

"Malaysia's Multimedia Super Corridor and Its First Crisis of Confidence."

From the *Asian Journal of Social Science* 30:2 (2002): 248-270.

Abstract

This paper discusses Malaysia's attempt to join the "information society" and "knowledge economy" by launching its ambitious Multimedia Super Corridor (MSC). The discussion is framed in the context of globalization, modernity and the situation of other Muslim societies. Notwithstanding the present national skepticism regarding the MSC, the project has been reasonably well designed and launched. But it is, in the final analysis, only a part of the larger structure of national innovation systems that function equally as "engines of economic growth."

Introduction

Malaysia's multimedia super corridor is that country's unique way of joining the "information society" and assisting the transition to the "knowledge economy." Since the Internet is a global construction, it is obviously at the heart of the "second" great transformation that is now going on under the heading of "globalization." Moreover, globalization and modernity today are clearly linked. Efforts to modernize forms of education, commerce and government are all linked to the new modes of globalized communication and their mastery. At the same time, globalization implies adopting international standards, especially international standards of openness with regard to communication, commerce, and government, as well as engineering and science.¹

From a business and commercial point of view, it is important to recognize that globalization is powered by three inexorable trends: globalization of communication, globalization of labor and commodity markets, and the networking of computers (within firms, between firms, nationally, and internationally). With the networking of computers around the world, via the World Wide Web (Web), virtually all commercial transactions can be done electronically. Even apart from the Web, it should be noted that retailers and wholesalers alike can send and receive orders automatically and electronically virtually around the world with the use of either fax or computers. Transactions that in the past would have taken several days to execute— the time to write up an order physically, post it in the mail, and send it to an offsite location – can now be completed within seconds or minutes. All of this is taken for granted now in the United States and the Western world, but it is not yet a reality in most Muslim or other underdeveloped countries. However, the leaders of Malaysia recognized some of the

¹ This and the following paragraph are taken from Huff (2001).

early signs of this great transformation in early 1990's, and they proceeded quickly to create an Internet infrastructure that would adequately connect Malaysia to the Internet and lay the foundations for the transition to a knowledge-based economy. They hoped that their "multimedia super corridor" (MSC) would become a new engine of economic growth. The project was launched in 1996 and by 1999 it was up and running, clearly far ahead of all other Muslim-majority countries. The many current references to "failed modernity" in the Muslim world do not apply to Malaysia.² However, by the summer of 2001, a malaise had set in and considerable skepticism was widely expressed.

The MSC Story

The MSC story begins with the "Vision 2020" statement and its commitment to making Malaysia a fully developed country by the year 2020. The Vision 2020 statement (Mahathir 1998, Chapter 1) was created in 1991 by consultants at ISIS (the Institute for Strategic and International Studies) and later fully embraced by Prime Minister Mahathir. But it was realized soon thereafter that bringing Malaysian average income up to that of a "fully developed" state by 2020—which was estimated to be about \$US10,500 in (1994 dollars) (McKinsey and Associates, as reported in K.J. John, 2001:16)-- could not be achieved by focusing mainly on significant increases in manufacturing (projected to grow by approximately 7% per year and topping out at 38% of GDP in the mid-1990's. (See Figure 1.). To make the grade and to bring Malaysian wages up to the level of a fully developed country would require another strategy and another "engine" of economic growth. Consultants and advisers to the Prime Minister proposed that the incipient ICT revolution, then becoming apparent, was giving birth to a "new economy," the "Information age" of the global economy. In a word, the advisors argued that the ICT revolution had within it the seeds of a new engine of growth that would give rise to the "knowledge economy" and this would be the new engine of economic growth. If Malaysia could position itself to be part of this new global, knowledge-based economy, then it would be able to harness the new technology and propel itself into the status of a fully developed country by 2020.

² For a compelling analysis of the struggles that Middle Eastern and North African countries have been having adjusting to globalization, see Henry and Springborg (2001)

