EVALUATION OF MULTIMEDIA SUPER CORRIDOR (MSC MALAYSIA) CONTRIBUTION IN MALAYSIAN ECONOMY

by

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ABSTRACT

The Multimedia Super Corridor (MSC Malaysia) is the government and major national initiative that was designed as a catalyst for the growth of ICT and to satisfy the country's ambitions in achieving fully developed status by the year 2020. The MSC established in 1996, aimed to build a competitive cluster of local ICT and attract world class companies with the aspiration of becoming a global ICT hub and multimedia innovation, operation and services. The initiative spearheads a number of ICT projects that are intended to transform Malaysian society into a k-economy through the use of ICT including education, healthcare, commerce, governance and industries.

The purpose of this study is to assess the MSC Malaysia's contribution to the economic and socio-economic development in Malaysia. The finding demonstrates MSC Malaysia's significant contribution to economic and benefited the ICT industry and the nation as a whole. A world class environment, facilities and the incentives offered in Bill of Guarantees in MSC have been successful in attracting FDI and DDI and made significant progress towards its goal as a global ICT hub. MSC achievements beyond contributing of RM34.7 billion to the GDP (2004-2010), also has significant achievement with 2520 of MSC status companies producing revenue RM92.8 billion; create of 99,590 knowledge-based jobs, generated RM33.1 billion worth of exports and RM1,512 million in R&D investment as well as Registered 5721 of new IPs. Some success also were observed from MSC Malaysia flagship applications e.g., e-Government, MyKad, Smart School and Telehealth addressed to improved socio-economic and benefited public society.

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LIST OF ABBREVIATION

AS	-	Application Software
BOG	-	Bill of Guarantee
BPO	-	Business Process Outsourcing
CAGR	-	Compounded Annual Growth Rate
CDP	-	Capability Development Programme
CIOs	-	Chief Information Officers
CMC	-	Creative Multimedia Companies
CMMI	-	Capability Maturity Model Integration
DDI	-	Domestic Direct Investment
EG	-	Electronic Government
FAMA	-	Federal Agricultural Marketing Authority
FDI	-	Foreign Direct Investment
GDP	-	Growth Domestic Product
IBB	-	Internet Based Business
ICT	-	Information and Communication Technologies
IHL	-	Institutions of Higher Learning
InfoTech	-	Information Technology
IP	-	Intellectual Property
ISP	-	ICT Strategic Plan
IT	-	Information Technology
JV	-	Joint Venture
K-economy	-	Knowledge Economy

KLCC	-	Kuala Lumpur City Centre
KLIA	-	Kuala Lumpur International Airport
KLSE	-	Kuala Lumpur Stock Exchange
MAMPU	-	Malaysian Administrative Modernization & Management Unit
MATRADE	-	Malaysia External Trade Development Corporation
MDeC	-	Multimedia Development Corporation
MESDAQ	-	Malaysian Exchange for Securities Dealing and Automatic Quotation
MeSH	-	Mobility, Embedded Software & Hardware
MEWC	-	Ministry of Energy, Water and Communication
MGS	-	Multimedia Super Corridor Grant Scheme
MIDA	-	Malaysian Industrial Development Authority
MITI	-	Ministry of International Trade and Industry
MNCs	-	Multi National Corporations
MOE	-	Ministry of Education
MOH	-	Ministry of Health
MOSTI	-	Ministry of Science, Technology & Innovation
MSC	-	Multimedia Super Corridor
NDP	-	National Development Policy
NEAC	-	National Economic Action Council
NEP	-	New Economic Policy
NITA	-	National Information Technology Agenda
NITC	-	National Information Technology Council
NRD	-	National Registration Department

NVP   -   National Vision Policy

OPP1   -   First Outline Perspective Plan

OPP2   -   Second Outline Perspective Plan

OPP3   -   Third Outline Perspective Plan

PIKOM   -   Association of the Computer and Multimedia Industry

PPSMI   -   Provide laptop and courseware to schools for teaching Science

                        and Math in English

Proton   -   Perusahaan Otomobil Nasional Berhad

R&D   -   Research & Development

RM   -   Ringgit Malaysia

SeS   -   Software & e-Solutions

SMEs   -   Small and Medium Enterprises

SMIDEC   -   Small and Medium Industries Development Corporation

SSO   -   Shared Services & Outsourcing

SSQS   -   Smart School Qualification Standards

U.K   -   United Kingdom

U.S   -   United Stated of America

UPM   -   University Putra Malaysia

USD$ -   United States Dollar

CHAPTER 1

INTRODUCTION

1.0   Introduction

The Multimedia Super Corridor (MSC Malaysia) is the government and major national initiative that was designed as a catalyst for the growth of the information and communication technology (ICT). These projects are aimed to transform the Malaysian economy into a knowledge-based economy with ICT advancement in line with the country's ambitions in achieving fully developed status by the year 2020. The initiative led many ICT projects across the country aimed at transform Malaysian society through the use of ICT including governance, education, healthcare, industries, and commerce.

The development of MSC has created a lot of incentives and policies that were designed to become the leader in ICT industry and applications at regional level and globally. The product and services of the companies that are highly integrated with multimedia technologies have been granted MSC Malaysia-Status, which benefited from the bills of guarantees provided by the Malaysian government.

In return, the government expects those companies will transfer their expertise in the ICT and multimedia sector in the future for mutual benefits.

The development of the MSC Malaysia is planned under three phases. The first phase (1996-2003) included laying out world class ICT infrastructure to attract international and local companies. Under this phase, Cyberjaya and Putrajaya were established as the world's smart and intelligent cities and will create a world-leading framework of cyber-laws.

The second phase of development (2004-2010) aims to link up all five Cyber-cities with other parts of cities in Malaysia and finally to link with other Cyber-cities throughout the world. It will develop a web of corridors and cluster of world-class ICT and multimedia companies. It will also set standards for the flagship application, leader in cyber law in the global community, and set up a number of intelligent cities linked to cyber-cities globally. Lastly the third phase (2011-2020) aims to expand Malaysia's ICT connections globally. It will have a cluster of intelligent cities linked to the global information and agenda for MSC Malaysia will be extended nationwide. It will be a nation's transformation into a knowledge based economy and society, as envisaged in Vision 2020 (msc.com, 2011).

1.1   Problem Statement

To enhance the development of the ICT industry and promote knowledge based economy in Malaysia, the MSC has been set up as the focus of the IT strategy under the Seventh Malaysia Plan (1996-2000). The MSC Malaysia was established to become a global hub for ICT and multimedia innovation, operation and services. These projects are aimed to push the Malaysian economy up to the higher value chain, through technology intensive and knowledge economy, in line with the country vision to achieve developed nation status by 2020. As stated by, Tan Sri Nor Mohamed Yackop, Minister of Finance II (2006);

> *"The Government recognizes the need to drive the economy towards higher productivity and competitiveness through technology intensive and knowledge based economy, as these provide the best opportunities for transforming the economy up the higher value chain. As part of this effort, MSC Malaysia was launched to provide the catalyst and impetus to drive the development of a knowledge-based society. The Cyberjaya initiative has been put in place to spearhead the development of MSC Malaysia to become the National ICT Hub".*

Since established in 1996, MSC Malaysia has brought a lot of ICT projects across the country aimed at improving the use and adoption of ICT among Malaysian society through education, governance, healthcare, commerce and industries. MSC Malaysia will not be successful without the involvement of MNC's companies, particularly from the FDI's investment. FDI plays an important role in ICT development and MNCs now dominate the ICT industry in Malaysia. Their investments in the MSC has succeeded in creating jobs, encouraged feeder company start-ups, trained skilled worker, transferred technology and opened up international markets (Harris, 1997).

After 15 years in development, MSC Malaysia has played a significant role and gave great impact to the national economy in terms of local revenue, export, employment, R&D, attract FDI as well as fostering DDI. The question is to what extent that MSC Malaysia has successfully contributing to national economy within the set of location provided in Cyber-city and Cyber-center. Does MSC Malaysia have succeeded in attracting FDI as a main player towards ICT Hub in this region and does local companies are also growing in line with foreign companies? In addition there are also benefits from the Flagship initiative launched for the socio-economy improvement. The government has spent billions of dollars to ensure that

the flagship initiative generate as much as possible benefits to the public society. To this point, what is the achievement of Flagship Application initiative in socio-economic development?

Hence, this study will describe the achievement and contribution of MSC Malaysia in Malaysian economy particularly in harnessing ICT industries through FDI and DDI as well as adoption of ICT in the society.

1.2   Significant of the study

Outcome of this study will reveal the significant contribution of MSC Malaysia to the economic and socio-economic development in Malaysia. These also will disclose whether MSC Malaysia has succeeded in promoting FDI and fostering growth for local companies as well as measuring the achievement of flagship applications. At the end of the study I will give some relevance recommendation for the improvement and implementation of the MSC Malaysia in the future.

1.3   Objectives

The government facilitate and assist the development of MSC Malaysia in such of global changing economics to attract the presence of ICT intensive companies. MSC Malaysia is meant to form a cluster of ICT intensive local and foreign companies to adapt the technology and R&D strategy in order to transform the economy into a knowledge-based economy.

The main objective of this study is to evaluate the government initiative of MSC Malaysia's contribution to the economic and socio-economic development in Malaysia. This is including the analysis on the significance achievement of MSC Malaysia in attracting FDI and fostering local ICT industries. Besides, this study aimed to assess the achievement of government flagship application initiative and give some recommendation for its continuing relevance in driving the economy towards higher technology and knowledge based economy.

1.4   Research Questions

1. Does MSC Malaysia succeeded in attracting FDI and fostering local ICT companies' growth?

2. Does MSC Malaysia have significant contribution to Malaysian economy in terms of GDP, revenue, export, employment and R&D?

3. What is the achievement of Government Flagship Application in socio-economic development?

1.5 Methodology of the Study

This research intends to validate the link between the monetary value of MSC Malaysia initiative output and its contribution to economy in Malaysia. The core will be study on the contribution of MSC Malaysia in Malaysia's economy. The research outcome may validate it as a viable economic tool or have significant impact in drives the Malaysian economic growth. Information gathered from secondary sources will answer questions on the size of industries, sales, employment, FDI as well as DDI within the MSC Malaysia location.

1.5.1 Purpose of Study

The purpose of this study is to analyze and evaluate the MSC Malaysia's contribution in Malaysian economy. According to Sekaran (2003), a descriptive

study conducted to ascertain and be able to describe the characteristics of the variables of interest in a situation. The goal of a descriptive study consequently, to give the researcher a profile or to describe relevant aspects of the phenomena of interest from individual, organizational, industry-oriented, or other perspective (Sekaran, 2003). For example in this study, the researcher wants to describe the MSC Malaysia initiative contribution to economic and socio-economic development in Malaysia.

Descriptive studies that present data in a meaningful form thus help to (1) understand the characteristics of group in a given situation, (2) think systematically about aspects in a given situation, (3) offer ideas for further probe and research, and/ or (4) help make certain simple decisions such as how many and what kind of individual should be transferred from one department to another (Sekaran, 2003).

1.5.2   *Research Approach*

The research uses a quantitative approach to solve the research problems, and to bridge the cause and effect way of thinking. According to Creswell (2003), a quantitative approach primarily uses post-positivist claims for developing knowledge (i.e. cause and effect thinking, reduction to specific variables and

hypotheses and questions, use of measurement and observation, and the theories test), uses strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data (Creswell, 2003). Using a quantitative approach, the study seeks objectivity in its analyses of reality based on the empirical evidence and tested theories.

1.5.3 Research Focus

The research aims to evaluate the contribution of MSC Malaysia initiative in Malaysian economy. The research focuses on analyzing the size of the industries and current achievement of MSC Malaysia in terms of sales, employment, FDI, DDI and R&D in this area. Besides, this research will also analyse the Flagship initiative achievement and benefits to the socio-economic in Malaysia.

1.5.4 Sources of Data

Data collection generated from various agencies such as Malaysian Development Economic Corporation (MDeC), Economic Planning Unit (EPU), MOSTI, Bank Negara Malaysia, MITI, MAMPU, MOE as well as from various Report (Malaysian economy, series of Malaysian Plan) and all relevant sources to

which MSC Malaysia has affect on the Malaysian economy. Other sources such as books, journals, articles and relevant documents published by the government and scholars will be analyzed and organized in a manageable way so as to make sense to this research.

1.6   Organization of the Study

This study is sectioned into five chapters as shown in Figure 1 below. Chapter one is an introduction that present an overview of the study including the problem statement, significant of study, objectives and a brief of methodology used in this study. It provides the theoretical framework that will guide the study.

Chapter two provides extensive overview of study background on Malaysian economic development and MSC Malaysia development and its current status. Chapter three contains extensive of literature of MSC Malaysia and ICT industries similar kind of studies in different regions and their impact on overall globe economy. Chapter four will explore the analysis and findings of the study on MSC Malaysia's contribution in Malaysian economy as well as in socio-economy. Chapter five contains of the recommendations and concluding remarks.

Figure 1: Outline of the Study

Chapter 1: Introduction

Chapter 2: Background of Study

Chapter 3: Literature Review

Chapter 4: Analysis and Findings

Chapter 5: Recommendations & Conclusions

References
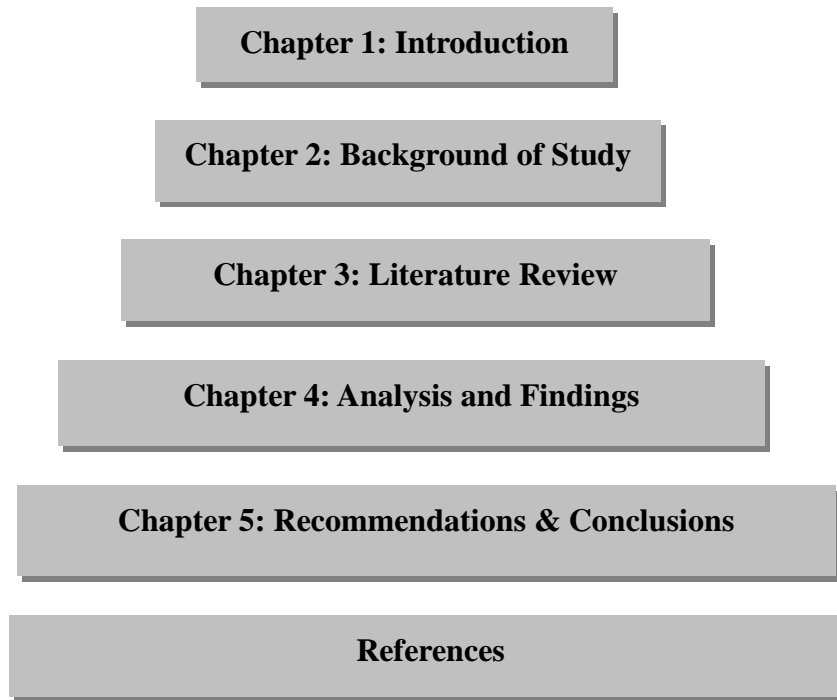
CHAPTER 2

STUDY BACKGROUND

2.1   Economic Development Background

The Federation of Malaysia was formed in 1963, initially consisted of Malaya (Peninsular Malaysia), Singapore, Sarawak and Sabah. Singapore left the federation due to internal political tensions and became an independent state in 1965. Malaya gained independence from British on 31 December 1957 and later on Sarawak and Sabah join and united to form Malaysia on 16 September 1963. Malaysia covers an area of about 330,803 square kilometres, consisting of states in Peninsular Malaysia, namely Johor, Melaka, Negeri Sembilan, Selangor, Pahang, Perak, Terengganu, Kelantan, Kedah, Pulau Pinang, Perlis, and the Federal Territories of Kuala Lumpur and Putrajaya, Sabah and Sarawak on the island of Borneo and the Federal Territory of Labuan off Sabah (Figure 2.1).

Malaysia is a multiracial country, which is a legacy from the British colonial system that resulted to the divide of Malaysians into three main ethnic groups; Malay, Chinese and Indian. The Malays, the indigenous people, amounting to about

55 percent of the population, Chinese and Indians amounted about 35 percent and 10 percent, respectively. There are also groups of indigenous people of Sabah and Sarawak, such as Kadazan Dusun, Bajau, Murut, Iban, Melanau and Bidayuh. Malaysia's administrative system practises the parliamentary democracy with constitutional monarchy. It has three branches of government, namely the Executive, the Legislature and the Judiciary. During independence in 1957, Malaysia had population about 7.4 million and it has grown rapidly, such by 2010 the country's population had about 28.3 million people.

Figure 2.1: Map of Malaysia

Source: Map of Malaysia, www.**malaysia-maps**.com

During its attained Independence in 1957, Malaysia was fundamentally income agrarian economy, with heavy reliance on rubber and tin which is about 70 percent contribution to total export. However, the nation cannot rely solely on both commodities rubber and tin for export purposes because of the fluctuating price and demand in these commodities. The government made a great effort to expand the agricultural by focusing on diversifying and modernizing agricultural production and branched out it into the manufacturing sector. Malaysian government launched the First Malaysia Plan (1966-1970) as a major step forward in economic transformation, namely agricultural diversification to sustain economic growth and development. As reported in the Plan, a total of $10,500 million was assigned for development expenditure in the public and private sectors, for the process of modernization and Malaysia's nation-building (Malaysia Plan, 1966).

After a decade of independence, in 1970, the government has been successful in the agriculture diversification and export oriented manufacturing industries were growing rapidly with 10.4 percent yearly growth. Malaysia was able to replicate the four Asian Tiger economies (South Korea, Taiwan, Singapore and Hong Kong) and transform the economy into variety sectors with the industrial sector as the main source of country's growth.

In 1980s, the government efforts to diversify the economy into more advanced industries show the establishment of Proton (Perusahaan Otomobil Nasional Berhad) in 1985, as a national automobile company. This move was based on the premise that the nation needs to reduce its dependence on imports of capital and goods to sustain growth and to generate an additional support industries (EPU, 2010). In 1994, Proton's annual production exceeded 134,000 units and domestic market share rose to 70 percent. Proton exported cars to 30 countries and more than 70 percent of the local vendors associated with the technical partners from Japan.

Foreign direct investment (FDI) has been implemented and promoted actively as the introduction of the Free Trade Zone Act of 1971, and the Promotion of Incentives Act of 1986. The electronics and electrical products industry is the most important manufacturing sector, providing significant contribution to the industrialization of the economy. Growing importance of industrial electronics was due to greater production of high value added products such as computers and telecommunications equipment (MITI, 2006).

During the eighties period, Prime Minister Mahathir Mohamad also introduced Privatization policy and the 'Malaysia Incorporated' approach

to stimulate national economic development in 1983. Malaysia Incorporated, which was inspired by Japan Inc., viewed the country as a corporation, with the government provide and maintain a conducive businesses environment while the private sector as an engine of economic growth. Over the period 1983-2009, a total of 503 projects were privatized, with almost triple of them (348) were existing projects and 155 new projects, mostly in construction, transportation, electricity and the gas sectors (EPU, 2011). From all these privatized projects, the Government managed to save about 113,440 of payroll from the eliminated jobs, while saving from Capital expenditure is about RM161.7 billion and RM 6.5 billion from sales of Government equity and assets (EPU, 2011).

