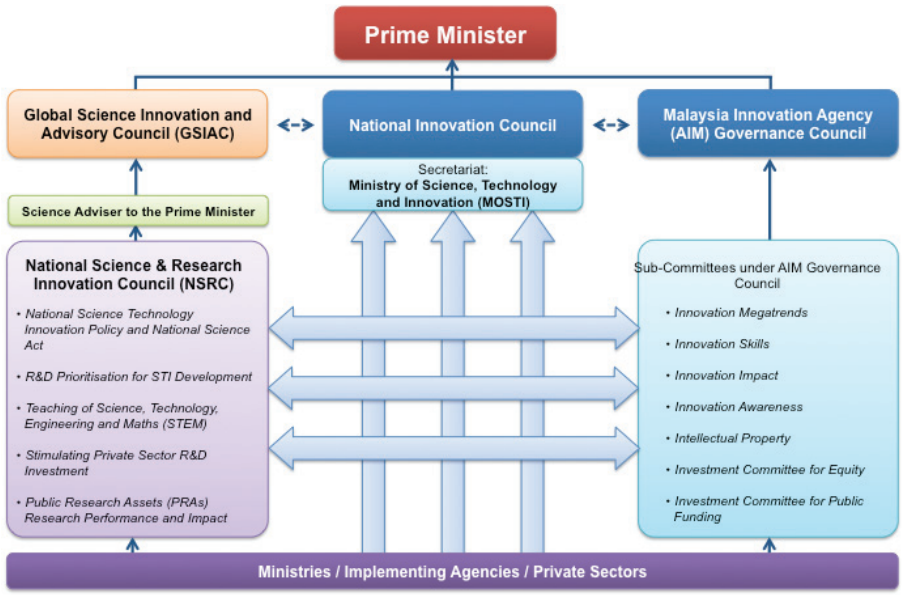

Figure 2: STI Governance – The Malaysian Experience

4.2 National Innovation Model

The National Innovation Model (NIM) was introduced in Malaysia in 2007. The main objective of NIM was to shift Malaysia from a resource-led economy to an innovation-led economy with significant global presence, driven largely by domestic private enterprise and activity in Malaysia (DDI), to meet the objectives of the Vision 2020. Since the

introduction of IRPA in the mid-1980s, the scientific community has pursued aggressively the Research and Development (R&D) path in creating the inputs for innovation without giving much attention to the market needs and the result is a dismal level of commercialisation success. In order to address the outcomes, NIM introduced the market pull approach for short and medium-term results, complementing the longer-term target from the technology push approach.

Figure 3 shows how the NIM addresses the innovation value chain through the technology-push and market-pull approach while addressing the market, technology and funding risks. NIM recommends the following policy prescriptions for the nation's innovation-led economy initiative.

- Shift to an innovation-led economic strategy
- Pursue aggressively market-driven innovation (MDI), continue to actively support technology-driven innovation (TDI)
- Focus government's role on risk mitigation to assist private sector drive for MDI
- Expand incentives / grants for entrepreneurs to acquire technology
- Adopt new venture capital (VC) model
- Conduct programs in Malaysia in entrepreneurship, innovation risk management and mindset change with university / industry in collaboration.

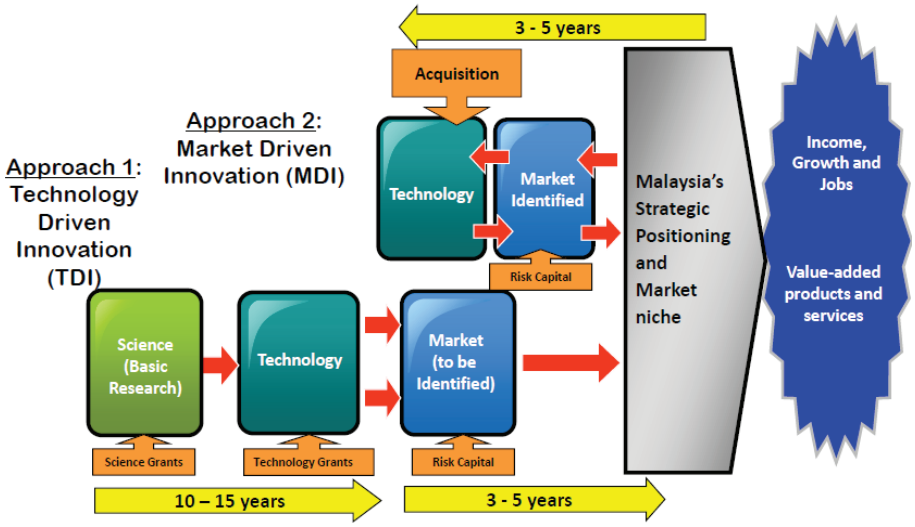

Figure 3: National Innovation Model [4]

4.3 National Innovation System (NIS)

As in [3] has defined the NIS as the set of distinct institutions which jointly and individually contribute to the development and diffusion of new technologies and which provide the framework within which governments form and implement policies to influence the innovation process. As such, it is a system of interconnected institutions to create, store and transfer the knowledge, skills and artifacts that define new technologies.

Figure 4: The Innovation Value Chain

It is critical for a country like Malaysia that is geared towards an innovation-led economy to clearly define and adopt an NIS that is reflective of its public, private and academic structure. The concept of the innovation system stresses that the flow of technology and information among people, enterprises and institutions is key to an innovative process. As shown in Figure 4, an NIS contains the interaction between the actors who are needed in order to turn an idea into a process, product or service on the market.

5.0 ENHANCING MALAYSIAN INNOVATION ECOSYSTEM

The innovation ecosystem is the environment formed by the community of organizations, corporations, governments, and academia. As well, this includes the innovation-influencing factors within the ecosystems, including policy and education systems. This ecosystem plays an essential role in improving countries' global competitiveness by driving growth and increasing productivity.

Figure 5: The Innovation Ecosystem – Malaysia [6]

Figure 5 illustrated the Malaysian innovation eco-system. For innovation to flourish, the environment in which one innovates has to be optimum. This means that the ecosystem must support and not repress innovation. The actors in the ecosystem must have access to the right conditions that encourage and stimulate them to innovate. This is a difficult balancing act as there are so many factors that have to be looked at and addressed.

The success of any innovation-driven growth strategy depends on the ability to attract a large community of creative individuals from different fields. Entrepreneurs, a large component of the innovation eco-system, have to be supported with skills that will foster innovation. These skills are typically found in the larger companies or in Multi-National Corporations (MNCs). The innovation ability of global giants like Nokia or Samsung or Apple has to trickle down to our SMEs, so that the eco-system is balanced and remains healthy.

Universities are the cornerstones of the innovation eco-system and have major roles to play. In developed countries, there is an active two-way flow of talent between universities and industry. This has enabled the infusion of innovation methodologies and best practices from industry into academia, resulting in universities becoming the hotspots of innovation.

6.0 CONCLUSION

Malaysia highlighted innovation as one of its pillar to achieve its goal to be a middle income nation by 2020. By putting the concept at the centre of the government transformation program, policymakers focus part of their energy to build a sustainable innovative ecosystem to support the country's development.

The concept of innovation system stresses that the flow of technology and information among people, enterprises and institutions is key to an innovative process. It contains the interaction between the actors who are needed in order to turn an idea into a process, product or service on the market. By giving priority to education, developing analytic skills amongst youth, supporting local SMEs development and empowering entrepreneurs, Malaysia is capitalizing on lessons from existing innovative environment and structures its unique ecosystem taking into accounts the country specific nature.

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