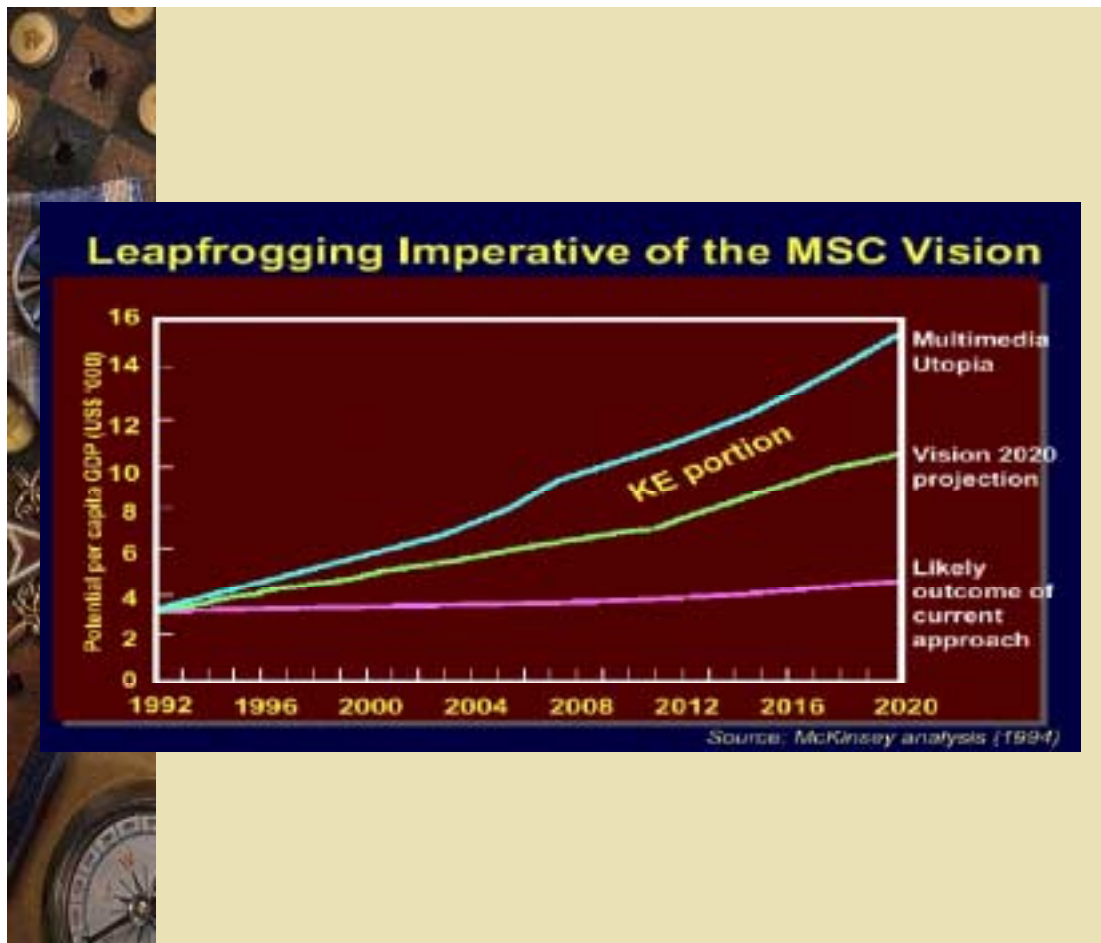


Figure 1. Malaysia Economic Growth Projection Scenarios—by McKinsey and Associates, 1994 (as report in K.J. John, 2001).

It is interesting to note that a team of Australian experts had proposed a similar project in the late 1980's. It was called "multifunctional polis" but was turned down by the government because it was thought that creating a platform "to fast-track next generation industries" was a task for private enterprise. (The [Edge/Netv@lue2.0](#), September 24, 2001, p. 2). Consequently, one of the original team members, Dr Terry Cutler, later became a member of the International Advisory Panel (IAP) of the MSC, and continues to serve on it.

In any event, the Malaysian plan centered on creating a new "platform" of information technology, a local, Malaysian-based version of the Internet-Web platform. It was finally conceived as a "multimedia super corridor," an ICT "utopia" that would be a "test-bed" for all sorts of new "multimedia" /ICT applications. This new infrastructure and its products would create new jobs, produce new kinds of "value-

added” products and services, transform government, communication, and commerce in Malaysia. In the process it would (potentially) attract big multinational ICT corporations, ICT leaders such as Intel, Microsoft, Oracle, Compact, HWP, etc. If the venture were successful, it would get Malaysia to its goal of being fully developed AND would position Malaysia as a major ICT “hub” in Southeast Asian, even in “the world.”

In the end, the concept of a “multimedia super corridor” was adopted, and its construction begun in 1996. By the summer of 1999 the fiber optic core had been laid and was up and running at 2.5 gigbits /sec (expandable to 10 gb/sec) in the 50 km “corridor” stretching from the Petronas Towers in Kuala Lumpur west to the newly opened Kuala Lumpur International Airport (KLIA). In addition to that, MIMOS (the Malaysian Institute of Microelectronic Systems) had leased a high speed telecommunication line from Penang in the north (the location of Malaysia’s microchip facilities) south through the MSC/Kuala Lumpur corridor all the way to the southernmost city of Jahor Bahru, just a stone’s throw across the straits to Singapore. Not only that, several private telecommunication companies had installed other high speed lines connecting the north and south of the Malaysian peninsula with the MSC. Furthermore, MIMOS maintains four international lines running from the MSC to Japan, Canada, and two to the West coast of the US (to San Francisco and Los Angeles). In the summer of 1999, the Japan-Malaysia connection was providing a heavily trafficked connection to users in China. Locally, Internet cafes were everywhere, and their charge for Internet service ranged between 60 cents and one US dollar an hour (RM2, in September 1999 outside KL). By the end of 1999, nearly 63,000 kilometers of fiber optic cable had been laid (Malaysia, 2001: 375).