Malaysia has been able to maintain over three decades of steady economic development with an average annual GDP growth rate of 7.6% between 1989 and 1999. However, Malaysian economy experienced a sharp recession in 1997-1998 during the Asian financial crisis, which resulted in depreciated its currency nearly 40 percent. The crisis has also affected countries in the region, including South Korea, Thailand and Indonesia. The government established the National Economic Action Council (NEAC) in early 1998 as a step to revive the economy and stimulate the economy for recovery, such as stabilizing the currency and fostering domestic

demand. These measures give a positive impact as in 1999, Malaysia was able to stabilize economy and have the greatest recoveries among the Asian country with the GDP growth rate reached 5.8% and inflation rate dropped from 5.3% in 1998 to 1.4% in early 2000 (Geneva, 2001).

After 7 years pegged the ringgit to the U.S dollar, finally in July 2005, the government removed the policy of pegging the ringgit's value to the U.S. dollar at an exchange rate of RM 3.8/ U.S. $1. According to Bank Negara (Central Bank), Malaysia allowed the ringgit to trade in a managed float against major currencies consecutively to raise the value of ringgit in the market value. This policy aimed to retain the ringgit more stable and to avoid uncertainty of currency fluctuate that could harm exports. Bank Negara also has intervened in financial markets to preserve stability in the trading level of the ringgit.

The Malaysian financial system revealed significant resistance of the global financial crisis in 2008, where by banks have sufficient capital and not affected by the U.S. sub-prime market. A conservative regulatory environment and healthy foreign exchange reserves has minimized country's exposure to financial risks and the global financial crisis. However, fall in demand for consumer

goods worldwide especially in the U.S. has resulted in negative GDP growth in

2009 and recovery expected will take place in 2010.

2.2 Macro Economic Policies

Since 1970, Malaysia has implemented economic development based on the

strategy in three long term policies namely the New Economic Policy (NEP) 1970–

90, the National Development Policy (NDP), 1990–2000, and the National Vision

Policy (NVP), 2001-2010. Besides emphasising on the economic growth, these long

term development policies also always put the interests of all groups or communities

in society in an equitable manner in country's strategy of development (Yusof and

Bhattasali, 2008).

2.2.1 New Economic Policy (NEP: 1971-1990): The First Outlines Perspective

Plan

The New Economic Policy (NEP: 1971-1990) is the master plan of the First

Outline Perspective Plan (OPP1) which consists of the Second Malaysia Plan (1971-

1975), and ended with the Fifth Malaysia Plan (1986-1990). Every Plan covered a

five years period. The NEP, were established to rectify the economic imbalanced among the ethnics group particularly the Malays and indigenous peoples (*bumiputera*), acquired less than 3% of the nation's wealth. The Malays are mostly were concentrated in the traditional villages, doing agricultural activities, while the Chinese dominated commerce and Indians educated worked as professional such as doctors or lawyers, and the less worked in the plantations.

Inequalities in income distribution among the ethnics groups lead to the riot in May 1969. This communal riot forced government to formulate the strategy to narrow down the economic gap and disparities among ethnic groups. The government introduced more aggressive programs to establish a Malay entrepreneurial class by involved and direct intervention in the economy. The NEP indicated a crucial change in government policy as a key turning point of development in the country's history. The NEP had a two-pronged objective of eradicating poverty; first, reducing absolute poverty through raising income levels and increase opportunities for employment and second, to restructure society in correct economic imbalances so as to eliminate the identification of economic function with ethnicity.

The government's strategies to eradicate poverty and restructure the society

produced significant improvements in income distribution in 1990. The percentage

of households living below the poverty line income declined from 49.3% in 1970 to

16.5% in 1990 and further reduced to 5.1% in 2002. While the restructuring of

corporate equity, shows more than two thirds of corporate equity in Malaysia owned

by foreigners in 1970, while the *bumiputeras*, owned only 2%. The NEP set a

restructuring target in which by 1990, the *bumiputeras* holdings should reach 30%,

other 40% of Malaysians and the foreigners 30%, in a growing economy (EPU,

2010).

2.2.2   *The National Development Policy (NDP: 1991-2000): The Second Outlines Perspective Plan*

The government introduced the National Development Policy (NDP) in June

1991, which is effective from 1991 to 2000 and covered six and seventh Malaysian

Plans. The NDP is the master plan of the Second Outline Perspective Plan (OPP2)

and part of the long term policy of Vision 2020. The main objectives of NDP is to

transform Malaysia into a fully industrialize country and upholds the NEP's

objectives to eradicate poverty and achieving well-balanced society through

economically, socially, spiritually, culturally and psychologically. Ultimately, the government expects that Malaysia will be actually achieved national unity through socio-economic development.

The NDP focus on eradicating hardcore poverty and reducing relative poverty; developing human resources in the country; allow the private sector more participated in the restructuring of society; and increase the *bumiputera* involvement in the economy by focusing on the development of the *Bumiputera* Commercial and Industrial Community. The economic development plans, has been working to boost the country into a higher growth through the export industrialization as many adopted by other Asian countries. The private sector will provide the impetus for national economic progress to lead country's into advanced and significant industrial economy in 2020.

2.2.3 *National Vision Policy (NVP: 2001-2010): The Third Outlines Perspective Plan*

The government efforts to develop the nation and to provide prosperity to the people are continuous process in the new long-term plan of National Vision Policy. This plan is in force for 10 years from 2001 to 2010 covering the Eighth and Ninth

Malaysia Plan. The essence of both long term plans is still to maintain a balance development, specifically in high tech based industries and information technology to generate economic growth based on knowledge economy.

The NVP focuses on building a resilient and competitive nation, increase the quality of development on various levels and sectors as well as produce high growth. National unity remains the principal goal of development to bring prosperity to all society as the diversities of Malaysians will be consider in building a harmonious, tolerant and dynamic society.

The NVP is the creation of an enduring and competitive Malaysian society through building a resilient nation by fostering unity and increase the quality of life as well as increasing economic resilience, promote an equitable society by eradicating poverty and reducing imbalances within ethnic groups as well as regions. Under the NVP focus also has directed to develop a knowledge-based economy as a strategic move to raise the value added of all economic sectors as well as strengthen human resource development to produce competent, productive and knowledgeable workforce.

2.3   Multimedia Super Corridor (MSC Malaysia)

The construction of the MSC Malaysia was introduced in 1991, consists of four major large scale mega projects known as the Kuala Lumpur City Center (KLCC), Kuala Lumpur International Airport (KLIA), Putrajaya and Cyberjaya. In August 1995, the government announced the MSC Malaysia as a focus of ICT development under the national IT strategy in Seventh Malaysia Plan (1996-2000). This strategy intended the MSC to enhance the development of the ICT industry and to transform the Malaysian economy into a k-economy with ICT advancement.

Figure 2.2: MSC Malaysia Logo

The project covers an area 50km long and 15km wide and consists of five cities, the Cyberjaya, KLCC, Kuala Lumpur Tower, Technology Park Malaysia and University Putra Malaysia-Malaysian Technology Development Corporation (UPM-MTDC). These cyber-cities have been designated for the development of ICT and multimedia innovations, providing the world-first class facilities for MSC Malaysia-

status companies to operate their business premises in a good conducive environment (Figure 2.3).

Figure 2.3: Maps of MSC Malaysia

Source: Mdec, msc.com, 2011

The MSC's development was planned under three phases. The development of the MSC Malaysia is planned under three phases. The first phase (1996-2003) included laying out world class ICT infrastructure to attract international and local companies. Under this phase, Cyberjaya and Putrajaya were established as the world's smart and intelligent cities and will create a world-leading framework of

cyber-laws. During this phase five cyber-cities has been developed and more than 1,000 companies and universities have been granted MSC Malaysia Status. Ultimately, seven major MSC Malaysia flagship initiatives were launched, with 22,000 high-value jobs created as well as generated revenue worth of RM6 billion (msc.com, 2011).

The second phase of development (2004-2010) aims to link up all five Cyber-cities with other parts of cities in Malaysia and finally to link with other Cyber-cities worldwide. It will develop a web of corridors and cluster of world-class ICT and multimedia companies. During this phase, it will also set standards for the flagship application, leader in cyber law in the global community, and set up a number of intelligent cities linked to cyber-cities globally.

Lastly the third phase (2011-2020) aims to expand Malaysia's ICT connections globally, with a cluster of intelligent cities connected to the global information network and the agenda of MSC Malaysia will be broaden nationwide. This will be the nation's transformation into a knowledge-based economy and society, as envisaged in Vision 2020 (msc.com, 2011).

Under the Ninth Plan, the focus on the development will be directed to existing MSC cyber-cities as well as newly identified MSC cyber-centres in Perak, Melaka, Johor and Sarawak. This development expected to increase more 250 additional global MNCs. The number of MSC status companies is projected to increase from 1,421 in 2005 to 4,000 by 2010, generating 100,000 jobs nationwide and 1,400 intellectual properties (IPs), as highlighted in Table 2.1 (Malaysia, 2006).

Table 2.1: Selected MSC Indicator (2001-2010)

Catogories	2001	2005	2010e
MSC-status Company (number)	621	1,421	4,000
- Locally Owned	410	1,033	-
- Foreign Owned	198	349	-
- Joint-venture (50-50)	13	39	-
Job Creation (number)	14,438	27,2882	100,000
- Knowledge Workers	12,169	24,2522	-
- Others	2,269	3,0362	-
Investment (RM billion)	3.16	5.112	12
Revenue (RM billion)	-	7.212	69
Exports (RM billion)	-	1.572	2.5
R&D Expenditure (RM million)	-	6702	1,000
IPs Registered (number)	-	119	1400

Source: Ninth Malaysian Plan; EPU, 2006.

Meanwhile, several new strategies will be implemented, such as reviewed and enhanced the MSC Bill of Guarantees, promoting joint R&D between local and foreign ICT entities, extending MSC benefits via the nationwide MSC expansion, and encouraging the production, usage and adoption of domestically-designed and manufactured ICT products and services. The government also will put efforts to ensure adequate provision of essential services, including broadband and widespread internet access as well as transport facilities and improved amenities (Malaysia, 2006).

Up to date, MSC Malaysia has reached at various and diverse stages of achievements on its development and projects implementation. For examples, almost all the targets that were set up in the first phase have been successfully implemented. While in the second phase, although showing a significant achievement, but there is still room for improvement. These different stages of achievements and milestones of MSC Malaysia highlighted in Table 2.2 below.

Table 2.2: MSC Malaysia Achievements and Milestones

Phase I (1996-2003) Target milestones	Achievements
1 corridor	A corridor ranging from KLCC to KLIA, including Cyberjaya and Putrajaya created

50 world class local companies	742 companies, 50 foreign and local MNCs awarded MSC status
Launch 7 flagship applications	All 7 flagship applications were launched in Phase I
World leading framework of cyber-laws	Comprehensive set of cyber-laws were enacted. However, cyber-laws targeted e-commerce adoption are still pending
Cyberjaya as world-leading intelligent city with balanced and environmentally-sensitive development plan	Investments in Cyberjaya were focused on physical infrastructure while the development of social infrastructure was not at the same pace
Phase II (2004-2010) **Target milestones**	**Achievements**
Web of corridors	7 Cyber-cities and 8 Cyber-centres (KL, Perak, Johor and Melaka) have been rolled out
3,750 MSC Malaysia status and 250 MSC Malaysia global companies	By end 2007 - 1,482 MSC status companies 17 are Strong Performers and 84 are MNCs
Enhance flagships application and introduce new ones	Flagship applications have yet to realize their full potential. There have been no new flagships.
Leadership towards harmonized global framework of cyber-laws	ICT-related laws (especially IP-protection rights) have yet to be adequately enforced
Enhance local ICT industry and catalyse potential world class local companies	By end 2007 - 1,100 local MSC status companies and 17 Strong Performers
Link to world leading intelligent cities	High speed link connectivity to Japan, Europe, Asia Pacific and US is now available with outbound bandwidth at 27Gbps and further improvements planned

Sources: www.nitc.my, EPU, 2009

2.3.1   Cyber-cities and Cyber-centres

MSC Malaysia has developed cyber-cities and cyber-centres to attract and retain ICT firms and industry to develop their businesses in competitive environments.In June 2004, the MSC Malaysia cyber-city and cyber-centre status was extended to other city outside the original designated area in order to spread the benefits throughout the country. Under the new location status on MSC Malaysia Next Leap (2004-2010), MSC Malaysia cyber-city status was awarded to Bayan Lepas Free Industrial Zones in Penang and Kulim Hi-Tech Park in Kedah (Figure 2.4).

Figure 2.4: MSC Malaysia Next Leap (2004-2010)
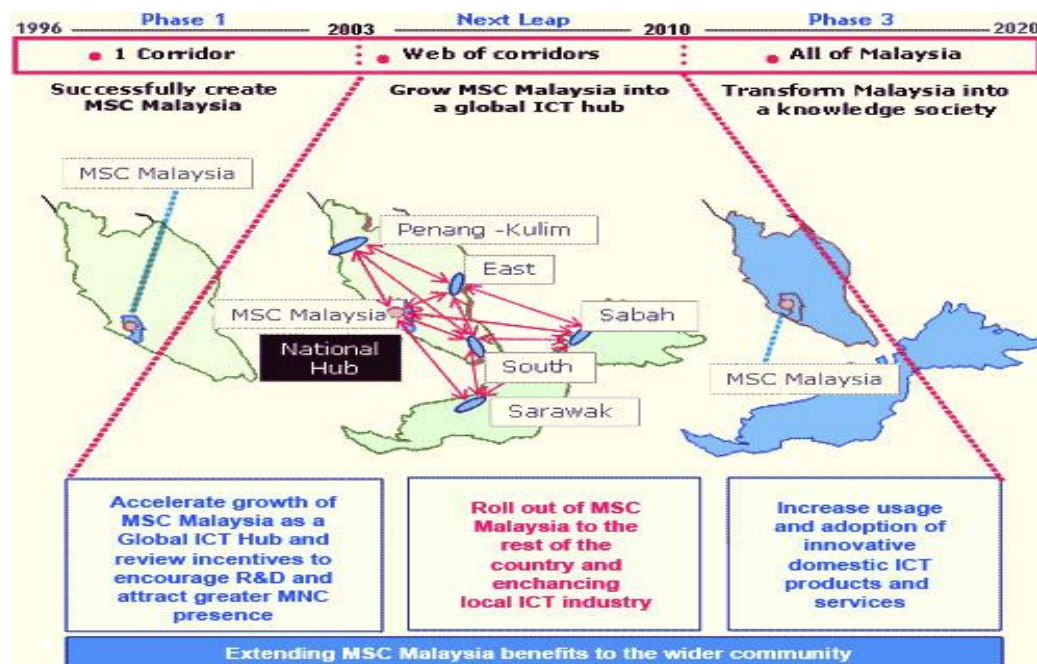
Source: Mdec, msc.com, 2011

The MSC Malaysia expansions targets nationwide expected will accelerate the growth and will meet the target of becoming a global ICT hub. MSC also always review the incentives to support R&D as well as to attract greater MNC presence in MSC cyber-city. The expansion of MSC Malaysia to other city will also promote local ICT industry and enhance adoption and usage of domestic ICT product and services to the society.

MSC Malaysia cyber-cities and cyber-centres will be catalysts in bridging the country's digital divide, enhancing economic growth and competitiveness as well as help to promote a performance in service delivery. The expansion of MSC Malaysia's location and incentives will boost the growth of new investments, particularly in ICT and knowledge-based industries and generate high value jobs in the states (MDeC, 2011). These Cyber-cities are audited annually to match with minimum standards and criteria that differentiate them from any other location. As an expansion of MSC Malaysia, more cyber-centre declared and added to the network such as Putra Square in Kuantan Pahang, specializes in education, defense, logistics, integrated content and agro biology. At present, there are 16 Cyber-cities and Cyber-centres across the country; 10 in the Klang Valley and 6 in other states of Peninsular Malaysia.

2.3.2 MSC Malaysia Incentives

MSC Malaysia plays a significant role in developing the ICT industry in Malaysia as well as contributing to the national economic development. MSC Malaysia initiative has designed with good infrastructure and packaged with incentives and conducive legal and regulatory environment to attract international and local investor. Fiscal and non-fiscal incentives offered to companies who meet the criteria and granted as MSC Malaysia status companies as illustrated in table 2.3.

Table 2.3: MSC Malaysia Incentives

Financial	Non-Financial
• Pioneer Status -100% exemption from taxable statutory income. This incentive is granted for a period of 5 years for the first round. • A 100-percent Investment Tax Allowance (ITA). • Eligibility for R&D grants (for majority Malaysian ownership MSC Malaysia-Status companies. • Freedom to source capital and borrow funds globally.	• Duty-free import of multimedia equipment (DFI) • Intellectual property protection and a pioneering and comprehensive framework of cyber-laws • No censorship of the Internet • High-powered implementation agency as an effective one-stop super shop - MDeC. • World-class physical and IT infrastructure • Globally competitive telecommunication tariffs and services guarantees • High-quality planned urban development • Excellent R&D facilities, including the region's first Multimedia University • Green environment protected by strict zoning

Source: msc.com, 2011.

For the financial incentives, the MSC Malaysia status companies are given five-year exemption from income tax, or a 100 percent Investment Tax Allowance (ITA) on new investments. Besides, multimedia equipment imported is duty-free and R&D grants given to local small and medium size enterprises (SMEs). MSC status companies also eligible to refund the duty paid on the re-exported components for exporting multimedia products manufactured in Malaysia using dutiable components.

The non-financial incentives given to MSC Malaysia status companies will enjoy the benefits of employing foreign knowledge workers without any restriction. They can be totally foreign owned which are allowed to source capital globally and received waivers from the Foreign Exchange Controller. To enjoy the benefits of MSC Malaysia Status, the companies must reach the criteria such as must be providers or heavy users of multimedia products and services; hire a large number of knowledge workers; specify how the technology and/or knowledge transfer to Malaysia, or otherwise contribute to the development of the MSC and the Malaysian economy.