During this first phase of the MSC, there were grand hopes for it which were stated in various brochures and web pages. The MSC was to be:

- A vehicle for attracting world-class technology-led companies to Malaysia, and developing local industries;
- A Multimedia Utopia offering a productive, intelligent environment within which a multimedia value chain of goods and services will be produced and delivered across the globe;
- An island of excellence with multimedia-specific capabilities, technologies, infrastructure, legislation, policies, and systems for competitive advantage;
- A test bed for invention, research, and other ground-breaking multimedia developments spearheaded by seven multimedia applications;
- A global community living on the leading-edge of the Information Society;

- A world of Smart Homes, Smart Cities, Smart Schools, Smart Cards and Smart Partnerships. <www.mdc.my/index.html>

Despite the hype, the original conception of the MSC and its initial execution deserves high marks. If we make a comparison between the Malaysian MSC project and those of other parts of the Muslim world, then Malaysia looks very good indeed, as it is the most Internet-developed Muslim country (See Tables 1 and 2). I will return to the question of the MSC's status in the Southeastern Asian region.

The Digital Divide

Table 1. Internet Host per 10,000 People (January, 2000)

Region	Internet Hosts per 10,000 Pop.
	Jan-00
Middle East and North Africa	0.55
Sub-Saharan Africa	2.73
South Asia	0.22
East Asia & Pacific	2.69
Low Income	0.37
Middle Income	9.96
High Income	777.22
Low and Middle Inc	5.4
The World	120.02
Malaysia	25.43

Source: World Bank Development Report 2000/2001, Table 19, pp. 310-11.

Table 2. Arab/Middle Eastern Countries

Country	Hosts per 10,000 pop.-- Jan-00
Algeria	0.01
Egypt	0.73
Iran	0.09
Jordan	1.27
Kuwait	20.5
Lebanon	10.93
Morocco	0.33
Saudi Arabia	1.28
Syria	0
Tunisia	0.1
Turkey	13.92
Yemen	0.02
<hr/>	<hr/>
Malaysia	25.43

First Signs of Crisis: The McKinsey Report

In the spring of 2001, however, a major study was commissioned by the Malaysian government to evaluate the progress of the MSC. The study was carried out by McKinsey and Associates, the international consulting firm that did most of the preliminary work for the original launching of the MSC. Their report was delivered to the Malaysian government in March of the year 2001, but in the meantime the report was leaked to the press, causing a considerable stir. Since the report remains confidential, the following characterization of the report's findings represents a composite sketch gleaned from various news accounts and editorial comments.³

³ Many of the Malaysian newspapers carried special reports on the MSC in September 2001, as this was when the International Advisory Panel held its annual meeting in Kuala Lumpur. For one of the better and more comprehensive accounts, see

However, one should add the following details. Since the MSC was proposed as a corridor, it became a geographical space, complete with land holdings. A former palm plantation was bought as a location for the new “cybercity” and multimedia corridor. The Malaysian government and the telecoms each financed about half the costs of the initial investment. To execute the whole project, a Multimedia Development Corporation (MDC) was set up. The latter was expected to use its position as facilitator of Internet development, and one supposes, as a land- and office-leasing agent, to be fiscally independent.

Within the fifteen by fifty kilometer corridor there was a “Bill of Guarantees,” especially the guarantee of no censorship and the provision of certain “state of the art” facilities, including fiber optic connections. In addition, special exemptions regarding ownership rights, access to international financial markets and unrestricted use of foreign “knowledge workers” were part of the package. Companies that chose to settle in that zone had to meet certain standards of technical capability and entrepreneurial promise, as well as financial solvency, if they were to be given “MSC Status.” The latter designation would presumably lead to greater visibility and other advantages for the designated companies. It seems likely also that Malaysian leaders had in mind the creation of a Malaysian “Silicon Valley.”

With that background in view, the report of McKinsey and Associates suggested the following criticisms:

- Too much red-tape getting MSC-Status approval.
- Conflict of Interest between the Multimedia Development Corporation’s economic interests and those of the companies it is supposed to assist.
- Need to allow MSC companies to locate anywhere they desire.
- Make more areas/cities part of MSC corridor (e.g., Penang)
- MDC needs better, more ICT-qualified leaders.
- MSC/Cyberjaya needs more “world-class” companies.
- MSC project needs more ICT/Knowledge workers than the new Multimedia University (MMU) can produce, or MMU is not good enough to draw top-flight regional “intellectual capital.”
- MSC has not had a big enough impact on economic development; it needs better venture capital managers, etc.
- Malaysia Telecom (and other Internet Service Providers [ISP’s]) have failed to deliver the infrastructure needed to support the MSC’s development.

[Netv@lue2.0](#), the supplement to [The Edge](#) (“Malaysia’s Business and Investment Weekly”), September 3, 2001, and subsequent issues.

- Not enough attention was given to supporting and promoting Malaysian “small and medium sized” firms (SMEs).

Much of this criticism is understandable and justified, though it is far too early to make a final judgement on the success or failure of the MSC. It is probably correct to suggest that the top leadership at the MDC (the Multimedia Development Corporation) needs to be replaced with more professional and seasoned ICT professionals, which appeared to be taking place in the Fall of 2001 (*Computimes*, October 4, 2001, p.1).

The issue of insufficient “intellectual capital” is bound up with a variety of indigenous problems, including the government policy of promoting Bumiputeras (that is, people of Malay extraction), which has often been practiced to the neglect of Chinese and Indian citizens. Prime Minister Mahathir has spoken out on many occasions, criticizing Malays for not being hardworking enough, for not achieving top honors in schools, and for not being entrepreneurial enough. Recently, the government has decided to make admission to universities based on merit starting with the next class of applicants in 2002. Nevertheless, the MSC web page lists twenty (20) universities with “MSC status,” which presumably means that they are heavy users of ICT and that they also teach various aspects of ICT (www.mdc.com.my).

In the meantime, the anticipated yield of “knowledge workers” from existing universities by the MDC appears to be adequate, above all given the down turn in the US and global economies. According to the MDC, “the net supply of It/engineering students expected to be produced between 1999-2001 is about 137,000 while the anticipated demand between 1998-2005 is 104,000.” (Personal communication from Sumitra, 5 July 2001). Furthermore, plans have been laid for the opening of a joint Malaysian-American graduate school focusing on high tech.⁴

When the Malaysian governmental elite launched their Web project, nobody knew what direction the Web would take. When I heard the original presentation of the MSC project at a conference in Malaysia in 1996, it was clear that this was an experimental adventure, that nobody could say what the direction(s) would be—neither computer visionaries, policy planners, nor religious officials. For example, we can now see (as we could not in 1996) that the Internet entails the following functional dimensions. It is:

- A new digitized global communication system.

⁴ Interview with Tan Sri Datuk Dr Omar Abdul Rahman, former Science Adviser to Prime Minister Mahathir, in Putrajaya, October 11, 2001.

- A massive data storage & retrieval system: for economic, governmental, historical, medical, scientific information.
- An electronic “Bulletin board” (“Usenet”).
- An automated post office.
- A trans-local, trans-national shopping mall
- A potential medium for political mobilization and action.
- An experimental location for new “communities”.
- A new medium spawning new types of crime.
- An international meeting place in which new international laws must be worked out.
- A new medium of entertainment and “self expression”.

But even that list has to be expanded to include Malaysia’s hopeful idea, that the Internet/ ICT, can be a new engine of economic growth. Consequently it made perfectly good sense to say that the project was taken on as an experiment. Indeed, the Malaysian leadership was so cautious at the outset that it did not dare to give the job of providing the basic Internet infrastructure to private enterprise out of fear that it would exclude too many Malaysians. But shortly thereafter it did indeed privatize most of the project.

Similarly, in that context, it made sense to talk about a corridor of high tech, multimedia development, since it would have been far too costly to wire the whole country. In addition, it would have been very difficult politically to offer the “Bill of Guarantees” to any and all foreign companies that might wish to locate anywhere in Malaysia with their special exemptions for ownership rights, capital market access, and unlimited knowledge-worker importation. At the time the idea of a corridor was “in the air” and this seemed to be the solution to the problem.⁵

But this geographic limitation was soon to become a liability. For among the critics of the MSC, the view that the MSC is a “big land deal” frequently surfaces. At the same time, the island of Penang, off the north west coast, is the site of many high-tech industries, especially computer chip design and manufacture, and which was very successful before the launch of the MSC. Consequently, a strong case could be made for its inclusion in the MSC, and for giving companies located there MSC status. But

⁵ Interview with Dr Tengku Azzman Shariffadeen at MIMOS, July 23, 2001.

this has been rejected by the Prime Minister for reasons mentioned above.⁶ Nevertheless, there are plans to create a series of “cyber-cities” around the country that would provide the benefits of the Bill of Guarantees and would grant MSC status to companies locating in them.

As for the criticism that not enough companies, international or otherwise, have located in Cyberjaya, a spokesman for the MSC quickly shot back that, in fact, the target number of MSC-status companies located in Cyberjaya has surpassed expectations and schedules ([The Edge/Netv@lue2.0](#), September 6, 2001). Indeed, at the end of October 2001 there were 585 MSC-status companies (www.msc.com.my/mdc/statistic/default.asp), and 50 of these were World Class companies. At the same time, the MDC could say that about 65% of the companies were Malaysian companies, and that therefore, this project was benefiting the Malaysian business community, and above all, its fledgling ICT community. Subsequently the MDC revised upwards the targeted number of MSC-status companies from 500 to 650 by the end of the 2002.