The MSC Malaysia Status entities/ companies are eligible to a set of incentives, rights and privileges from the government, under the Bill of Guarantees

(BoGs). The BoGs reflects the government's intention to provide an environment in MSC Malaysia that is conducive to the development of MSC Malaysia Status entities (MDeC, 2011). Benefits and incentives offered to the companies under the BoGs are:

i. **Provide a world-class physical and information infrastructure.**

The Government will provide a conducive and enabling environment for companies to conduct their business operations, undertake research and develop new technologies, applications and products. The provision of this BoG is to require MSC Malaysia Status companies to locate and operate their business operations in "MSC Malaysia Cyber-cities" or "MSC Malaysia Cyber-centres".

ii. **Unrestricted employment of local and foreign knowledge workers.**

MSC Malaysia Status is required to specify the number of knowledge workers (local and foreign) that it requires for the conduct of its MSC Malaysia qualifying activities. An MSC Malaysia Status entity may employ such number of knowledge workers as indicated upon the grant of MSC Malaysia Status.

iii. **Ensure freedom of ownership by exempting companies with MSC Malaysia Status from local ownership requirements.**

There are no restrictions are imposed by the government on equity conditions for companies incorporated in Malaysia. Though, companies involved in various sectors, equity conditions imposed by the respective sector regulators will apply and required to comply with equity conditions, and paid-up capital conditions. However, MSC Malaysia Status companies are exempted from the above, provided that the property is used for their operational activities, including as residence for their employees.

iv. **Give the freedom to source capital globally for MSC Malaysia infrastructure, and the right to borrow funds globally.**

MSC Malaysia Status companies are free to source capital globally and to remit funds abroad, which are made in foreign currency and transacted through licensed onshore banks. They are also free to borrow from resident and non-resident lenders in Ringgit and in any foreign currency to finance their business operations. Non-residents investing in MSC Malaysia Status companies are free to repatriate any amount of capital, divestment proceeds, profits and dividends arising from their investments.

v. **Provide competitive financial incentives, or an investment tax allowance, and no duties on import of multimedia equipment.**

Under the Promotion of Investments Act 1986, Malaysia Status entity may choose to enjoy either;

- Pioneer Status: 100 percent exemption on taxable statutory income for a period of up to 10 years; or

- Investment Tax Allowance: 100 percent deduction of qualifying capital expenditure against the taxable statutory income, for capital expenditure made during the first 5 years of its operation.

vi. **Become a regional leader in intellectual property protection and cyber-laws.**

The Government is committed to establish a conducive legal and regulatory framework of Intellectual Property and Cyber laws, and to ensure that laws are properly administered, complied with and enforced. The Government further aware of the need to stay ahead of regional competition and is committed to continually enhance the framework to be parallel with international developments and new challenges.

vii. **Ensure no Internet censorship.**

To the extent that any act is illegal in the physical world, it will similarly be prohibited in the online environment. Hence, laws prohibiting dissemination of, for example, indecent/ obscene or other illegal materials will continue to apply. In this regard, relevant ministries and agencies will continue to take appropriate actions and enforce those laws that are under their respective responsibility.

viii. **Provide globally competitive telecommunications tariffs.**

MSC Malaysia entities enjoy a set of published telecommunications tariffs that are generally competitive against selected countries, for the conduct of MSC Malaysia qualifying activities. To ensure competitiveness, the published tariffs are continuously benchmarked and reviewed, and are therefore subject to fluctuations. Further, the said tariffs may not necessarily be the lowest, taking into consideration, among other things, the dynamic nature of the global telecommunications environment and the overall economic conditions and telecommunications framework of the country.

ix. **Tender key MSC Malaysia infrastructure contracts to leading companies willing to use the MSC Malaysia as their regional hub.**

The Government may consider inviting leading companies that are willing to set up their global/ regional hubs in Malaysia to submit proposals for key MSC Malaysia infrastructure works, as an incentive to attract such companies to invest in MSC Malaysia. The offer of contracts may be made through direct negotiations based on a number of considerations, including value propositions of such companies and their expertise and track record in carrying out similar successful projects elsewhere.

x. **To provide a high-powered implementation agency to act as an effective one-stop super shop.**

MDeC has been set up by the government to act as a one-stop centre, to drive the development of MSC Malaysia specifically, and the ICT industry

in general. MDeC's functions are to coordinate, promote and develop the ICT industry and selected services in MSC Malaysia and Malaysia. MDeC's roles and functions will be further discussed in the next section.

2.3.3   MSC Flagship Applications

There are various MSC Flagship Application projects were established to integrate the MSC Malaysia into Malaysian economy and benefits of linking up with the socio-economy. Seven flagship applications have been launched since the MSC Malaysia establishment in 1996. These flagship projects are namely, E-Government (electronic government); MyKad (a multipurpose card); Smart Schools; Telehealth; Research and Development cluster; E-Business; Technopreneur.

Four key flagship applications (i.e., E-government, MyKad, Smart School and Telehealth) has been developed and set up with various projects to increase and enhance ICT adoption to the society. These projects initiative has either directly or indirectly give some impact to the Malaysian's socio-economic development. While the others, three flagship applications such as R&D cluster, E-business and Technopreneur Development were targeted at developing critical enablers to develop the ICT industry and promote adoption of ICT in other business sectors.

These Flagship Applications provide an attractive opportunity for local and foreign companies, in the various scopes and implementations. A brief development of these government flagships initiatives are (msc.com, 2011):

i.   **E-Government** – The goal is to improve transparency and responsiveness to the public. Yet to reach full potential due to limited number of transactions available online as well as issues in infrastructure, change management and integration of legacy systems.

ii.   **MyKad** – The goal is to provide a secure ID platform for private and government transactions and processes. This initiative has attracted many private applications to-date but uptake of public applications, e.g. driver's license, has been minimal. Besides, access to infrastructure, e.g. card readers, lack of buy-in from other agencies and poor public perception of security limits public usage of other applications on MyKad.

iii.   **Smart School** – The goal is to promote ICT literacy and encourage creativity and self-learning. Smart School has been enhanced based on learning from pilot and full roll-out expected by 2010. This initiative held some productivity and social gains from improved administration of schools and reduction of paperwork.

iv. **Telehealth –** The goal is to improve the standard of healthcare and provide more information to the public for better manage their health. Teleconsultation, MyHealth portal and Continuous Professional Development programs have been launched while Lifetime Health Record project yet to be launched. However, poor access to infrastructure and under-developed critical enablers limiting use of Telehealth projects and hampering implementation of Lifetime Health Record.

The development of the Flagship Applications are driving by government ministries and agencies who work close partnership with the foreign and local ICT companies in providing the ICT projects innovation and implementation. The Flagship Applications and the lead agencies responsible for their development are as shown in Table 2.4 below.

Table 2.4: Flagship Applications Lead Agency

Flagship Applications	Lead Agencies
Electronic Government	Malaysian Administrative Modernisation & Management Unit (MAMPU)
Multi-Purpose Card	National Registration Department (NRD)
Smart Schools	Ministry of Education (MOE)
Telemedicine	Ministry of Health (MOH)

Source: EPU; msc.com, 2010

The MSC applications have generated innovative business opportunities for private sector participation and have attracted considerable investor interest both at national and international levels. The establishment of MSC business presence in the cities of Jeddah in Saudi Arabia and Dalian in People's Republic of China (China) promoted partnerships with a view to replicate a number of the MSC applications abroad. In order to bring the products to international markets, emphasis was made on standards compliance to ensure interoperability, modularity and scalability of the MSC applications (Malaysia, 2006).

The government has promoted and invited all the multimedia community in Malaysia and around the world to participate in the MSC Malaysia to explore and exploit business opportunities. These projects have long-term objectives to adopt multimedia technologies as a critical enabler in the process to change core elements of technology infrastructure and social systems such as in education or public administration. Each application provides the companies opportunity working together with the Malaysian government to develop and implement innovative multimedia applications as well as enable them to use the MSC Malaysia as a global provider for their multimedia and IT development.

Under the Ninth MP, various computerization programmes implemented by the relevant ministries and agencies. The Ministry of Energy, Water and Communications (MEWC) lead the telecommunications infrastructure development to Bridge the Digital Divide (BDD), support and upgrade the telecentres and SchoolNet. While the MSC Multimedia Applications will be deployed by key implementing agencies, namely, the MAMPU, MOE, MOH and Ministry of Home Affairs. The Ministry of Science, Technology and Innovation (MOSTI), together with MDeC will lead MSC developments and promotions, while MIMOS will lead in the ICT R&D (Malaysia, 2006).

A total of RM12.9 billion has been allocated for ICT-related programmes and projects as shown in Table 2.5. The main portion of the allocation has been distributed to the computerisation of Government ministries and agencies as well as BDD initiatives largely for the supply and maintenance of computers and internet access.

Table2.5: Expenditure and Allocation For ICT-Related Programmes, 2001-2010

Programmes	Expenditure	Allocation
Computerisation of Government Agencies	**2,125.0**	**5,734.2**
Bridging the Digital Divide	**2,433.1**	**3,710.2**
- School	2,145.1	3,279.2

- Communications Infrastructure Service	254.0	150.01
- Provision Programme Telecentres	18.1	101.0
- ICT Training / Services	15.9	180.0
ICT Funding	**1,125.6**	**1,493.0**
MSC Multimedia Applications	**1,153.1**	**1,100.5**
- e-Government	537.7	572.7
- Smart School	363.9	169.8
- Telehealth	91.8	60.0
- Government Multipurpose Card	159.7	298.0
MSC Development	**320.8**	**377.0**
ICT Research and Development	**727.5**	**474.0**
Total	**7,885.1**	**12,888.9**

Source : Ninth Malaysian Plan, 2006.

2.4   Cyberjaya

Cyberjaya also known as 'Intelligent City' or 'Smart City' was launched in 1999 within 2,894 hectares (7,000 acres) area as the engine for the ICT growth as well as the multimedia development in the MSC Malaysia. It was designed to become a regional ICT hub, leading for other cyber-cities, KLCC, KL Tower, Technology Park Malaysia and UPM-MTDC.

Cyberjaya aimed to be the hub of international IT companies and investors are encouraged to locate their companies in this city to promote the ICT cluster. To

achieve this objective, Cyberjaya was established with excellent environment as well as conducive business and advanced technology, that attractive to both local and foreign business partnerships and to enhance inter-government collaboration in trade, economic development, technology and knowledge transfer.

Figure 2.5: Map of Cyberjaya
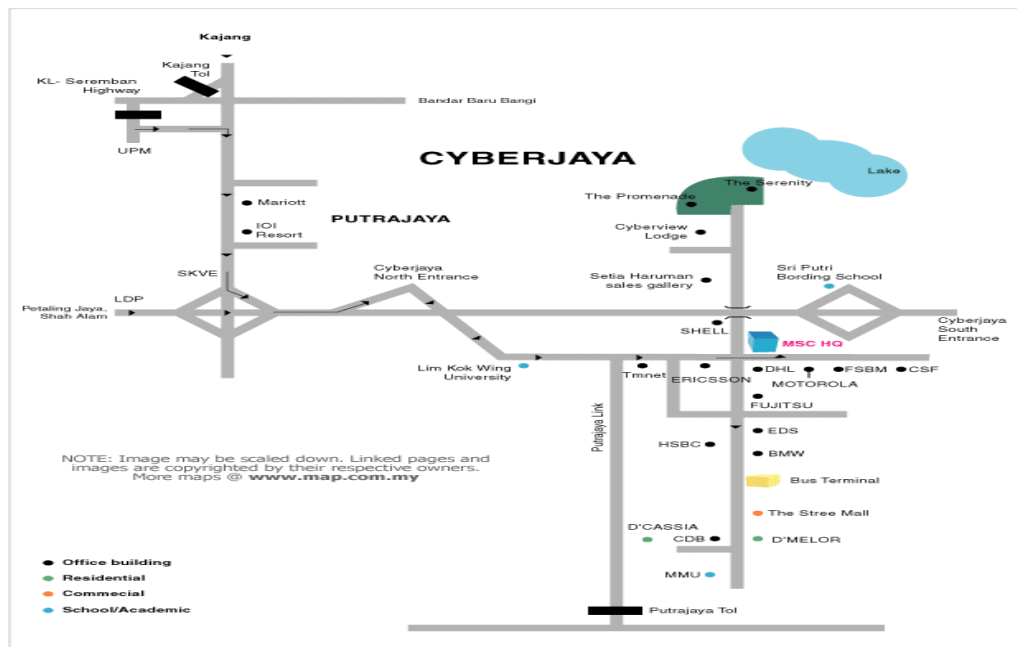
Source: www.mscmalaysia.my, 2010

The Malaysian Government has made efforts to develop Cyberjaya as a preferred and attractive destination for outsourcing locations in the world, a preferred ICT and Multimedia Hub. As of October 2008 there were 457 MSC Malaysia status companies in Cyberjaya; 30 companies were MNCs and 427 non-

MNCs companies as shown in Table 2.6. The city continues to grow with recorded a daytime population of 41,000 and estimated number of knowledge workers 28,000.

Table 2.6: Facts and figures in Cyberjaya, 2009

MSC Malaysia Status Companies	**457**
MNCs:	30
Non-MNCs	427
Day Population	41,000
Night Population	14,000
Knowledge Workers	28,000

Sources: www.cyberjaya.com, 2010

Cyberjaya will be further developed as a thriving National ICT Hub, with a pro-business environment promoting competition and synergy among related industries and services. Various services including transportation and infrastructural amenities will be enhanced to ensure Cyberjaya is more accessible and conducive for work and leisure. In addition, Cyberjaya with wireless broadband city will provide the wider platform to promote innovative applications among the growing ICT-savvy workforce and consumers (Malaysia, 2006).

2.5   Multimedia Development Corporation (MDeC)

MDeC is located in intelligent city of Cyberjaya as the supporter for ICT development in Malaysia. MDeC is a government owned corporation place under the Ministry of Science Technology and Innovation as a private limited company under the Companies Act 1965. MDeC was established to facilitate the development and promotion of MSC Malaysia, advised the government on ICT legislation, and policy, develop MSC Malaysia as a key growth driver of the economy and set breakthrough standards for ICT and multimedia operations.

MDeC also responsible for the promotions of MSC Malaysia local and overseas, and to support companies within the MSC Malaysia designated areas. MDeC collaborate with various authorities and government agencies to ensure that MSC Malaysia provides a favorable environment for companies to exploit full potential of ICT and multimedia technologies. Six prevalent categories have been identified to represent the broad industry of MSC Malaysia Status Companies, namely Application Software (AS), Mobility, Embedded Software & Hardware (MeSH), Internet-based Business (IBB), Creative Multimedia Companies (CMC), Shared Services & Outsourcing (SSO) and Institutions of Higher Learning (IHLs)

and Incubators (mdec.corp.com, 2011).

Under the Ninth MP, the capacity and capability of MDeC will be increased as an ICT investment promotion agency to attract new, and retain existing, local and foreign investments especially within the cyber--cities and cyber-centres. Strategic marketing and promotional programmes in collaboration with the private sector will be vigorously pursued, to promote Malaysia as a dynamic and competitive ICT investment destination in this region. In order to penetrate global markets, MDeC will work towards forming strategic alliances and joint-ventures among leading foreign MSC-status companies and Malaysian enterprises to participate in SSO as well as creating new growth generating activities (Malaysia, 2006).

Among others, the mission of the MDeC is to ensure that MSC Malaysia is the world's best environment to harness the full potential of multimedia and proactively collaborate with Government and companies for mutual enrichment.

CHAPTER 3

LITERATURE REVIEW

3.1   MSC Malaysia Model of ICT Cluster

MSC Malaysia is a national initiative established by the government to promote Malaysian ICT industry and for the global ICT industry exploit and locate their full potential of ICT and multimedia technologies. MSC Malaysia provides ideal business environment, and designed with attractive facilities and incentives as well as talent resources for the attraction of major global ICT investment in the MSC Malaysia Cyber Cities. It also provides a pleasant growth environment for Malaysian ICT SME's to develop and expand their businesses into world-class companies (MDeC, 2011).

The development of the MSC is proposed to build a high technological environment and infrastructure that capable in attracting both national and international investors. This cluster and technology region is to replicate the economic success in Silicon Valley, USA and also to develop applications through the use of ICT to transform key economic sectors such as finance, insurance and

real-estate sectors (Malaysia, 2002).

According to Mohan (2006), the concept of clustering or regional development is increasingly associated with global information resources, development of advanced skills, continuous innovation and new technologies transmission. These potentials are very important in sustaining international competitiveness and building a knowledge-based economy. The MSC, as a regional system of innovation for firms and the ICT industry has some reasons why the MSC project was envisaged (Mohan, 2006):

- Due to Malaysia lose its comparative advantage in its traditional economic sectors;

- Economy requires higher productivity through technology and high value-added economic activities;

- Information Age and converging technologies offered the best opportunities for socio-economic transformation.

The development of MSC indicates the beginning of a radical transformation in Malaysia's development and economic objectives. It places IT in the centre of a comprehensive development plan (Banarjee and Anuar, 1999). The rapid development in ICTs will take mankind to the 'Information Age' and is ushering a

new society, the 'Information Society'. This evolution of an information age is considered to be the driving force of economic development (Banarjee and Anuar, 1999). The government challenges that IT and more specifically the MSC offer new opportunities for progress and development in the economic, political and social (Mahathir, 1998)

According to Mohan (2006), the MSC intended to build up a pleasant environment in the field of ICT industry to encourage new business development and high technology entrepreneurship in Malaysia. It uses the 'regional clustering' approach that meant to spread it throughout the country by building capacity in this sector and to obtain applications for national development.

Many cities and countries around the world have been working to build a clusters by labelling themselves Silicon something e.g., Silicon Plateau (Bangalore), Silicon Alley (New York), Silicon Hills (Austin Texas), Silicon Island (Taiwan), Silicon Fen (Cambridge, U.K.) and attempted to copy the 'Valley's' success story (Mohan 2004). In Asian countries, such as Singapore, Taiwan and Malaysia are taking step in fostering clusters to remain competitive in producing best companies and brains as well as to meet the needs of workers and companies. They built

business and IT infrastructures and offered competitive incentives. One of the well known among them is the Singapore ONE project, which is similar to MSC Malaysia (Mohan, 2006).

Asim (2006), highlighted that the impact of ICT has been evident in all development sectors; has now been termed as a 'Global Village' in which all communities act as one and are linked by the web of optic fibre and other means of telecommunication. The ICT has a vital role in overall economic development as well as had a primary economic and administrative role throughout the country's history. The development of ICT has made an impact on overall socio-economic fabric of a city (Asim, 2006). Thus, the government need to formulate the best possible infrastructure and incentives policies that will turn the economy in encountering the challenges and adapt to the k-economy.

Various terms had been used to capture the importance of region for innovations, such as industrial districts, innovative milieus, regional systems of innovation and technopoles. As Zhou and Xin (2003) highlighted a regional cluster is diverse but interrelated. Technology firms and R&D institutions provides an ideal setting to address the last two difficulties that local firms necessarily confront. The

presence of diverse firms and research institutions in spatial proximity can assist

firms to advance technology. The clusters can also enhance firm access to the market

by providing information and entrance to the network. Overall, clusters strengthen

the learning capacity of local firms even if the sources of new technology are

external (Zhou and Xin, 2003).

Bouwman and Hulsink (2002), asserted the industries in high-technology is

frequently very determined, with a variety of connections between core firms and

local sub-contractors, universities and research centers, as well as local or regional

authorities. They are establishing high-technology companies by involves in

business activities, partnership in R&D, enduring entrepreneurship, and practicing

knowledge transfer by job-hopping and spin-offs. Other terms of cluster that being

used for high-tech sectors (such as biotechnology and information technology), are

'technopole' or 'technopolis' (Bouwman and Hulsink, 2002). The technopoles is

refers to variety of deliberate attempts to plan and promote within one concentrated

area, technologically innovative and related to industrial production.

Smilor et al. (1988) provides the conceptual framework in explaining the

process of development in high-technology industries and economic growth in the

industrial district. The technopolis circle in the techno-industrial district has demonstrated the interaction between several sectors of the institutional which produces a 'technopolis'. They are a large technology companies (headquarters and branches, major sales or R&D and employer), the research university, the emerging companies (academic, corporate spin-offs and suppliers), governments (local, national, federal) and support groups chambers of commerce and trade platforms (Smilor et al., 1988).

3.2   ICT in Regional Economy

Much of the literature discussion on advanced technology regions is from the developed countries and less known from developing countries. Except for India, where the big graduate pool and lower labour cost has facilitated the development and making it the most fast growing IT sector in the region. In other regions like Malaysia, where conditions are different, there is a need to attract more world class companies in competition with the Philippines and China (Asim, 2006).

Evolutions of ICT has encouraged companies in many knowledge based cities to exploit high level of technology, disperse from city centre due to several

factors such as increased in travel cost and space rent, traffic congestion, image, prestige, competitive conditions as well as availability of labour. The geographical boundaries between nations nowadays are diminishing rapidly, consequently of creation advancement in the ICT (Moss, 1999). The growth in ICT sectors allows the companies to doing business in any part of the world where the conditions of political stability, constructive policies and infrastructure with manpower are available in seeking maximum profits with lower costs.

According to Moss (1998), high concentration in ICT activities and electronic communications can strengthen the cities, with high focus of media, advertising, entertainment, educational, health care and financial services. Telecommunications technologies can broaden the reach of these services further than their traditional physical boundaries. Currently the private sector is making new investments in technologies in improving bandwidth for the flow of information via national "backbones". The availability of high speed access will further spur economic activity and telecommunications innovation (Moss, 1998).

Businesses such as financial firms, manufacturers and retailers, rely on the ICT to manage their activities worldwide (Moss, 1998). This causes to the need of

high-end office buildings installed with communications systems that linked to satellites, fibers optical, and computers so that information can be transferred instantly across the country and the world (Moss, 1998). Communications technology has brought to the emergence of 'world cities' that linked to each other by telecommunication networks.

Moss, (1998) further stated that entrepreneurs and small businesses seems to take advantages of ICT to compete in local and international markets as a result of technological innovations and reduced in cost of computers and telecommunications. The Internet may strengthen the regions comparative advantage as an information production and transmission centers and heightened the role of information in a knowledge-based economy.

According to (Asim, 2006), technology regions like Silicon Valley and Route 128 Massachusetts, USA have advanced telecommunication infrastructure, skilled labour and good airport access but they also are very high cost for conducting day to day operations. Therefore companies are now shifting to lower cost areas around the world where the cost of doing business is cheaper such as in India and Philippines, while retaining the front offices in those areas. Examples of such companies are Microsoft and Hewlett Packard. With the development of ICT and its

absorption in the basic business processes, the telecommunication infrastructure, connectivity, bandwidth, speed, reliability, telecommunication tariffs and supporting policies in place has also become very important (Asim, 2006).

Moss (1998), affirmed that rapidly emerging advances ICT are changing the cities role in economic and its physical development pattern. Public policies are necessary to encourage investment and competition in the telecommunications industry that will sustain information intensive industries and the residential populations.

Saxenian (1994) has highlighted that a high intensity in R&D activities has generate substantial economic growth in suburban regions such as the Silicon Valley in California and Route 128 in Massachusetts. It has promotes innovation and collaboration, and enables them to respond quickly to changing markets and technology due to an emergence of a decentralized and technological network system and industrial organization. The rise of new high-technology firms, industries, and regions emerged as vibrant complexes of technology, entrepreneurship and venture capital during the 1970s (Sexenian, 1994).

Silicon Valley as a regional network-based industrial system has promotes collective learning and producers are able to absorb and adjust flexible to related technology. The region's compact social networks as well as open labor markets have promoting experimentation and entrepreneurship. The reemergence of Silicon Valley during the 1980s was based on a new generation of startup firms such as Cypress Semiconductors, Chips and Technologies, Cirrus Logic, Silicon Graphics, and countless others that were flexible and diversified enough to capitalize on the ceaseless revolution in high technology products and markets (Sexenian, 1994).

The literature has emphasized the role of cluster on innovative regions in the endogenous formation, and sharing of knowledge in technology hubs in advanced countries. According to Zhou and Xin (2003), the MNCs relationship with local firms is interdependent in which their cooperation provides the local firm with crucial technology and training, that can be utilize strategically to develop their market linkages and innovative capacity in the local market.

Zhou and Xin (2003), argue that the reliance on external sources of technology does not diminish the role of a region in influencing technological changes. The companies could maintain their technology advantage with a close

personal networking with companies in Silicon Valley, California, thus internalizing

the MNCs' knowledge through social networks. Bangalore in India is a truly

successful high-tech region for software export in a developing country. But its

dependence on external markets may arguably limit its long-term growth and its

contribution to India's transformation (Zhou and Xin, 2003).

3.3   FDI and Tax Incentives

Developing countries interests in attracting FDI are often exercise various

favoured tax policies in order to remain competitive. Tax holidays have been

especially prominent in the 1980s (Mintz, 1990 and Shah, 1995) as its offer a low-

tax regime to new foreign investors for a qualifying period because the company

needs time to establish good levels of profitability.

Tax incentives, defined as any incentives that will lessen the tax burden of

enterprises in order to encourage them to invest in particular projects or sectors

(UNCTAD, 2000). The survey found that fiscal incentives were most commonly

used for the reductions in the standard rates of corporate income tax and tax holidays.

These are followed by exemptions from import duties on capital equipment, raw

materials and semi-finished components, duty drawbacks, accelerated depreciation, specific deductions from gross earnings for income-tax purposes, investment and reinvestment allowances and deductions from social security contributions (UNCTAD, 2000).

According to Asim (2006), The globalization has push many developing countries incorporating new tax policies for MNC's to set up their headquarter, financial and trading operations in their authority. To attract FDI, many countries prefer a low corporate income tax rates, low or no preservation taxes on income payments to non-residents, at the same time sustaining revenue by countering efforts of multinationals to shift profits from high to low tax jurisdictions, companies. These policies have been become more common in the past ten years compared to traditional tax holidays incentives (Mintz, 2004).

For examples, countries such as Singapore, Chile, Malta and Malaysia have established special financing tax policies to attract FDI or holding companies. These countries have the most significant outbound investment and used their special financing regimes to encourage holding and financial companies. The interesting about these high-FDI countries is that tax holidays are limited to only one third of

the cases as in Singapore, Macedonia, Czech Republic, Jamaica and Malaysia (Mintz, 2004).

State and local taxes can also influence the cost of a particular location, as low taxes can increase the overall profits of a company. In the near past it has been seen that countries seeking business being off-shored and out-sourced are offering exemption of income tax to get more benefits of the capital investment in branch offices and thus getting advantages in the job opportunities and development of overall economy on a city and regional basis as in the case of China, Malaysia and India (Nilles, 1999).

A global survey conducted by UNCTAD on the Tax Incentives and FDI affirmed that most of the governments have been attempted to promote their countries as an attractive investment location for attracting private capital and technology investments as well as managerial skills to help achieve their economic development goals. They have taken measures to facilitate FDI, such as liberalizing the laws and regulations for foreign projects investment; provide guarantees for repatriation of investment and profits; and established mechanisms for the

investment disputes settlement. Tax incentives are also part of these promotional efforts (UNCTAD, 2000).

According to UNCTAD (2000), generally the investors will consider two-stage process in assessing countries as locations for their investment. In the first stage, they screen based on country's essential determinants such as market size, access to raw materials and availability of skilled labor. Once past the first stage, will then consider the next stage of assessing tax rates, grants and other incentives may become important. Developed countries, frequently employ financial incentives such as grants, subsidized loans or loan guarantees. However, these policies are generally not offered by developing countries to foreign investors due to a direct drain on the government budget. Alternatively, these countries tend to use fiscal incentives that not require direct use of government funds (UNCTAD, 2000).

3.4   Knowledge economy and the economic growth

Since the 1960s, governments throughout the world were sought to enhance their country's development at the same time encouraged to develop their capability in the knowledge economy for generating growth. For example the World Bank

recommendations for India's development should force its strengths to become a leader in the creation and use of knowledge (Dahlman and Utz, 2005). The country should emphasize on the economic reform agenda to gain benefits from the knowledge revolution, and continue to implement various policy to accelerate growth. Countries around the world have been encouraged to implement the same strategies and embrace the concept of knowledge economy to stimulate economic growth.

The availability of knowledge enhances the potential for lower-cost developing countries to move into high value added products at a faster pace and enables new entrants to compete with established producers (Malaysia, 2002). The industrialized countries, whose utilizing knowledge in the production processes, were able to increase the share of high-technology industries in their total manufacturing value added and exports. They are more advanced in terms of human resource, technology, R&D, innovative capability and infrastructure (Malaysia, 2002).

Besides generating new activities, development of the knowledge economy will also produce improvements in the productivity and enhance competitiveness

(Malaysia, 2002). The emphasize on developing knowledge economies is driven by the belief that knowledge has replaced machinery, land and labour as the principal resource in economic growth and production (Bell, 1973; Richta, 1977; Machlup, 1962; Beniger, 1986; Parker, 1973; Porat, 1977; Drucker, 1993). This shows that developing countries who lacking in the conventional inputs of production such as capital, will still can achieve sustainable economic growth as long as they developed knowledge economy oriented activities (Jarman and Chopra, 2008).

The theory of knowledge economy emphasizes the status of knowledge in enhanced economic growth. As Jarman and Chopra (2008) highlighted, knowledge-intensive activities produce the greatest returns, countries to implement knowledge in their economies will achieve higher productivity and growth. This obviously will involve a substantial reallocation of funds into knowledge-oriented projects, such as the ICT sector, which has increasingly come to symbolize the knowledge economy (Jarman and Chopra, 2008).

In different argument, developing knowledge economies will create upgrading and improvement as knowledge promotes and generate the new technology through the whole economy. According to Kumar (1995), knowledge, is

progressively supposed to affect work in two ways. Firstly, upgrading the knowledge

content of existing work, in the sense of the new technology adds rather than

subtracts from the workers skill. Secondly, is the creation and expansion of new

work in the knowledge sector are predominating in the economy. Moreover, it is the

more skilled, more knowledgeable information workers who will come to constitute

the core of the information economy (Kumar, 1995, p. 23).

In terms of its contribution to the Malaysian economy, the MSC is perceived

as being instrumental in promoting foreign investment into the country and

enhancing economic activity (Mahathir 1998:76-83). The MSC's, offers Malaysia

the opportunity to become a key player in the fastest growing and most lucrative

sector of the Malaysian economy, i.e. ICT. The value chain of products and services

in the IT industry will contribute to the revitalization of the nation's economy.

Although the government would like to see MSC Malaysia attract and incubate

high-end white-collar enterprises, it also has promoted the stepping-stone job

creation benefits of the grey-collar work of call centres, financial services, and

human resources that have kept the initiative alive (Jarman and Chopra, 2008).

Three key problems related to the employment development in knowledge

economies in developing countries (Jarman and Chopra, 2008). Firstly, developing countries are currently more successful in attracting the lower order activities of MNCs instead of attract high-end operations in R&D of top MNCs, that are being outsourced and off-shored to reduce costs. Secondly, human capital takes much longer to develop, that probably takes much longer than 20 years to entrench a significant cultural transformation that embraces innovation, creativity, mastery of knowledge and technical sophistication in a broad section of a population. However, the roles of human capital in the knowledge economy, is important to be able to capture and sustain the firms high-end activities.

Thirdly, the term of ''knowledge economy'' covers a wide scope of activities. Much of problem in knowledge economy literatures is very common, and treats the knowledge economy as if it were no distinguished instead of a complex hierarchical system. It overlooks the enormous advantages and long lead that developed countries have over developing countries (Jarman and Chopra, 2008).

CHAPTER 4

ANALYSIS AND FINDINGS

4.1   MSC Status Companies (1997-2009)

The number of MSC status companies, including Institutes of Higher Learning (IHLs) and Incubators has increased from 94 in 1997 to 2,520 in 2009 (Figure 4.1). The number of companies has increased more than triple since 2002 at a compounded annual growth rate (CAGR) of about 15.2% from 2002 to 2009.

Figure 4.1: Number of MSC Malaysia Status Companies (1997-2009)
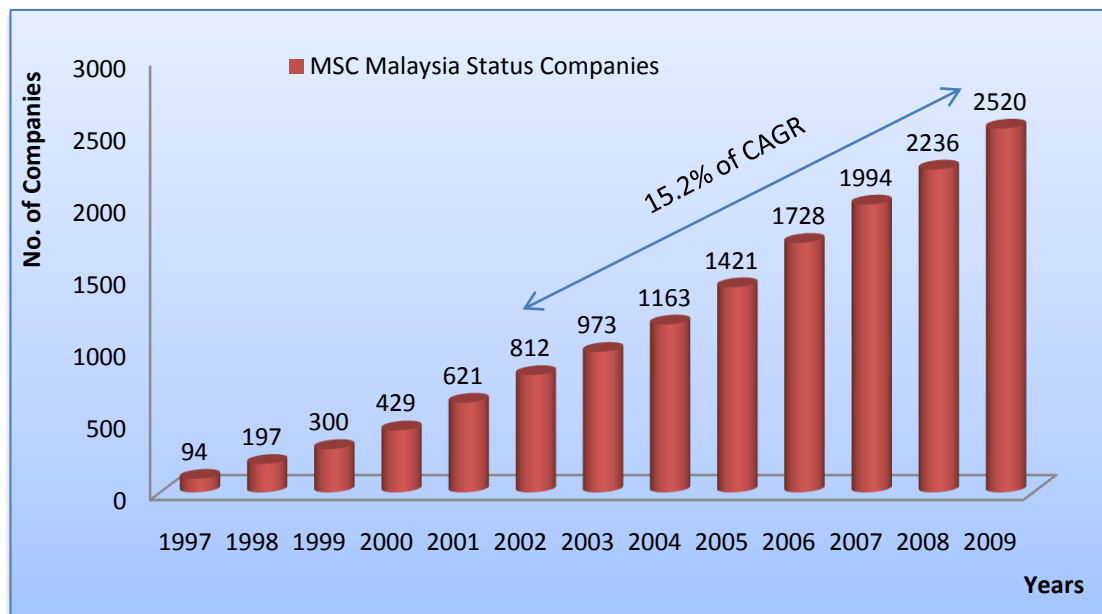
Source: MSC Malaysia Industry Report; MDeC, 2009.

Approximately 1,956 are still active and among of leading ICT companies located at MSC Malaysia, including corporations such as Microsoft, Motorola, Dell, Satyam, HP and IBM. As of December 2009, there were 284 new companies were awarded the MSC Malaysia Status, which is an increase of 13% of previous year.

Figure 4 .2: MSC Malaysia Status Companies by Technology Cluster, 2009
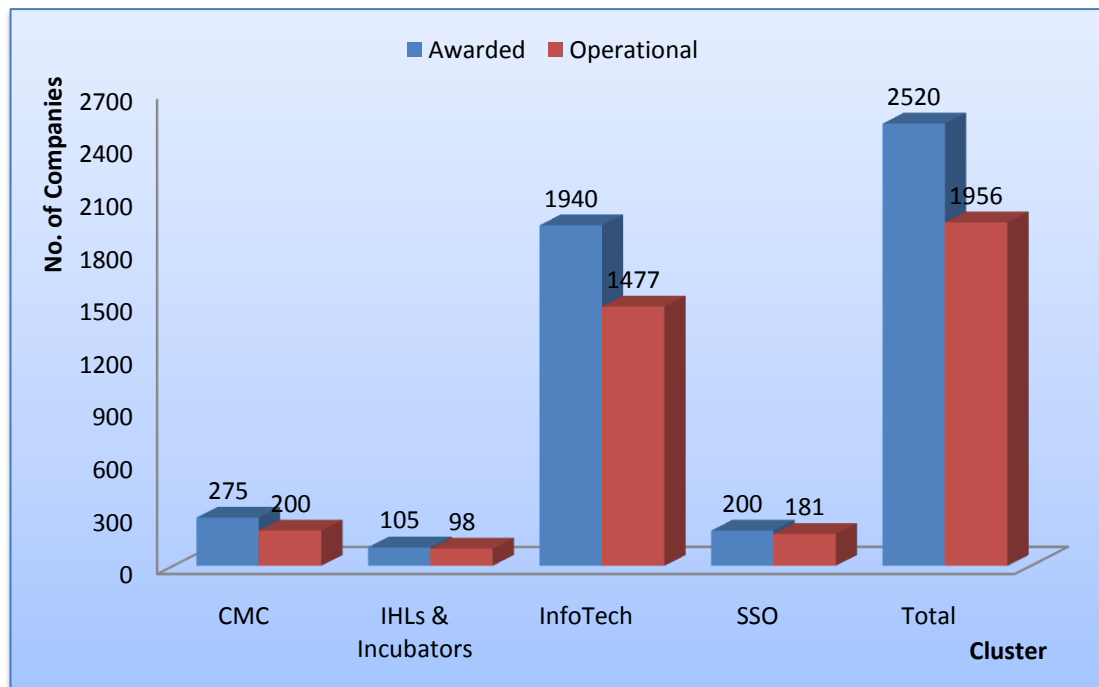
Source: MSC Malaysia Industry Report; MDeC, 2009

MSC Malaysia Status companies are separated into four technology clusters (based on MDeC categorised business technology clusters) that are the Information Technology (InfoTech), Shared Services & Outsourcing (SSO), Creative Multimedia Cluster (CMC) as well as Institutions of Higher Learning and Incubators as shown

66

in Figure 4.2. From these four industry clusters, the InfoTech cluster [i.e. Application Software (AS); Mobility, Embedded Software & Hardware (MeSH); and Internet-based Business (IBB)] is the largest number of companies, representing 1940 (76%) of the total MSC Malaysia companies, providing for almost 28,000 jobs, and the highest generator of Intellectual Property (IP).