As regards the economic impact of MSC related activities, it is clearly too soon to make any judgment about that. On the one hand, MSC status companies located in Cyberjaya have spent hundreds of millions of dollars in the course of their work, both on infrastructure development and R&D. Estimates of how much e-commerce has been generated by the MSC have not yet been produced. The research firm IDC has estimated that by 2005, e-commerce in southeast Asia will reach US\$9 billion (<www.idc.com.my>). As the number of MSC-status companies grows, it is clear that the growth of e-commerce and ICT-related business will also grow in tandem.

Lastly, the claim that the telecoms have not fully delivered the Internet service expected seems to be right. On the issue of cost, clearly access costs are too high for residential and business users. This is widely attested. DSL service is not widely available because it requires fixed lines in relatively dense settlements frequently requiring the installation of new fixed lines. But the charges for it are reported to be well over \$1000 Ringitts (about US \$260) per month, clearly an exorbitant rate. To be sure the MSC does provide state-of-the-art highspeed broad-band lines to businesses and universities around the country. Nevertheless, some users (despite all the fiber optic cable that has been laid), even in newly opened Putrajaya (the new high-tech government center outside Kuala Lumpur), have the sense that service is not as fast and reliable as it should be. Most users have only dial-up service (at about 45kbs), and even in the Kuala Lumpur Civic Center (KLCC) at the foot of the Petronas Twin Towers

⁶ Interview with Dr K.J. John, October 22, 2001.

(one of the anchor points of the MSC), in the main concourse demonstration area, there is only dial-up, not broad band service available. Of course, there are technical problems of going “the last mile” from fiber cable at the curb to the user, but here again it should be the job of the telecoms to overcome those obstacles. The Prime Minister has recently suggested putting more resources into wireless communication, and that seems like a modest short-term solution. In response to the criticism that the MDC did not place enough emphasis on SME’s, the MDC leadership has now announced a new program that will target the SME’s.

In brief, there are a number of criticisms of the MSC after two years of operation, some of which merit more credence than others. The criticism of the failure of the telecoms to fully deliver their part of the infrastructure is perhaps one of the more serious. Most of the criticism, in this writer’s view, are signs of intelligent vigilance and the obvious need to fine-tune the parts of a very large and ambitious national project. Given the rapid pace of technological innovation and the constantly evolving international standards of ICT management, it makes sense for the MDC to look for new management. Singapore has often done that in its various national endeavors, and this has kept its leadership well positioned to deal with the high level of competition in Southeast Asia.

There is, however, another source of serious criticism that concerns e-government. But first I turn to the “Flagship Applications” which were to be developed and rolled out in Phase 2 of the MSC project.

Flagship Applications

The original concept of the MSC included the idea of “flagship applications” which were intended to provide some kind of “content” that would provide inducement to use Malaysia’s new Internet infrastructure. The original design of the MSC called for the creation of 6 flagship applications, though the list eventually got expanded to 8—the eighth just now appearing and which is designed to enhance “technopreneurship.” However there seems to be some re-evaluation going on. In September of this year, the MDC web page for the Flagships listed seven (7) flagships, and the eighth, for technopreneurship, had just been announced. However, in November, the Web page reverted to the six (6) applications, divided into two groups, “multimedia development” and “multimedia environment” applications. The first group includes:

- Electronic government
- A Multi-purpose card
- Smart Schools
- Telemedicine

The second cluster of “multimedia environment” applications include:

- An R&D cluster
- Borderless Marketing (<www.msc.com.my/mdc/flagships>)

The “Worldwide Manufacturing Web” had been dropped from the list.

The first of these flagship applications, the e-government application, is actually a combination of several specialized pieces of software:

- A Project Monitoring System (PMS).
- A Human Resource Management Information System (HRIMS).
- A Generic Office Environment (GOE), Groupware.
- An Electronic Procurement (EP) system that would automate the process of procuring goods and services between buyers and government offices.
- An Electronic Delivery Services application.

(This is an alternate method for transactions and interactions between the public and government via electronic delivery channels of Wireless Application Protocol [WAP].)

There is also a sixth part here, a generic electronic labor exchange (ELX) for tracking workers. However, a knowledge workers exchange (KWX) has been up and running for several years already.

Each of these applications is in a different stage of development and readiness for rolling out. Some parts of the e-government application have been at least pilot-tested, but none has been fully rolled out. The so-called “Smart Card” (“MYKAD”) was just being released in August of 2001 in the Klang valley (the area stretching from KL to port Klang) and 2 million people are expected to have it by the end of the year. In principle, it will be a national ID card, a driver’s license, a healthcare info card, and a bank transfer card, all secured by the owner’s thumb print. When the Smart Card was conceived, it was probably a “World’s first” idea.

The Smart Schools project intends to make Internet training and facilities more available to the general population. Another part of that project utilizes a bus fully equipped with computer equipment that can accommodate about a dozen students. It is driven around the country to provide temporary access to computers at local schools.

The Telemedicine application is being designed to help manage and deliver healthcare on site and over the Web and is being developed in conjunction with a new very high-tech new medical center.