MSC Malaysia has succeeded in producing among of the best companies in Malaysia, as it produces of 57 MSC Malaysia Status companies listed on Bursa Malaysia. The market capitalization of ICT companies in Malaysia is the highest compared to other sectors. Many of these companies are also wining award with prestigious local and international awards. Total investments in 2009 continue to rise with value of RM2.16 billion, which is 21.5% growth over 2008. FDI accounted for 28.8% and DDI 71.2% of new investments. Thus far, MSC Malaysia has attracted RM14.5 billion worth of investments in the First Phase (1997-2003) with FDI accounted for 32% and DDI 68% of total investments. In the Second Phase (2004-2010), MSC Malaysia has attracted RM27.26 billion worth of investments, in which FDI contribute the most to the growth of MSC with 60% of the total investment, where as DDI accounted for 40%.

In 2004, the MSC Malaysia Capability Development Programme (CDP) was launched to strengthen capabilities and improve the competitive edge of the Malaysian ICT industry as well as assist companies for international best practices. CDP offers 16 organisational and a professional development programmes that addresses three focus areas: process, people and product. In 2009, there were more than 80 CDP activities attended by 20,000 Malaysians and 1,600 MSC Malaysia companies. Besides, 64 MSC Malaysia status companies also recorded being awarded global certifications and altogether, more than 3,000 Malaysians and 200 local companies have received international standard certifications (MDeC, 2009).

The core focus of CDP is to improve efficiencies for strong returns on investment. CDP programs has helping companies who participated achieved a 93% of growth in export sales. CDP's capacity building and skills development initiatives have resulted in a significant increase in the number of competent software houses. This is reflected in the growth of CMMI-rated companies, from only 1 to 70 in 2009. CMMI (Capability Maturity Model Integration) is the de facto international standard for software companies to help improve their performance. Malaysia has the most number of CMMI-rated software companies in Southeast Asia. It also ranks 14th out of 100 worldwide in the Carnegie Mellon Software Engineering Institute (SEI) 2009

of CMMI ranking list (MDeC, 2009). This achievement has helped promote Malaysia as a dynamic location for ICT-based FDI.

4.2   Foreign Direct Investment (FDI) Performance

FDI plays an important role in contributing to the growth and technologies development in MSC Malaysia. In 2009, there are about 25% of MSC status companies are foreign owned or are joint-ventures with foreign ownership (i.e., out of 1,956 active MSC status companies, 399 are foreign while 60 companies are JVs) as shown in Figure 4.3. Approximately 20% of foreign MSC status companies are MNCs, and mostly in the SSO sub-sector.

Figure 4.3: MSC Malaysia Status Companies by Equity Ownership
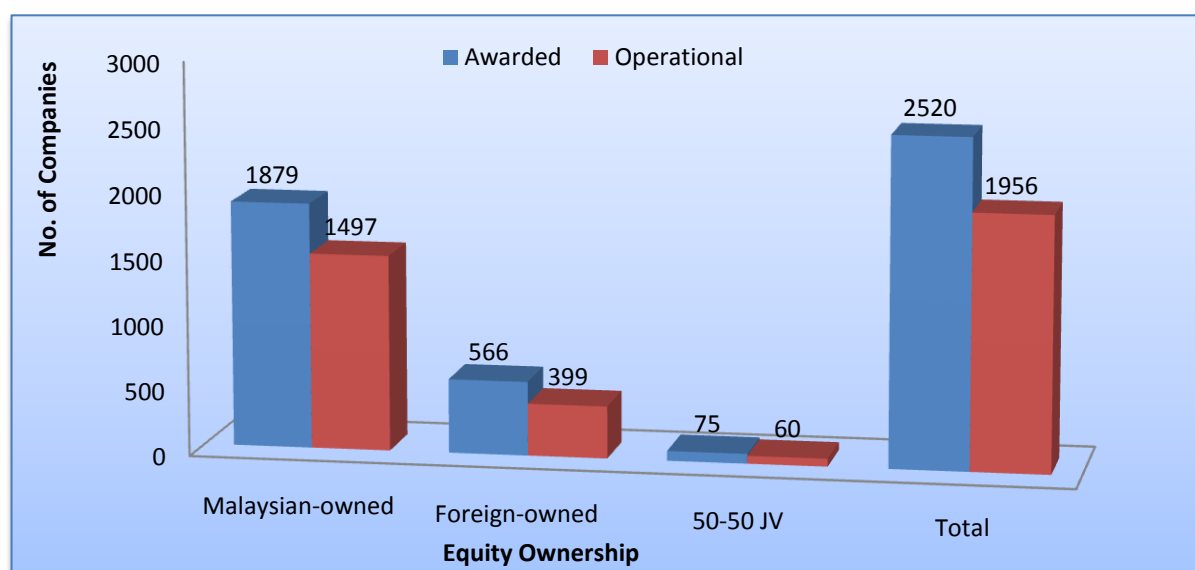
Source: MSC Malaysia Industry Report, 2009; MDeC

The FDI strategy in MSC focuses more on companies operating in priority sub-sectors since Malaysia has the competitive advantage of low cost and industry clusters are already growing. These priority sub-sectors, namely Shared Services & Outsourcing (SSO), Software & e-Solutions (SeS) and Creative Multimedia (CMC) are supported with significant government investments. Since 1997, a total of 89 MNCs have entered and among them including such giant corporations and global MNCs as shown in Table 4.1.

The top 10 MNCs contribute about 69% of total employment and also account for 63% of total sales by MNCs in MSC Malaysia. In addition 89% of workers employed by MNCs work in the SSO sub-sector and 88% of average sales by MNCs also produce by this sub-sector (MDeC, 2009).

Table 4.1: Leading MNC's Companies

IBM has set up its Asia Pacific South Regional Administration Support Centre (RASC) providing administrative services (managing customer's orders, accounts receivables, etc). It also has a regional Contact Centre (RCC) providing teleweb sales support, customer support helpdesk.
Its office in MSC Malaysia acts as a global outsourcing centre to spearhead the development of some mission critical systems and directly support the software needs of some of Satyam's Fortune 500 clients.

Established its first Global Business Centre (GBC) outside of US with remote internal IT support and maintenance and supports development of new application systems, process design facilities, software development, and local sales and marketing.
HP Multimedia Malaysia serves primarily as a support centre with application development. It also has a Global Application Development and IT Support Centre (GADSC) to support HP's efforts in the areas of enterprise data warehousing and application development.
Alcatel. Lucent focuses its efforts on partnerships with local content and application development companies under the Alcatel Partnership program to facilitate 3G mobile data business in Malaysia.
EDS Malaysia supports global clients in the areas of BPO and IT Outsourcing. It plans to add over a hundred high value-added software engineering jobs from 2008.
Microsoft Knowledge Capital centre focuses on software development training, production and certification services and established a Digital Nervous System in SEA.
It has software development for communication systems, smart card applications and enterprise solutions. It also undertakes R&D activities in the area of network management, specifically designing, developing, testing and deploying software solutions for Operations Management Centre.

Source: MDeC; Companies directory, msc.com, 2009

MSC Malaysia has attracted world class companies that will benefit and brought the country to the forefront of FDI. It have received technology giants such as IBM, Intel, Wipro, Tata Consultancy, Mastek, Silicon Graphics Inc, Siemens, SchlumbergerSema, Panasonic, ZTE, NEX, Fujitsu, Lucent Technologies as well as leading international banks, oil majors and telecommunication leaders (MDeC, 2009). These investments demonstrate the recognition of MSC Malaysia growing role as a global IT hub in this region. MSC Malaysia also seen as strategic location for the gateway to ASEAN, India, China and OIC markets. In addition Malaysia offers business friendly policies, human capital development focus, and world class infrastructure and info-structure have attracted these companies to invest in MSC Malaysia.

Study on the economic impact by EPU in 2009, shows that low labour costs, English-speaking workforce and a stable business environment are among the key attractions of MSC Malaysia. The benefits offered under the MSC BOGs for MSC status companies offer some value added to MNCs especially in tax incentives, freedom in hiring of foreign workers, exemption from foreign ownerships and foreign capital restrictions are specifically attractive incentives. Guarantee of world class infrastructure and competitive telco tariffs are also considerations for the

location decisions but may be no longer become priority like other criteria such as access to talent pool and attractiveness of location and social infrastructure. Other guarantees such as no internet censorship and infrastructure contracts are viewed as unimportant and not highly valued by the MNCs.

Besides Malaysia's natural competitive advantage, benefit from incentives offered to companies has also attract foreign companies. These range from customised incentives to tax benefits (pioneer status and investment allowance), duty free import of multimedia equipment, and R&D grants as highlighted in the BoGs. The value adds of these benefits to the MNCs are;

i.   **World-class physical and information infrastructure** – The quality of telecom, power, connectivity with other nations and office space are important, though not always a key success factor. MNCs may have other priorities (e.g., access to talented workforce, location in attractive environment, etc.)

ii.   **Unrestricted employment of foreign/local k-workers** – This is of particular importance to MNCs as they appreciate the ease in employing

foreign k-workers if local workers are not able to fill the required positions.

iii. **100% foreign ownership** – Another factor that is very important to the MNCs as they do not need to dilute ownership or seek partnerships or joint ventures for local operations.

iv. **Global source of capital** – This is very important to most MNCs as they can leverage on their home country or other sources of capital.

v. **Competitive financial incentives** – Most MNCs appreciate MSC Malaysia's competitive financial incentives. Customized incentives are often a decisive factor for deciding between locations in a region.

vi. **Regional leaders in IP and cyber-laws** – This is critical to companies that are involved in design or R&D related activities.

vii. **No internet censorship** – this does not have much impact as most MNCs are not affected by internet censorship. However, censorship is regarded as an indication of the openness of the country's economy and society.

viii. **Competitive telecommunication tariffs** – Most MNCs have the critical size to negotiate better rates on their own. However, competitive telco tariff are important for most ICT companies.

ix. **Infrastructure contracts to MSC Malaysia companies** – This benefit is not understood by most MNCs. Also, there is no 'infrastructure contract' awarded on a regular basis.

x. **One stop agency (MDeC)** – A very important factor for MNCs to benefit from one local agency to facilitate interaction with Malaysian Government agencies.

However, there is a high risk of MNC's companies will leave MSC if the cost advantage offered in other region. From the three critical enablers, costs, workforce and business environment that MNCs highlighted on the MSC Malaysia's attractiveness, operating cost is a key success factor for most offshore shared service and outsourcing companies. This leads to a high risk of foreign MNCs will closed operations in Malaysia if they do not move up the value chain as they are continuously looking for competitive cost-effective environments, especially for SSO companies. These companies can easily relocate if cost advantage exists elsewhere such as Philippines and Vietnam.

Relocation of these companies would result in a significant reduction in the economic impact of MSC Malaysia as they currently account for approximately 70% of the total contribution of foreign and JV MSC status companies. Hence, it will be critical to attract the right type of foreign companies or MNCs to increase the economy extend benefits. Besides, it is essential for MSC Malaysia to enhanced support its FDI strategy and focus on moving MNC operations up the value chain to maximize benefits to the Malaysian economy beyond simply providing employment.

EPU study on the economic impact in 2009 reveal that additional spill over benefits from MNCs is mainly in the area of global business exposure. MNCs provide work experience to Malaysians in an international environment, enabling them to build relationships with multinational teams or clients and awarding credibility for their future career. A global IT services company claims that employees who working in foreign MNCs get the opportunity to work on global activities and build up their career credibility. Spread out benefits also reflects in the capability development of local employees include training programs, continuous learning opportunities, coaching or mentoring and building of transferable skills.

Other spill over effects such as supplier linkages, where local vendors provide services to the MNCs and where buyer-supplier relationships are established with MNCs. Partnerships or collaborations of local companies with MNCs are still limited. Benefits would arise from selling complimentary products or through joint development projects. There is still limited collaboration among companies that are co-located in one physical cluster such as Cyberjaya and little evidence that MNCs would stimulate competition, which would increase the competitiveness of local players. There are also limited spill over effects from technology transfer. However, some MNCs have started to invest in higher value-added activities such as engineering facilities or R&D centres (EPU, 2009).

4.3   Fostering Domestic Direct Investment (DDI)

The number of local MSC status companies has been growing at 30% annually over the past 5 years with an average of 200 new companies every year. In 2009, a total of 1,879 MSC status companies are local with 85% of them operates in the InfoTech cluster. Generally, MSC Malaysia has succeeded in fostering the growth of local ICT companies, with 29 companies have annual revenues exceeding

RM30 million and five companies awarded 'Global Companies Status' by MDeC. However, successful local ICT companies are still relatively small compared to other regional ICT hubs such as Taiwan, China and Singapore. The top 10 local companies employ a total of 9,925 people, which is 31% of total employment and also contribute 49% of total sales from local MSC status companies (EPU, 2009). The InfoTech (AS & MeSH) cluster is the largest sub-sector among local companies, which is contributed about 59% of jobs and 53% of sales by local companies.

MSC Malaysia has facilitated the growth of successful local firms, and some companies have succeeded in expanding regionally. There are 29 local MSC status companies have revenues exceeding RM30 million and five local ICT companies have achieved the 'global companies' status awarded by MDeC. These companies are:

1. **Green Packet** – Developer and provider of Mobile Broadband and Networking Solutions, and winner of Deloitte Technology Fast 500, Asia Pacific 2007. It received MSC status in 2001. It has revenues of RM123

million and net profit of RM31 million (2007) with 51% of sales from outside Malaysia.

2. **Jobstreet** – One of Asia Pacific's leading internet recruitment websites with 6 million jobseekers. It has expanded worldwide and has offices in India, Malaysia, Singapore, Philippines, Bangladesh and Indonesia. It received MSC status in 2004. It has turnover of RM83 million and net profit of RM30.1 million (2007).

3. **Iris** – The first company in Asia to set up manufacturing facilities for Smart Cards. It implemented the Malaysian Electronic Passport (1998) and MyKad (2001) and was awarded Technopreneur of the Year 2006 by PIKOM. It received MSC status in 1997 and has revenues of RM220 million in 2007.

4. **Xybase** – A leading system integrator with airport IT expertise. It is a charter member of Software Asia Alliance (SAA), a coalition of seven award-winning software and service companies with global channel network and support. It received MSC status in 1998.

5. **Silverlake Axis** – Provides expertise in IT solutions for banking industry, with a strong presence in South East Asia. It is the winner of The Asian Banker IT Implementation Awards 2008 – Best Retail Payment Project

Award 2007, as well as IBM Business Partner Award in multiple years. It received MSC status in 1999 and has revenues of RM137 million in 2007.

In addition to this, four local MSC Malaysia status companies have received the Red Herring Asia Top 100 award (i.e., Aogos Network, ENT Quest, iGene and Synamatix). The RED Herring Asia is a regional award to acknowledge promising start-ups. ASTRO (All Asia Networks) is the largest local MSC status company with revenues of RM2.2 billion and 2 million paid subscribers. Other leading local MSC status companies are:

Table 4.2: Leading Local MSC Status Companies

MEASAT Measat, a subsidiary of Astro, Malaysia's leading cross-media group with a significant presence in Direct-To-Home TV services and commercial radio. It is looking to expand overseas and currently has JV in Indonesia and India. It received MSC status in 1997.
SnT Asia's Outsourcing Innovator SNT provides e-logistics solutions to manufacturers, retailers, and logistics providers and was awarded 'Top Ten to Watch in Emerging Asia Markets 2007' by Global Services. It was awarded Deloitte Fast Tech 500 with 630% revenue growth over three years. It received MSC status in 2000.
SUNAMATIX Bioinformatics for the Next Generation SUNAMATIX finds and stores patterns data into dynamic network architecture has a partnership with HP to ship its flagship genetic sequence database solution. It has licensed its software to institutions in US, Europe, Australia

and Singapore. It received MSC status in 2003.
BriteSoft™ Effortless Application Development   A software platform that provides a complete application (basic or Enterprise) without writing a single line of code. It was awarded Red Herring Top Asia 100 (2006) and PIKOM IT product of the year (2007). It received MSC status in 2002.
FIFTH 5 MEDIA™   FIFTH MEDIA, builds multifunction box that offers wireless connectivity and office solutions, and was short listed with global firms on Red Herring's Global Top 100 (2007). It received MSC status in 2004.

Source: MDeC; msc.com, 2009

The main benefits of MSC Malaysia status for local companies are the grants, support for market access, brand recognition and ease in hiring foreign talent. A total of RM190 million has been disbursed through the MSC Grant Scheme (MGS) to a total of 90 local companies. This grant has enabled companies to conduct research and commercialize their products, leading to the success of local companies such as Iris, Synamatix and Jobstreet.com. MSC Malaysia has also led to an increase in entrepreneurial activity in the ICT sector, with many new organizations, universities and incubators established to support technopreneurs.

Several local companies have acknowledged that MSC Malaysia has helped to fast track their business growth (EPU, 2009). The main benefits of MSC status for local companies are:

i. **Access to grants and financial incentives -** Most of local companies are in the expansion stage and require additional funding. Grants are crucial for their survival instead of tax incentives for start up local companies because many companies do not make profits in the first year operation. The objectives of MGS are to encourage and establish R&D activities by local companies leading to innovative ICT / multimedia products that possess significant commercial potential. The gains from MGS during the 8MP (2001-2005) are including commercialization of 27 projects with total sales of RM198.5 million and listing of 12 MGS companies on MESDAQ. The recipients of MGS grants include successful local companies such as:

- Iris (Global company)[1] – received RM3.7 Million

- Redtone (M'sia. strong performer)[2] – received RM3.5 Million

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[1] Global Company awarded by MDeC;

- Synamatix (Red Herring Asia 100)[3] – received RM2.9 Million

- Jobstreet (Global company)[1] – received RM1.6 Million

- Greenpacket (Global company)[1] – received RM0.8 Million

ii.   **Access to market -** In terms of access to market place, local companies assist by MDeC for overseas market expansion such as participated in overseas trade shows organised by MDeC. These events turn into useful avenue for local companies to expand their business overseas.

iii.   **Ease in hiring foreign talent -** Local companies appreciate shortened application time for employment visa as they occasionally need to hire foreign workers.

In addition, one of the eligibility criteria of MSC status companies is to be located in one of the MSC cyber-cities or cyber-centres for enjoying advantages of benefits such as reliable and competitive physical infrastructure and access to R&D facilities in MSC cyber-cities / cyber-centres. Under the BoG, local companies are

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[2] MSP are companies with min. revenue of RM30miln, min. export ratio of 40%, R&D ratio of 10%, 30% k-worker, profitable for at least 2 of last 3 years & paid up capital of at least RM1miln.

[3] Red Herring Asia 100 is an annual list to discover and advocate the promising startups that will lead the next wave of disruption & innovation

entitled to the same benefits enjoyed by foreign companies and MNCs including tax incentives, freedom in hiring foreign workers and global sourcing of capital.

However, some of these benefits are less relevant to local companies because many local companies are in the growth stage and do not benefit from tax incentives as they are not yet profitable. In addition, the location requirement for MSC status may not benefits local companies, especially SMEs, cannot afford to relocate to cyber-cities as these locations acquire high rentals. Small local companies may prefer to locate their business near to clients and business activities for more accessibility even though lesser in infrastructure.

Besides developing a local ICT industry, MSC Malaysia has also spurred entrepreneurial activities in ICT. As a result of MSC, various organizations were created to support the ICT industry, including Government agencies, universities, funding agencies, and technopreneur associations. Despite the relatively large number of local MSC status companies, there are only a few companies have successfully become regional players while many face significant challenges that constrain their growth. Much needs to be done for the DDI strategy to be successful including addressing the key challenges of local companies, which are difficulties in

attracting qualified local and foreign talent, problems with market access both locally as well as abroad and funding gaps. The location requirement for local MSC status should be reviewed to take into account the needs of local ICT companies.

4.4   Contribution of MSC Malaysia in Economy

The ICT industry continues to be an important engine for economic growth in Malaysia, contributing RM51 billion or 9.8% of real GDP in 2009 (Figure 4.4). Both the shared of ICT industry and MSC Malaysia to GDP in 2008 were slightly fall from previous year because of the impact of global financial crisis.

Figure 4.4: Shared of MSC Status Companies and ICT Industry to GDP
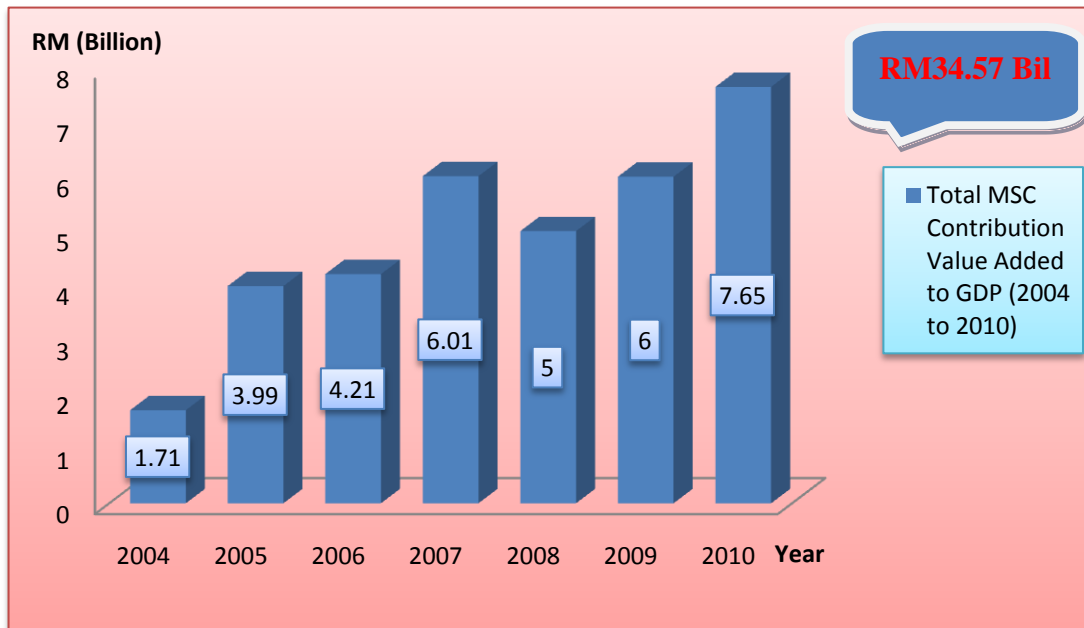
(2004-2009)
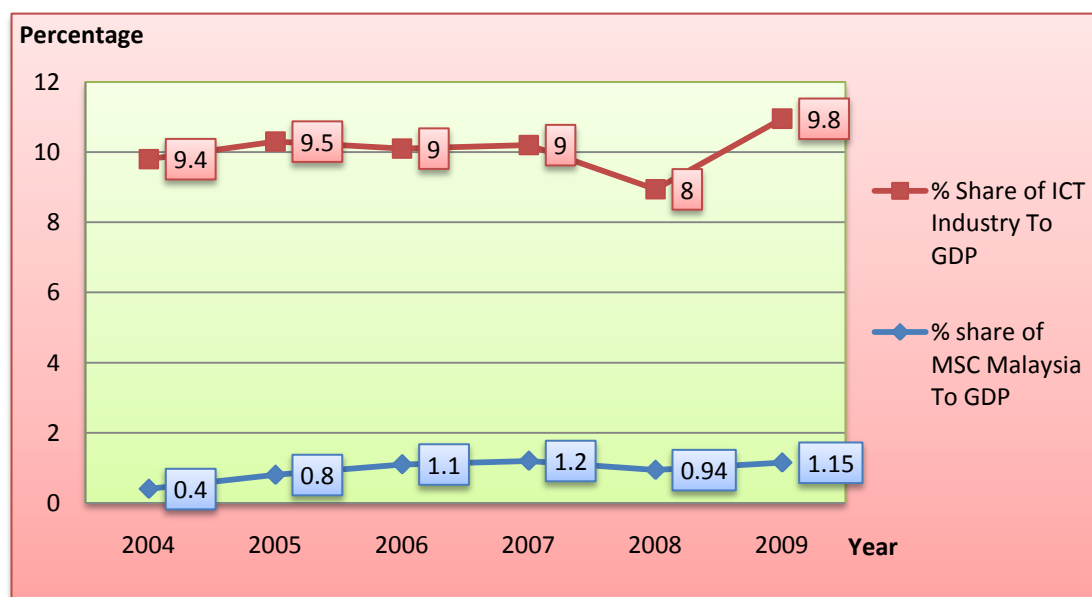
Source: msc.com; Epu, 2009; Seminar on ICT statistic, 2010

Although the majority of the Malaysian ICT industry is still driven by hardware and telecommunications, the software and services sector is expected to grow the fastest, at 12% p.a., contributing about RM15 billion to real GDP and providing an estimated 175,000 jobs by 2020. Overall, the ICT industry is forecasted to contribute around 10.5% of real GDP by 2020.

The contribution of MSC status companies to GDP in phase two (2004 to 2010), accounted for a cumulative GDP of RM34.57 billion (Figure 4.5). In 2010 alone, MSC recorded a total of 7.65 billion value added to GDP with an increase of 27.5% compared to 6 billion in 2009. Over the course of 7 years periods, the contribution of MSC Malaysia to GDP grew from 1.71 billion to 7.65 billion at CAGR of 23.87%.

Figure 4.5: MSC Contribution to GDP in phase two (2004 to 2010)

RM (Billion)

RM34.57 Bil

■ Total MSC
Contribution
Value Added
to GDP (2004
to 2010)

1.71 | 3.99 | 4.21 | 6.01 | 5 | 6 | 7.65

2004 2005 2006 2007 2008 2009 2010 **Year**

Source: MSC Phase 2 Report, msc.com, 2011

4.4.1   Sales Revenue

The total sales revenue of MSC status companies has increased more than

quadruple from RM5.8 billion in 2003 to RM24.8 billion in 2009 at a CAGR of 24%

(Figure 4.6). MSC revenue yearly growth achieved 14% from 2008 to 2009 with a

turnover RM24.8 billion surpassed the MDeC's target of RM19 billion. The local

sales contributed the highest portions of 71% with a value of RM17,652 million,

while export sales contribution of 29% valued at RM7,174 million in 2009.

Figure 4.6: Sales Revenue Yearly Growth

RM (Million)

| | Local Sales | Export Sales | Total Sales |
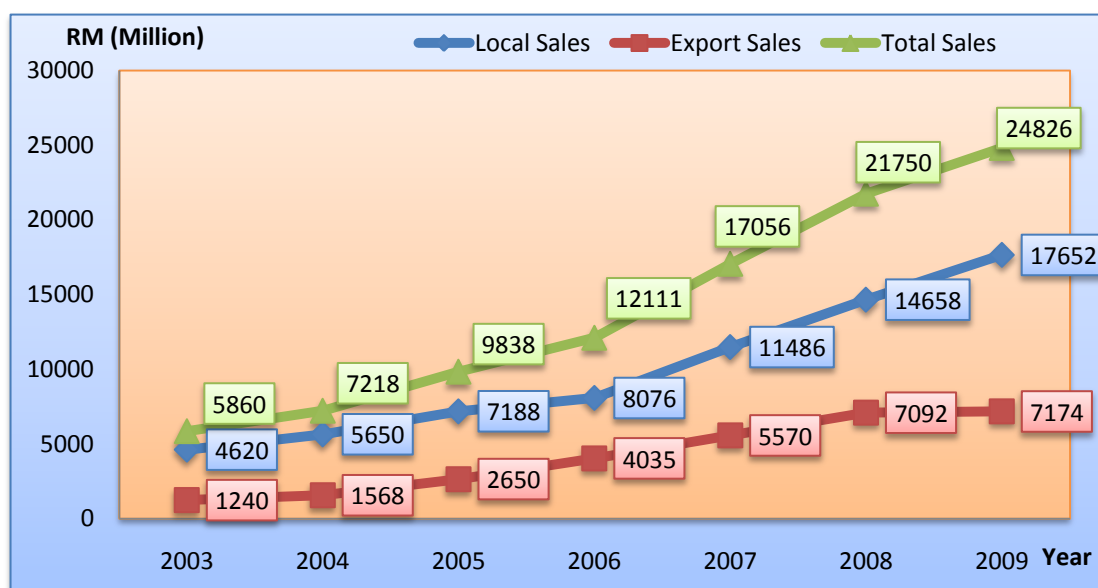
Source: MDeC; MSC Malaysia Industry Report, 2009.

Information Technology was the biggest contributor to MSC Malaysia revenue, accounting for RM12,581 million (51%) of total MSC Malaysia revenue in 2009 (Figure 4.7). This is followed by the SSO cluster, accounted for RM6,394 million (26%) of total revenue respectively. Three of clusters (InfoTech, CMC and IHL & Incubator) contributed more significantly to the local sales than export sales, while in the SSO cluster, export sales contributed to the most of total revenue with RM3928 million (61%) compared to RM2466 (39%) of its contribution in local sales. This reflected the SSO cluster business deal with international counterparts, markets and channel partners, primarily deal with export of goods.

Figure 4.7: Total Sales by Cluster, 2009
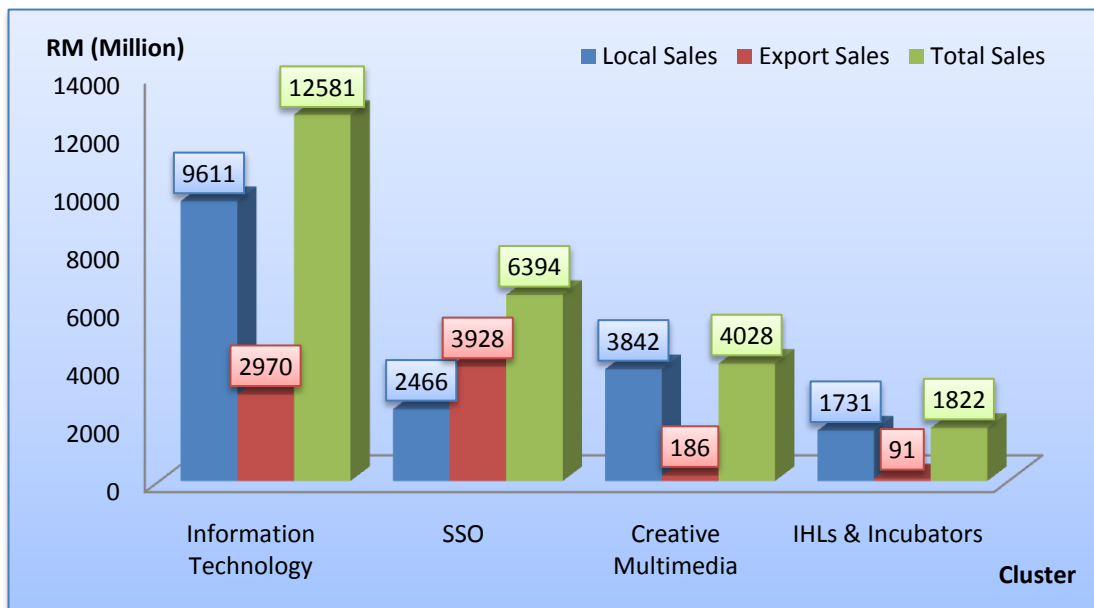
Source: MDeC ; MSC Malaysia Industry Report, 2009.

Malaysian-owned companies produce the largest proportions of sales in MSC with RM14,682 million (59%) of total MSC Malaysia revenue. While foreign-owned companies contributed about RM8,223 million of sales or 33% and the rest 8% contributed by JVs companies (Figure 4.8). Malaysian-owned companies contribute to the most of local sales revenue with proportion about 88%, while foreign-owned companies attributed 66% of their revenue to export sales.

Figure 4.8: Total Sales by Ownership, 2009

RM (Million)

Legend:
- Local Sales
- Export Sales
- Total Sales

Ownership	Local Sales	Export Sales	Total Sales
Malaysian-Owned	13012	1670	14682
Foreign-Owned	2822	5401	8223
50-50 JV	1819	102	1921
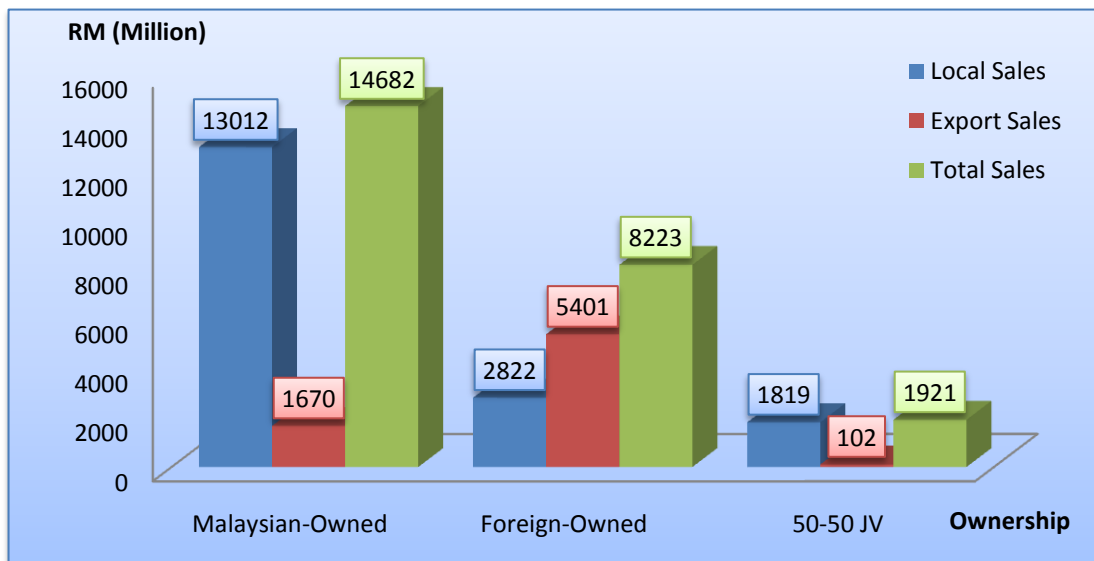
Source: MSC Malaysia Industry Report, 2009; MDeC

4.4.2   Employment Output
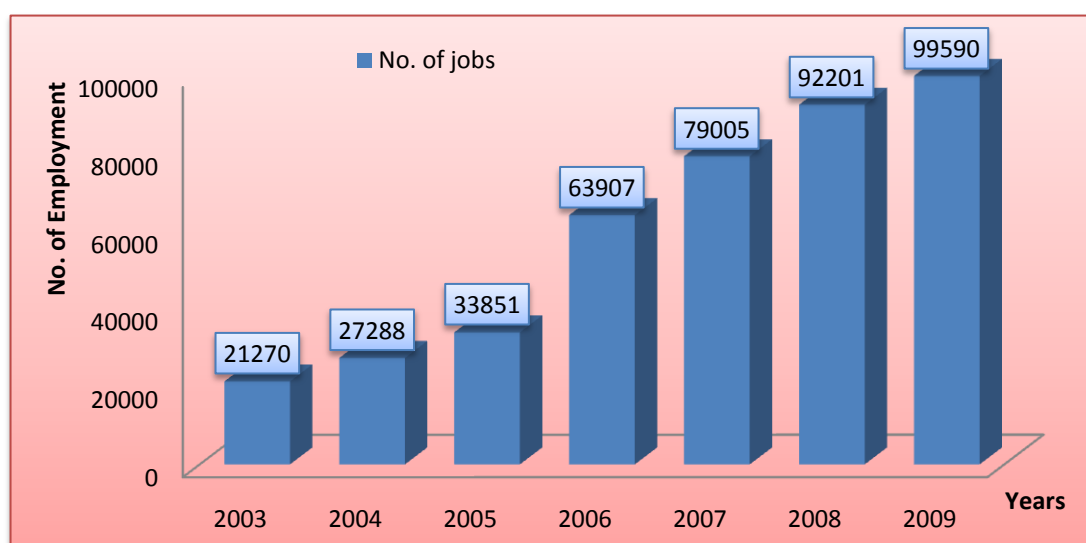
The number of jobs created by the MSC Malaysia also growing an upwards trend over the 7 years periods. MSC has nurtured a generation of high value knowledge workers as 99,590 of total jobs has created until 2009, which is a growth at a CAGR of 24.67% from 21,270 in 2003 (Figure 4.9).

Figure 4.9: Rising Number of Employment

The SSO cluster contributed to the highest number of employment in MSC Malaysia at 38,032 (38%) jobs in 2009, followed by the InfoTech cluster and the IHLs and Incubator cluster with 27,686 (28%) and 26,844 (27%) jobs respectively as shown in Table 4.3 below.

Table 4.3: Employment Performance by Cluster, 2009

| Cluster	Local Worker	Foreign Worker	Total
Creative Multimedia	6690	339	7028
IHLs & Incubators	25885	959	26844
Info Tech	24335	3351	27686
SSO	34977	3055	38032
Total Jobs	**91887**	**7704**	**99590**

Most of the jobs produce in MSC filled by local workers with 92% of the

total workforce and 8% of workers were foreigners. SSO companies contributed to the majority of total jobs as well as local workers while Information Technology contributed the highest for foreign knowledge workers at 43%. Out of these employees, 93% were classified as knowledge-workers who possess at least a degree qualification.

The number of job in SSO were increased due to the most of MNC's are operate in this sub sector. The need for a large workforce that can deal with multiple-region customer service and inter-related tasks is the reason of SSO has the highest output for job creation. Besides, there are 32 companies in SSO involved in Knowledge Process Outsourcing (KPO) and high value services sector which represents 17% from the total of 181 companies in SSO sub sector.

Malaysian-owned companies has create the most employment in MSC Malaysia with a total job of 64,388 (64%) in 2009. Foreign-owned and JVs companies contributed about 33,547 (34%) and 1655 (2%) of total jobs in 2009 respectively as shown in Figure 4.10 below.