The R&D Cluster application strives to ensure that the MSC is an attractive location for companies to develop next generation multimedia technologies and innovations. In addition, the R&D Cluster is intended to assist the improvement of

Malaysia's human resource development, provide a test-bed for experimenting with innovations, promote indigenous technology and encourage technology transfer to Malaysia.

The e-Business (or Borderless Economy) application seems to be only in the very early stages of its development. The developers of it hope to create and shape an Electronic Business environment that would be competitive with the major economic powers. This latter cluster is thought by the MDC to have an enormous potential market that could be one of the driving forces for future economic growth in Malaysia.

Lastly, there is the technopreneurship application. Whether this ought to be run and managed by the MDC when the MTDC (the Malaysian Technology Development Corporation) has already had nearly 10 years of experience with high tech startups is another question. All would agree, however, that there is need for such a support and training center for MSC-related firms. And finally, the “Worldwide Web manufacturing application,” which appears to have been shelved, aspires to make Internet-based technologies located in Malaysia accessible anywhere in the world to carry out manufacturing processes.

E-Government ?

I turn now to the question of implementing e-government. Here the idea was that Web-based government would revolutionize the nature of government, making services more available to citizens, and hopefully, make government more democratic.

In recent years governments around the world have moved toward using the Web to provide various governmental service. In the early part of 2001, a study was done by the international ICT consulting firm called Accenture (formerly Anderson Consulting). It carried out a study of 22 countries that were compared in terms of the actual delivery of government services via the Web. They investigated both the range of services provided by the governments and the degree to which various governments had improved their delivery of Web-based services over time. This comparison served as a basis for estimating the “Web maturity” of governments as they improved their Web-based delivery of services. The researchers also noted that no governments around the world had reached the maturity of Web-based service delivery found in private enterprise. www.accenture.com/xd/xd.asp?it=enWeb&xd=industries/government/gove_method.xml).

The results of the Accenture study yielded a typology of four groups of countries: Innovative Leaders, Visionary Followers, Steady Achievers, and Platform Builders (see Figure 3). It is in the latter category that the Accenture team placed Malaysia, and I think correctly. For its approach to the Flagship Applications was indeed to start “from scratch.” Instead of taking some available programs “off the

shelf’ and modifying them to fit Malaysia’s needs, it started from ground zero and worked up. It is too soon tell whether or not this approach will pay off, though its seems unlikely on the face of it. As a sort of “work-fare”—giving Malaysian ICT workers a real job to do and paying them while they were training to create something entirely new—it might be a feasible state policy, but it is unclear whether or not that was the best way to proceed. However, several of the parts of the new software design were contracted out to established software companies.

The researchers attempted to determine whether or not citizens could do such things as pay their taxes, get a driver’s license or apply for a passport online. As noted, they compared each country’s situation in 2001 with what it was in 2000 to determine how much progress had been made with regard to e-government delivery.

Before turning to those results, I should point out that Malaysia was the only Muslim country that made it into the sample, and one presumes that is because Malaysia has indeed embarked upon a real project of creating electronic government.

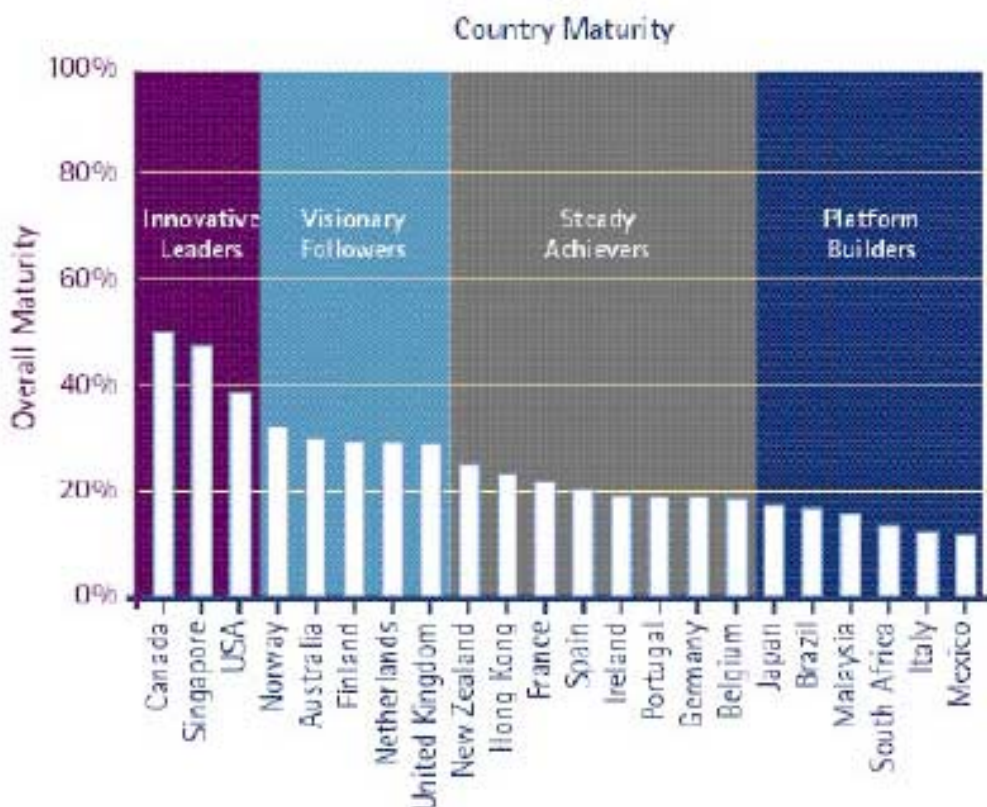


Figure 2. Estimates and Rankings of e-Government Maturity by Country.

This was the central task of Phase 2 of the MSC project, that is, to develop various flagship applications that would give people a reason to use the MSC, and thus serve as a drawing card for others outside Malaysia to locate their businesses there and to use the facilities of the MSC.

At the time of the study, the MSC’s flagship applications designed to provide e-government were only in developmental stages—most of them far from ready to be rolled out or pilot tested. Consequently, Malaysia’s ranking on the scale places its delivery of e-government toward the bottom, among the “platform builders,” but yet in the same group as Japan. Given Japan’s image as a successful high-tech developer, this might be seen as a considerable achievement for Malaysia, though it needs to be recognized that Japan is a laggard with regard to Internet development (see Nakayama – [this volume?]).⁷

That raises the question of how well Malaysia’s MSC will complete in the southeast Asian region. Looking at Table 4, one can see that Malaysia’s Internet preparedness places it somewhere in the middle, below Singapore, South Korea and Hong Kong, but above Thailand, Indonesia and the Philippines. These simple measures

Table 4. Internet Hosts and Computers in Southeast Asia by Country

	Hosts/10,000--'Jan 2000	Computers/1000 pop. 1998
Singapore	452	458
Hong Kong	162.82	254.2
Korea	60	156.8
Malaysia	25.43	58.8
Thailand	6.46	21.6
Philippines	1.58	15.1
Indonesia	1	8.2
China	0.57	8.9

Source: World Bank, World Development Report 2001.

⁷ A reporter for The Edge reported that Malaysia ranked in the top ten percent “of similar initiatives in the world.” (Jayasaeelan 2001).

of computer ownership and Internet connectedness tell us very little about the underlying infrastructure and the complicated set of resources that have to be marshaled to be successful in this ICT world of the information age. If there is truly an incipient economic transformation going on that entails a major shift from a “production economy” to a “knowledge economy,” then a far broader range of assets and human resources have to be considered. Remarkably, the Malaysian leadership has thought deeply about these issues and their resulting strategies merit additional attention. This is subject of the “K-economy.”

The K-Economy

This is actually at the heart of the whole project. It is the belief that the modern global economy is shifting toward a knowledge-based economy. This vision incorporates the leading themes of sociologists (Bell, 1976; Castells, 1996) and other social scientists who have pointed to the rise of the “network society,” the increasingly rapid flow of information around the world, the revolutionary changes in ICT, and the rapidly expanding commodification of ideas as economic products. Towards that end the architects of the MSC created a “National Information Technology Agenda” (NITA) to promote the knowledge economy. The latter idea was a mainstream endeavor from the beginning of the MSC vision. It appears, for example, in all of Dr. Tengku Azzman’s early papers promoting the MSC, and subsequently it got institutional. This was accomplished first by the establishment of a National Information Technology Council (NITC, in 1993) and then later the NITA. That group, the NITC, especially the staff at MIMOS, went on to spell out the practical and policy-focused implications of this new IT agenda. It was called the “Integrated Platform for Transformation into the E-World” (<www.nitc.org.my/resources/integratedplatform.html>). The MIMOS people took the idea of the emerging knowledge economy seriously and spelled out five (5) domains of social, economic, and political life that would become dominated by electronic technology, and hence could be called “e-worlds.” These include the e-economy, e-public service, e-community, e-learning, and e-sovereignty.” (<www.nitc.org.my/resources/integratedplatform.html>)



THRUSTS	VISION	KEY-FOCUS
E-Economy	All sectors of the Malaysian economy creating value and wealth through successful participation in the emerging knowledge-driven global economy	Knowledge-driven economy
E-Public Services	The Public, Private and Community Sectors providing people-oriented, customer-focused services electronically	Delivery mode of public goods and services
E-Community	Networks of Communities dynamically participating in the process of governance to enhance the quality of life of Malaysians	Participatory and inclusive governance processes for quality of life
E-Learning	Formal and informal networks providing the opportunity and cultivating an ethos of life-long learning for individual, organisational, institutional and societal advancement	A life-long learning culture
E-Sovereignty	Citizens and institutions focussed on enhancing national identity, integrity and societal stability in the face of borderless challenges to our sovereignty	Resilient National Identity

As one can see from Figure 3, the Malaysian leadership has devoted a considerable effort to understanding the ubiquitous "k-economy." The staff at the National Information Technology Council" (NITC) held seminars and commissioned a variety of papers to spell out the practical economic significance of the new economy. They also explored visionary science and technology writers—such as Michio Kaku (1997). He identifies ICT, biotechnology, and quantum physics as the three

Figure 3. The Five e-Worlds

of the K-economy. (Source: NITC)

revolutionary sciences that will both transform our understanding of biological and natural processes and give us the ability to control and manipulate them.