Figure 4.10: Employment Performance by Company Ownership, 2009.
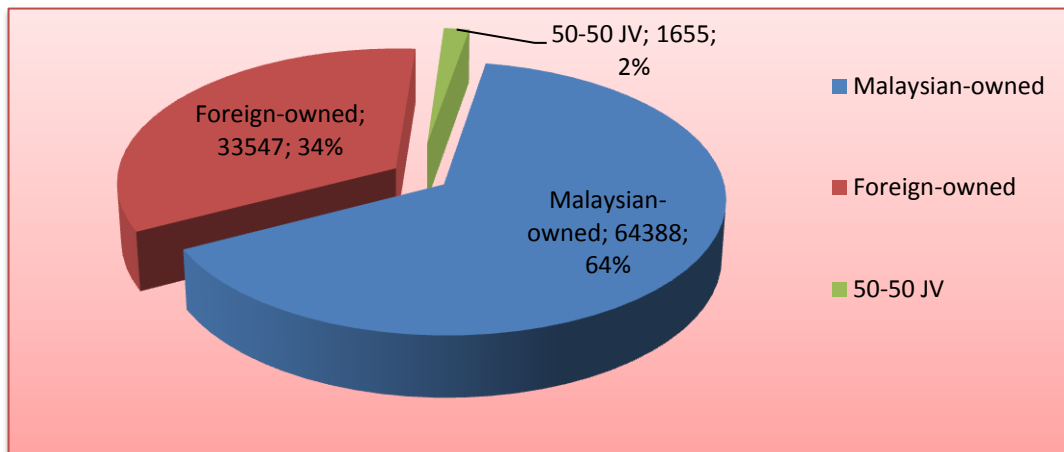
Source: MSC Malaysia Industry Report, 2009; MDeC

Approximately 34% of local knowledge workers employed in MSC foreign / JV companies get advantage of gaining knowledge transfer. They are benefited from training programs and from working in an international environment. In contrast only 7% of employees in local MSC status MNCs were the foreign knowledge workers. The low number of foreign talent working in local companies is mainly due to budget constraints and in some cases may hinder the development and global competitiveness of these companies.

In addition, the average salary of K-workers in MSC Malaysia also has grown by 16%, from RM2,400 per month to RM2,800 per month as more companies moved up the value chain. This is slightly higher than the national average salary which is an average of RM2,010 per month.

4.4.3 R&D Investment and Intellectual Property Registered

R&D spending by MSC status companies increased fivefold from RM482 million in 2003 to RM1,512 million in 2009 (Figure 4.11). As a result, the numbers of IP registration also increased, from 276 in 2003 to 5721 IP registrations in 2009. Total R&D expenditure fell about 7.05% in 2008 from previous year, however, in 2009 R&D expenditure shown an increase of 16% (RM1,512 million). This has shown that the MSC Malaysia status companies are recovering from the impact of the 2008 global financial crisis (MDeC, 2009).

Figure 4.11: R&D Expenditure
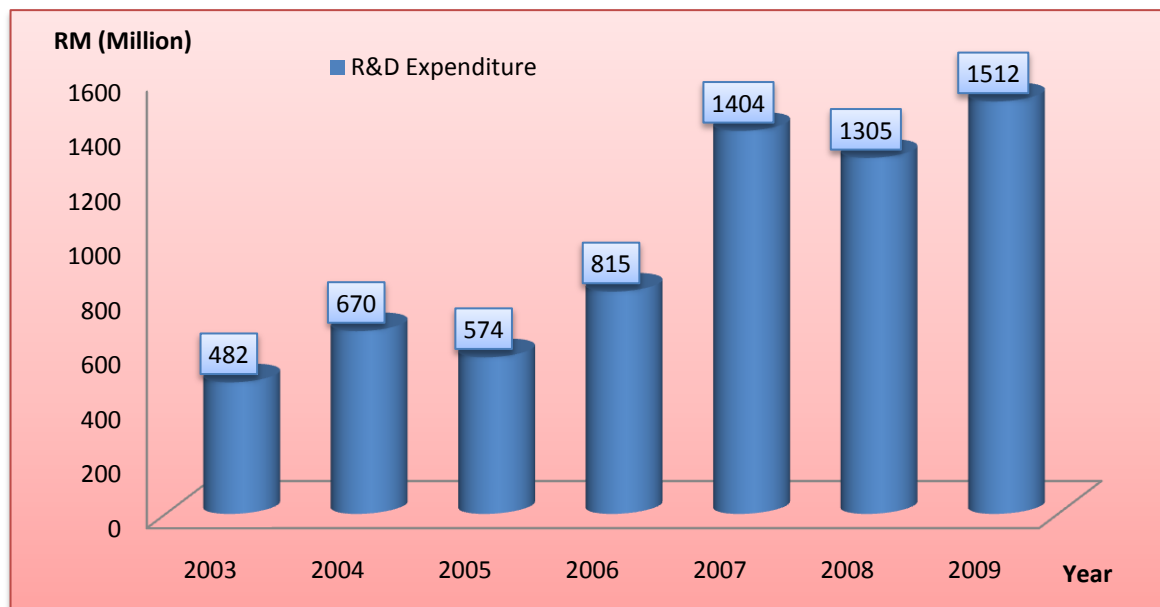
Source: MSC Malaysia Industry Report, 2009; MDeC

The Information Technology cluster contribute to the most of R&D Expenditure in 2009 valued at RM1,039 million (69%) from the total R&D investment in MSC Malaysia (Table 4.4). It is through the production of new innovations, be it products or services, they were also lead in producing IPs, with 722 registered in 2009. The SSO and CMC clusters contributed RM253 million (17%) and RM125 million (8%) to the total R&D expenditure respectively. While IHLs and Incubators contributed the least with RM95 million, representing 6% of total R&D Expenditure for 2009.

Table 4.4: R&D Expenditure & IP Registered by Cluster, 2009

Cluster	R&D Expenditure (RM Million)	No of IP Registered (Number)
Creative Multimedia	125	390
IHLs & Incubators	95	494
Information Technology	1039	722
SSO	253	146
Total	**1512**	**1752**

Source: MSC Malaysia Industry Report, 2009; MDeC

In 2009, 258 knowledge workers had been trained in R&D, further supported by the MSC Malaysia R&D Grant Scheme (MGS) that has funded 63 projects for a total of RM78.1 million (MDeC, 2009). A total of 25 out of 35 completed projects

generated RM55.89 million in revenue. Of this, 5 companies are listed on Bursa

Malaysia and one company listed on London Stock Exchange. These companies are

Palette, GPro Technologies, Portrade, N2N Connect, Mobility One and Key Asic,

and have a total market capitalisation of RM484.8 million. Recognition also came in

the form of three international and 12 local awards. Meanwhile, Bsmart Technology

and iDimension were listed in the *Deloitte Technology Fast 500 Asia Pacific 2009*

(MDeC, 2009).

4.5   Flagship Applications Contributions in Socio-Economic

Under MSC Malaysia, four key flagship applications were launched to

improve social conditions and provide economic benefits. The government

investments for the socio-economic benefit are still have limited productivity gains

due to implementation process requires the cooperation of multiple ministries /

agencies. The four key flagship applications as stated in MSC Malaysia website

(msc.com, 2011) are;

   i. **E-Government -** Aimed to improve transparency and responsiveness to the

      public. Yet to reach full potential due to limited number of transactions

available online as well as issues in infrastructure, change management and integration of legacy systems. Cooperation among agencies such as MEWC, MAMPU and other agencies need to be strengthen to ensure that implementation of e-Government applications are successful.

ii. **MyKad** – The objective is to provide a secure ID platform for private and Government transactions and processes. So far this projects has attracted many private applications but still limited of public applications, e.g. driver's license, has been minimal. This is because access to infrastructure, e.g. card readers, lack of buy-in from other agencies and poor public perception of security limits public usage of other applications on MyKad. Multiple agencies such as NRD, MAMPU, Pos Malaysia and NITC are required to ensure that MyKad application successful.

iii. **Smart School** – This Flagship designed to promote ICT literacy and encourage creativity and self-learning in education. Flagship has been enhanced based on learning from pilot and full roll-out expected by 2010 to make all school are smart school. However, engagement and communication between different stakeholders within MOE could be improved to speed up full roll-out of smart school.

iv. **Telehealth -** Launched to improve the overall standard of healthcare and provide more information to enable the public to better manage their health. Project initiatives under this flagship such as Teleconsultation, MyHealth portal and Continuous Professional Development programs have been launched but poor access to infrastructure and under-developed critical enablers limiting use of Telehealth projects. Cooperation between different stakeholders with MOH and MEWC essential for successful implementation of Telehealth.

The Government has invest an estimated about RM9 billion in socio-economic development which has resulted in significant impact to the economy from the flagship applications. The investments break up as shown in Table 4.5.

Table 4.5: Investment in Flagship Application in MSC Malaysia

Flagship	Amount (Million)
E-Government : • development of e-Government applications • spent for 7 initial e-Government flagships • spent for 11 new flagship applications	 • RM455 • RM228 • RM228
MyKad : • invested into MyKad project • purchase of 22Mn smartcards1	 • RM900 • RM600

• development	• RM300
Smart School:	
• developing 88 smart schools	• RM335.28
• for software	• RM200
Making All Schools Smart :	
• PPSMI2	• RM4.99
• for School Access Centres	• RM120
• for WebTV	• RM97.9
• for SchoolNet	• RM320
• for Computer Labs at schools	• RM1510
Telehealth:	
• invested in Telehealth pilot	• RM30
• software and hardware as well as 3 years maintenance	• RM23
• maintenance from 2006-2008	• RM6.5
MDeC:	
• new flagship applications from 2001-2005	• RM86.2
• New flagship initiative from 2001-2005	• RM67.7
• E-business for non-ICT SMEs	• RM3.9
• Total investments on flagships	• RM188

Source: EPU; Ninth MP, 2006.

Although these investments have significant impact to the economy as well as the companies involved in the flagship applications, but have produced only limited productivity gains (i.e., time or cost savings). Companies that have direct involvement and benefiting from the flagship applications are highlighted in Table 4.6 below:

Table 4.6: Companies Engage in Flagship Application

Flagship Applications	MNC Companies	Local
E-Government (MAMPU)	Fujitsu	MRCB Multimedia Consortium Sarawak Info Sys. SOLSIS
MyKad (NRD)	Unisys CSA MSC Sdn. Bhd. Tricube	Dibena Corp IRIS Corp Mass Media Interactive
Smart School (MOE / MDeC)	EDS British telecom NIIT India	Telekom Edutrends Digitechnologies Multimedia Synergi DEMC Anzagain Customedia Sapura
Telehealth (MOH)	WorldCare Health (M) Sdn. Bhd.1 Mitsubishi Corp. Concorde Investments	Pantai Hospital Bhd

Source: EPU; Ninith MP,2006, msc.com, 2010.

These Flagship initiatives have affected the lives of the society, industry and government. Each flagship application has a different achievement and stage of development, with E-Government and Smart Schools are ready for national rollout in 2010. Coordination among various government ministries, departments and agencies are very important to realize the goals of each application and the expected benefits. Description of the flagship applications and their benefits is illustrated as in Table 4.7 below:

Table 4.7: Benefits of Flagship Application

Flagship Application	Benefits
1. E-Government (MAMPU) ❖ Specialized software designed to automate administrative processes ❖ Government agencies host web portals to provide information and services ❖ Additional 7 pilots currently planned	❖ Improved transparency and responsiveness of Government towards public ❖ Cost savings and improve information flow and processes within Government ❖ Time savings and improve speed and quality of services to the public
2. MyKad (NRD) ❖ Government multipurpose card launched and made compulsory for all citizens ❖ 9 different applications were initially planned for use with MyKad ❖ Other Government agencies and private sector also developed applications using MyKad	❖ Secure ID platform for various public and Government transactions and processes ❖ Cost savings as avoid issuing multiple cards, reduction of paperwork and fraud ❖ Time savings and convenience, single source of personal information
3. Smart School (MOE / MDeC2) ❖ Infrastructure upgraded and specially designed software used as part of concept of integrating IT in pedagogy ❖ Concept piloted in 88 schools ❖ National roll out planned by 2010	❖ Promotion of ICT literacy, encourage creativity and self-learning amongst teachers and students ❖ Cost savings and more efficient administration of schools ❖ Time savings as reduce paperwork and administrative duties
4. Telehealth (MOH) ❖ Aim to offer holistic, individualized and quality healthcare to public	❖ Improving overall standard of healthcare, increase public access to

❖ Target to have integrated medical records for every citizen and provide support and information to medical staff and public	information and manage own healthcare ❖ Cost savings and improved productivity of public and medical professionals ❖ Time savings and save multiple visits to hospitals

Source: MDeC; msc.com, 2009.

4.5.1 Benefits and achievement of E-Government (EG) Flagship

The original plan for EG was to provide easy access, quality services through multi-channels for citizens and businesses, smooth information flow, leverage technology to enhance capabilities between agencies, and process improvement and people development within agencies. Agency websites have improved in terms of providing up-to-date information and user-centric information. This has resulted in better EG rankings for Malaysia. At the same time, lack of inter-operatibility and integration of legacy systems and new systems has been identified as a common challenge faced by many countries in EG implementation.

There is large potential for cost savings and process optimization from EG applications. There are clear indications for large cost savings through the e-procurement initiative. So far, there are 140,083 suppliers registered with MOF. This

initiative targets to provide an estimated savings of approximately 30%[4] on the value of E-Bidding transactions. In 2010, the government targets a total E-procurement transaction value of about RM10 billion.

Other EG applications have resulted in productivity gains and better service, such as the reduction of pension workflow forms from 46 to 29 forms. Initially, it took 3-4 months for processing and payment of first pension but today, pension is paid within first month of eligibility. This service benefits approximately 557k pensioners who receive an average of RM800 a month. At present, there are over 900 Government websites across federal, state and local authorities. The public is now able to access 2,209 forms and 687 online services. The Electronic Labour Exchange application has registered 300k employers and 405k job searchers to-date. The service offers a free online recruitment service for the public and has a list of approximately 900,000 jobs to-date.

Thus far, the EG flagship has resulted in relatively good rankings in the provision of EG services. Malaysia's ranking in internationally renowned EG services rankings were favourable:

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[4] *MAMPU ICT seminar presentation (23rd, July 2007)*

i. UN E-Government Survey in 2008 - Malaysia ranked 34th out of 189 countries surveyed.

ii. Waseda University World E-Government Ranking 2008 - Malaysia ranked 15th out of 34 countries surveyed.

iii. Brown University, USA study on Global E-Government 2008 - Malaysia ranked 11th out of 198 countries surveyed (ranked 25th in 2007).

iv. The portal My Government has won ―The 2008 World Information Technology and Services Alliance (WITSA) "Global ICT Excellence Award" out of 69 countries.

All EG projects have been completed and rolled-out nationwide in 2009, besides received a total of eight local and international awards for several EG projects. The award winning applications are: eKL Initiatives; Business Licensing Electronic Support System (BLESS); Pensions Online Workflow Environment System (POWER); Rakancop for SMS e-community; and E-Payment via Financial Procedure eXchange (FPX) Credit Card and Single Signed-on; and mySMS 15888 Government Gateway – A Step Toward Mobile Government.

The mySMS 15888 project received three prizes –the winner of both the MSC Malaysia APICTA 2009 Award and the International APICTA Award in the Best of EG and Services category. It also received a special award for Public Service

Empowerment through Mobility Innovation in 2009 (MDeC, 2009). Other EG achievements are;

i. **eKL Change Management (CM)**

- Growth in downloadable forms via myGov Portal, from 32,150 to 68,500 (113%)

- Growth in the adoption of myBayar, from 71 to 161 services (126%)

- Growth in the adoption of mySMS, from 29 to 122 agencies (320%)

ii. **Awareness of EG Applications** (sample respondents size: 2,850 respondents from five states)

- 68% of Malaysians are aware of EG applications

- 74% rated EG applications as "Good" or "Excellent"

MDeC and MAMPU also jointly organised an awards ceremony for Malaysia Government Portal and Website Assessment in 2009, which is showing seven government agencies received a 5-star rating. These awards are recognition and acknowledgement of EG's role in delivering public services more efficiently and effectively to the society, business community and the government.

4.5.2 *Benefits and achievement of MyKad Flagship*

MyKad a personal identification document that must be on the person of every Malaysian citizen has evolved into a secure and convenient tool to access public and private sector services. The original plan for MyKad is to provide a common platform for smartcard solutions in Malaysia for public and private sectors. It would consolidate identity, health and other information and licenses on a single card and provide functions for financial transactions. MyKad now has more than 60 products and applications covering more than 10 sectors, 166,000 points of usage and 300 integrated government service centres. According to MDeC, by the end of 2009, MyKad's digital infrastructure was extended to include more than 574 post offices, compared to 10 pilot sites in 2008.

MyKad project in agriculture also shows the progress; farmers can use it to access a database of traders and commodities registered with the Federal Agricultural Marketing Authority (FAMA). The agricultural database and geographical profiling system called eGeoFarmer@FAMA was launched on February 2009, that enable farmers and traders to track types of produce, location of markets, and conduct online and SMS transactions. FAMA has reported that the database has helped increase the visibility of its 26,799 pasar tani traders and

contributed to an income growth of between RM500 and RM1,000 (MDeC, 2009).

FAMA is now extending the service to 72,517 farmers in FELDA (Federal Land and

Development Authority), Pusat Operasi Gerai Buah-Buahan Segar (GBBS –

Operations Centre for Fresh Fruit Distributors), Ladang Kontrak and Industri Asas

Tani Malaysia (IAT – Contract Plantations and Primary Agriculture Industries

Malaysia).

In community services, an innovative of MyKasih was introduce involved a

Selayang community of 75 families, who were recipients of welfare support

donating from corporate and non-government organisations. MyKasih allows

beneficiaries nominated by the charity provider to use their MyKad as a 'debit card'

by activating their Personal Identification Numbers (PIN) for retail transactions at

designated outlets. The secure platform of MyKad creates confidence in the delivery

of welfare aid that ensures only designated people have access to the aid. It also

provides for transparency and accountability in the management of welfare aid

(MDeC, 2009).

MSC Malaysia Smart Card New Application Centre (Smart Card NAC) is a

smart card companies that have successfully positioned Malaysia at the forefront of

smart card and e-Passport technologies. Smart Card NAC is the development centre assigned to generate innovative MyKad programmes and community based applications and solutions to improve the quality of life of Malaysians nationwide. A total of RM1.2 billion was generated through the export of these technologies and solutions to more than 20 countries in Asia, Europe, the Middle East, Africa and the Americas.

However, there are gaps which need to be addressed and opportunities to reach the full potential from MyKad. For example, although MyKad has attracted many private applications, it has a limited adopt of public applications, such as driver's license, health information and e-Cash. The public uses of MyKad as an ID card, but adoption in other functions are still poor due to security fears and poor access to infrastructure also hampered usage, e.g., lack of card readers. MyKad application has also shown some social economic benefits since its implementation including:

i. **Security** - Use of MyKad to reduce fraud. Both Employees Provident Fund (EPF) and Tabung Haji require the use of MyKad for identification during withdrawal of funds.

ii. **Efficiency and convenience -** Use of MyKad to facilitate processes such as filling of forms. Private sector uses smartcard to reduce paperwork, e.g., Genting Resorts uses information on MyKad to facilitate check out.

4.5.3   Benefits and achievement of Smart School Flagship

Smart schools aimed at integrating ICT into the school environment to equip the next generation to become more competitive in the technology-driven globalised world. The original plan for Smart School was to use ICT to make teaching and learning easier, more creative and effective, increase ICT literacy amongst students and teachers and make communication and management amongst stakeholders more efficient.

The Smart School flagship application acted as a nucleus for the nationwide 'Making All Schools Smart' initiative, which aims to address 3 key areas, namely hardware, software and training. Hardware includes Computer labs, SchoolNet, PPSMI and TV Pendidikan (Education TV); while Software covers system and application software, Smart School courseware, PPSMI [5] courseware and TV Pendidikan programs. Training includes basic computer skills, usage of computers in

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[5] *Impact assessment study on the smart school integrated solutions and other ICT initiatives by Frost & Sullivan*

teaching and learning, usage of courseware and usage of TV Pendidikan in teaching and learning.

The Ministry of Education (MOE) has apprised 8,413 schools, of which 7,575 qualified as smart schools. Schools are required to achieve at least a 3-star rating, or the average level of the Smart School Qualification Standards (SSQS), in order to be eligible. The SSQS is a tool used by the MOE to monitor and measure a school's readiness to become a smart school. There are four models and two standards have been developed by the MOE to evaluate schools. The four models are: Centralized Service Desk Model (implemented in 2007), 88 Benchmarked Smart School Model (implemented in 2007), Rural Smart School Model (implemented in 2009) and Multiplier Effect Growth Model (implemented in 2009). The two standards are: SSQS – implemented in 2007 and Process Standards for Development of NextGeneContent2010.

To achieve the deadline of 'Making all Schools Smart by 2010', the government will transforming 50 rural schools as smart schools during the period 2009-2010. In 2009, 138 smart schools were classified as benchmarks and serve as reference points for other schools in their area (MDeC, 2009). The multiplier effect

model is now being implemented by MOE to achieve the exponential growth of Smart Schools. Smart schools nurture talented students who are encouraged to explore their interest in ICT under the Briged Bestari Programme (Intelligent Brigade Programme). These students are groomed to become the new generation of thinkers, equipped with the essential knowledge and skills to become the agents of change who shape Malaysia's future.

A study conducted by MOE & MDeC shows that ICT literacy among smart school students is higher than those from non-smart schools. The Smart School flagship has shown benefits in the 88 benchmark schools as follows[6]:

i. **It has had a positive impact on ICT literacy** - An average of 82.5% of teachers surveyed reported that their ICT competencies had been positively improved by the Smart School program. A majority of students and teachers have been positively impacted by Smart School implementation.

ii. **ICT facilities in schools helped teachers improve productivity** - 84% of teachers agreed ICT in teaching improved students' learning experience.

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[6] *Impact assessment study on the smart school integrated solutions and other ICT initiatives by Frost & Sullivan*

iii. **More efficient administration of schools -** It has reduced paperwork and increased administrative efficiency.

However, there are some clear gaps to fill in order for the 'Making All Schools Smart' initiatives to reach its full potential. In terms of hardware, strategic planning of ICT hardware provisions, localized technical support and basic troubleshooting training will help to address the challenges faced in providing and maintaining hardware to schools. A stronger emphasis on ICT in the curriculum and pedagogical methods as well as standardizing the development of courseware will help incentivize teachers and students to incorporate courseware and ICT in teaching and learning. Finally training and adopting competency standards will help teachers and school administrators effectively incorporate ICT in education.

4.5.4 Benefits and achievement of Telehealth Flagship

The original plan for the **Telehealth** application was to use telemedicine to provide a virtual network of health services, seamless integration of information for more timely and efficient healthcare and lifelong focus on wellness and empowering individuals to manage their health. MSC Malaysia's Telehealth flagship aspires to provide advanced healthcare services in the country by leveraging on ICT.

A key initiative is the MSC Malaysia IHE Connectathon (MMIC). MMIC is designed to enable healthcare ICT vendors to test the compliance of their products based on international healthcare standards in a realistic and live interoperability environment. It successfully tested 14 products against 6 integration profiles namely Clinical Summary, eGuarantee Letter, Enterprise Healthcare Scheduling (e-appointment), Consistent Time, Access to Radiology Information, and Scheduled Workflow (MDeC, 2009).

Another important achievement is the Malaysia Health Information Exchange (MyHIX). MyHIX is a central repository system that allows the sharing of health records between the participating facilities. MDeC also expanded its boundaries, by supporting healthcare interoperability to non-MOH facilities such as the Ministry of Defence, teaching hospitals under the jurisdiction of the Ministry of Higher Education, and the National Heart Institute. Among the achievements is the Integrated National Blood Bank that links all blood bank centres in the country. This will facilitate the sharing of blood information, with alerts sent out when there is a low blood stock on rare blood groups. It also provides for the updating of blood donor information, which is critical when there is a need to trace the source of blood.

The MyHealth portal (www.myhealth.gov.my) has been fully launched since 2006 and provides a variety of health information to the public in English and Malay and gives a directory for health facilities and Malaysia-specific health announcements. Both the Teleconsultation and Continuing Professional Development (CPD) initiatives have been piloted and launched at a national level. However, the Teleconsultation project faces several obstacles including poor connection and bandwidth as well as a lack of clear guidelines for use and complicated user interfaces.

In 2009, MyHealth portal showing grow as it recorded over 600,000 hits. It contains 640 accredited topics written by medical professionals from the MOH Malaysia for audiences ranging from children to adults and healthcare professionals. The portal also recorded receiving a total number of 6,038 via the "Ask the Expert" service, with 98% of the questions answered within 24 hours while the remaining 2% answered within 48 hours (MDeC, 2009).

CHAPTER 5

RECOMMENDATION AND CONCLUSION

5.1   Government Scope & Roles

MDeC as a government unit agency is playing significant roles in driving the growth of MSC Malaysia over the past 14 years. MDeC is responsible for developing FDI and DDI, providing support for market access, capability development and socio-economic development as well as other services such as admin support, and to ensure that MSC status companies have an attractive business environment.

However, these roles are not totally undertaken by MDeC itself. Other agencies such as Ministry of International Trade and Industry (MITI), through agencies such as Malaysian Industrial Development Authority (MIDA), Malaysia External Trade Development Corporation (MATRADE) and Small and Medium Industries Development Corporation (SMIDEC) are also responsible for developing FDI and DDI in sectors outside of MSC Malaysia. MITI also provides support for market access and admin support for its client companies.

Other Ministries such as Ministry of Human Resource (MOHR) and Ministry of Higher Education (MOHE) are responsible for workforce capability development and Ministry of Energy, Water and Communication (MEWC) has a direct role in improving business environment for ICT companies, especially in terms of info-structure. In addition, the implementation of flagships for socio-economic development is undertaken by multiple Ministries and stakeholders such as Ministry of Education (MOE) for Smart School and the National Registration Department (NRD) for the MyKad project. At present, three Ministries have the key roles in driving the entire ICT industry in Malaysia, namely Ministry of Science, Technology & Innovation (MOSTI), MITI and MEWC.

The organizations of government entities involved in driving MSC Malaysia need to be reorganized to ensure the roles and responsibilities are clearly defined with minimal duplications and overlaps. MSC Malaysia, as the national ICT strategy, should be driven by a central agency which can coordinate and align with other national economic development strategies. A central agency will help to coordinate and facilitate collaboration of different ministries and agencies to ensure that initiatives are successfully implemented. Currently the governance and implementation of MSC Malaysia are dispersed across several government entities.

In addition there are two councils provide governance of ICT initiatives in Malaysia namely, the National IT Council (NITC) and the Implementation Council of MSC Malaysia (ICM).

The implementation of MSC Malaysia as a national ICT initiative should be governed by a single entity that will decide on national ICT strategies and plans and oversee the implementation of MSC Malaysia. All this while, MDeC develops the strategic direction for MSC Malaysia with the input from the MSC International Advisory Panel (IAP), MAMPU develops the public sector ICT policies and various agencies develop ICT policies for other ICT sub-sectors and ICT-enabled initiatives. There is no clear Government body to oversee the entire national strategy on ICT and to ensure priority for other ministries and agencies. From this point, this role should be placed under one of the division in EPU (e.g., K-economy unit) to play the roles as Central Agency in overseeing the implementation of MSC Malaysia as well as developing and promoting the ICT industry adoption and as an enabler.

In addition, MDeC as an agency under MOSTI has no authority over other ministries / agencies in driving the implementation of MSC Malaysia. The cooperation and commitment of other agencies and ministries such as MEWC,

MOHE and MITI are vital to the success of MSC Malaysia. The allocation of roles and responsibilities for the development of MSC Malaysia need to be streamlined to ensure that each agency is clearly accountable for each role and responsibility. For this purpose, MDeC should focus specifically on local industry development (DDI) that will be responsible for fostering technopreneurship, supporting local industry development and expansion abroad, promoting the brand of MSC Malaysia and providing admin support to help assess and recommend applications for financial benefits for local companies.

Meanwhile the role of FDI attraction could be re-allocated to MIDA while other relevant ministries and agencies will continue the roles of developing attractive business environment for ICT companies and driving socio-economic development through ICT-enabled initiatives. For this additional role, MIDA will need to ensure that it has the necessary capabilities to execute the FDI function for ICT industry. MDeC might be placed under MITI together with other industry agencies such as MIDA, MATRADE and SMIDEC as an industry development agency. Under the MITI, MDeC will work closely with MIDA as the FDI attraction agency to align FDI and DDI strategies and maximize benefits to the economy.

5.2 Holistic strategy for the ICT industry

Currently, the scope of MSC Malaysia is limited to ICT companies in selected sub-sectors. These priority sub-sectors, namely Shared Services & Outsourcing (SSO), Software & e-Solutions (SeS) and Creative Multimedia (CMC) are selected based on Malaysia's current competitive advantage and are supported with significant government investments. The scope of MSC Malaysia should be extended to include all ICT sectors, including telco and hardware, and across the ICT value chain from manufacturing to high-end R&D. In addition, customized incentives are provided on a case-by-case basis to attract high impact FDI projects. The role of industry development should be driven mainly by the private sector, while the government will act as a facilitator to develop and attract companies as well as to promote clusters. It will also support the growth and expansion of companies in the priority sub-sectors through specific incentives and programs.

The 10-point incentive in BoGs includes a combination of financial and non-financial incentives, provided to all companies who qualify for MSC status, regardless of size and maturity. Companies who do not have MSC status do not enjoy any benefits from MSC Malaysia. The government may give a flexible

scheme to be applied in all ICT companies within the scope of MSC Malaysia.

Financial and non-financial benefits should be provided based on the company

needs according to their size, stages of maturity and alignment with overall industry

development goals. For example, a local company in a priority sub-sector could

receive support for international market access to expand their business abroad but

may not be given tax incentives.

Besides, MSC status companies are required to locate their business in MSC

Malaysia cyber-cities / centres in order to receive BoGs which guarantees a world-

class infrastructure. Initially the MSC corridor was designated as corridor between

KLCC and KLIA, and encompassing Cyberjaya, UPM-MTDC and KL Tower.

However, more locations outside this area have been declared MSC cyber-cities or

cyber-centres to spur competition between clusters and provide more location

options to MSC status companies.

Looking at this expanded scope of MSC Malaysia, the government should

consider that the location requirement no longer be a criteria for receiving benefits.

Companies, even those receiving benefits, should be free to locate anywhere based

on their priorities and needs. Companies that demand higher service levels in terms

of infrastructure and utilities can choose to locate in a cyber-city. For example, a large MNC may want to locate in Cyberjaya where land is plentiful and utilities and services are guaranteed. Otherwise, a small animation company may choose to locate in other areas such as Petaling Jaya which is close to studios and other animation companies.

In addition, several government initiatives have been launched to improve the general environment for doing business in Malaysia, especially to attract FDI. Initiatives such as PEMUDAH (Special Task Force to Facilitate Business) can be enhanced to ensure that Malaysia promotes competitiveness, shared accountability and more efficiency in implementing strategies.

5.3   Prioritize Government ICT initiatives

The government has recognized the importance of ICT adoption in other non-ICT sectors. Several initiatives have been launched to promote ICT adoption including financial incentives, training support and public-private partnerships. The adoption and use of ICT in government has been part of MSC Malaysia from the beginning with the launch of the e-Government flagship. The Public Sector ICT

Strategic Plan (ISP) serves as a general guideline for all agency ISPs but the implementation are not well organised and lack of monitored. In addition, the monitoring of ICT initiatives by government agencies is conducted on a project by project basis but not as part of the overall ICT in government strategy.

To address these issues, a central government CIO function should be established to undertake prioritization, resource allocation and oversight of all ICT projects in the public sector. The allocation of resources for ICT in government initiatives should be prioritized according to the needs and importance of the projects and taking into consideration of all funding for the projects. Each agency should develop own ICT strategies for their respective agencies and have direct links to the government CIO office to ensure that all agency ISPs are aligned. As a result, ICT strategy, planning and implementation will be improved as a key enabler for all government projects.

The MyKad project, as an ICT in Government initiative, is undertaken by National Registration Department (NRD). However, the NRD lacks the authority to push the MyKad platform to other agencies. While MDeC and other agencies identifying potential uses for MyKad, MAMPU provides technical approval and can

only recommended to other agencies for considering using the MyKad platform. The NRD then assists other agencies and private companies to install MyKad based applications.

Currently, the majority of MyKad applications are used in the private sector to simplify paperwork processes such as hotel check inns or loyalty card tracking. The government should focus its efforts in developing MyKad applications for government transactions. All agencies will use the MyKad for smart card-based projects and the government, through the NRD, MAMPU and other relevant agencies, will focus its resources on developing the MyKad platform for public sector applications to benefit the public.

The Smart School flagship application has been a key ICT in government project since the inception of MSC Malaysia. The ICT in education initiative has been mostly driven by the Educational Technology Division within MOE and other stakeholders within the ministry have minimal involvement in this initiative. During the roll-out of the smart school project, challenges arose in providing a standard ICT infrastructure to all schools, regardless of context and environment.

To further enhance ICT in education initiatives, all ICT in education projects should be prioritized to ensure that they deliver the desired objectives. Commitment of all stakeholders within MOE is required to ensure that ICT in education is a key priority and integrated with overall strategies and efforts to develop the education system. The different needs and environments of schools should be acknowledged in prioritizing investments for ICT in education.

Another key ICT project for socio-economic development, the Telehealth flagship initiatives need to be reviewed by MOH and align it with long term strategies and priorities, and consider the capabilities for successful implementation. All relevant stakeholders should aligned and committed to developing the critical enablers required for successful Telehealth applications such as better infrastructure and software systems development.

5.4   Develop HR/ talent and strengthen national R&D and innovation system

The importance of human capital towards the success of MSC Malaysia should be emphasized in line with changing trends and technology requirements of the ICT industry. The government should establish a mechanism to undertake and

nurture on the future skills requirements and related labour market issues that can impact the growth of the national ICT industry. This will ensure awareness that potential challenges in the ICT workforce and provides options to overcome these challenges.

Various programs have been put in place to increase the inflow of foreign and returning local talent. The government should take attractive initiative in attracting these foreign workers who may contribute more to the economy in the long run. Personal income tax rates and employment regulations should be reviewed to ensure that Malaysia remains a competitive location for foreign ICT workers. Immigration procedures such as work permits and PR status should be reviewed to encourage the long term stay of foreign k-workers.

In the same time, recognized the importance of R&D and innovation for national competitiveness, the government should also review the national R&D incentives. An active monitoring system should be established to ensure that R&D incentives targeted the right recipients. As part of the National Innovation Roadmap, the government will focus on developing both technology-driven and market-driven innovation. Grants provided to facilitate these efforts and institutes such as MIMOS

play a role in helping Malaysian ICT companies develop innovative products. The financial and non-financial support need to be strengthened to enhance the development of market-driven innovation and industry-academia collaboration as well as agencies play a more active role in ensuring that ICT companies engage in research and development.

5.5   CONCLUSION

The MSC Malaysia initiative has achieved much success and contribution in economy and socio-economic development since it's established in 1997. The goals of MSC Malaysia are very ambitious and in line with the vision to achieve Develop Country by the year 2020. These targets are purposed to help Malaysia fulfil its aspiration of becoming a globally recognized ICT hub with a competitive ICT industry, high usage of ICT across industries and an ICT-enabled government and society. A more effective achievement would be the value adds of MSC status companies to the national economy.

MSC Malaysia has succeeded in producing among of the best companies in Malaysia, listed on Bursa Malaysia and has the greatest market capitalization

compared to other sectors. Many of these companies are also wining award with prestigious local and international awards. Thus far, MSC Malaysia has attracted RM14.5 billion worth of investments in the First Phase (1997-2003) and RM27.26 billion in the Second Phase (2004-2010). MSC Malaysia has been successful in attracting FDI which is accounted of 60% of the total investment during the Second Phase period, while DDI contributed 40% of it. These investments demonstrate the recognition of MSC Malaysia growing role as a global ICT hub and as strategic location for the gateway to ASEAN, India, China and OIC markets.

MSC Malaysia has a significant contribution to economic and benefited the ICT industry that will help to transform the nation into a knowledge-based economy. In terms of contribution to the economy, MSC Malaysia has contributed a significant value to national GDP with a cumulative of RM34.57 billion in phase two (2004 to 2010). In addition, MSC achievements beyond contributing to the GDP, has also significant achievement with 2520 of MSC status companies producing revenue RM92.8 billion; create of 99,590 knowledge-based jobs, generated RM33.1 billion worth of exports and RM1,512 million in R&D investment as well as Registered of 5721 new IPs.

Some achievement also were observed from MSC Malaysia flagship applications e.g., e-Government, MyKad, Smart School and Telehealth addressed to improved socio-economic and benefited public society. The infrastructures and good working environment and the incentives offered in BOGs primarily tax exemption and other factors such as low cost of doing business and competitive conditions has been the driver as attraction for companies to invest in MSC Malaysia.

MSC Malaysia goals and objectives have shown a favourable achievement and success at different stages that have benefit the national economy and social well-being. The Malaysian ICT industry further development will be aligned with the overall national economic strategy which is comprises the whole of ICT industry to maximize the revenue on the economy. In addition the private sector should play a greater involvement as a player of the task of industry development while the government will support strategic sub-sectors that will develop into long term advantages for the nation.

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