In a series of related papers, the MIMOS/NITC staff attempted to work out in detail the presumed transition from a “p-economy” (production economy) to a “k-economy” (knowledge-economy) (NITC/MIMOS 1999a,b,c, 2000). The assumption is that ICT, quantum physics, and biotechnology are now going through major transformations, and will transform both the nature of work and the types of products that will be produced. According to this line of thinking, a major transformation of modern economies is to be expected as these scientific and technological revolutions mature and make their way through the production cycle.

As Figure 3 illustrates, the NITC agenda calls for a "migration" of Malaysian workers from the current state of development into five new e-worlds. It is recognized that in each sphere there is a new set of skills needed that Malaysian workers must

acquire (the “knowledge imperative”). Toward that end the NITC and other key actors have set up a committee, the “Strategic Thrusts Implementation Committee” (STIC) that is charged with implementing the NITC Strategic Agenda, the integrated platform for transformation into the e-

World.<www.nitc.org.my/resources/integratedplatform.html>.

Specific individuals and agencies have been appointed to support and monitor progress in each area.

Whatever the criticisms of the MSC-- and they are mostly lack of speedy execution-- it should be said that each step in the process has been carefully thought out by the Malaysian technocratic elite who advise the government. The Malaysian public is generally not aware of any of the background details that have led up to the development of the MSC. In Malaysia, the MSC is seen as Prime Minister Mahathir’s brain-child, when of course it is the product of months and years of committee meetings and intellectual debates involving experts from all over the world, as well as key movers within Malaysia’s own technical elite. Nevertheless, Malaysia’s leadership here in connection with its efforts to think through the steps necessary to transition to the k-economy have been recognized internationally. They have served as consultants to the technical elite of a variety of Middle Eastern countries and most recently, MIMOS has been named the Secretariat of the Global Knowledge Partnership.⁸ The efforts of the National Information Technology Council, however, are only the tip of the iceberg in terms of Malaysia’s national drive to transition to the k-economy and to create an “ecology” of creativity and innovation in the country.

National Innovation System

Malaysia’s efforts to harness the economic and social benefits of advancing science and technology (S&T) go back to the mid 1980’s, and to the 5th Malaysia Plan, 1986-1990. This planning was underway even before the Vision 2020 statement (to become a fully developed country by 2020) was embraced by Prime Minister Mahathir in 1991. Starting with the budget of the 5th Malaysia Plan (1986), policy planners realized that “the development of science and technology (S&T) is essential for Malaysia’s overall socio-economic advancement” (Malaysia 1991:187). They proceeded to put in place the rudiments of a national innovation system, more than RM\$400 million was dedicated to S&T research and development (an amount that was over and above

⁸ This is an international partnership designed to aid developing countries by creating a data bank and network of people who are engaged in all the issues associated with developing knowledge-based societies throughout the world.

<gkaims.globalknowledge.org/index.cfm>

institutional operating costs). That funding has been significantly increased in each subsequent budget, reaching RM\$1.6 billion for the period 2001-2005, with an additional RM\$2.8 billion (about US\$737 million) for S&T infrastructure development (Malaysia 2001: 360). In addition, in 1987, a program of “intensified research in priority areas” (IRPA) was put in place in order to direct research and development into commercialization and other priority areas. Malaysian policy makers are aware, however, that this amount is still below OECD levels of investment in S&T.

The concept of a national innovation system has been defined as the complex set of national agents, actors and institutions that enable and promote economic innovation.⁹

Widespread and serious attention to national innovation systems only began to be evident among academics in the late 1980’s, so it is impressive that Malaysia’s political elite have focussed attention on this aspect of economic development, even as early as 1986.

In the summer of 2001 the Malaysian Academy of Sciences produced an advisory report on the state of national science and technology policy which included a chapter titled, “The National Innovation System: The Driver for Change,”¹⁰ and listed such components as Financial Infrastructure, R&D Facilities, Technology Acquisition System, Human Resource Development, and a Public Awareness of Science program. However, even prior to that the former Science Adviser to the Prime Minister, Dr Omar (who was also the President of the Malaysian Academy of Sciences in 2001) produced two policy reports outlining the accomplishments of the government in developing a national innovation system, and laying out future steps to be taken to flesh out the system.

⁹ For the general literature on national innovation systems (NIS), see among others, Freeman (1995), Nelson (1993), Lundvall (1988, 1999), and Archibugi (1999). For references to Malaysia’s NIS, see Felker and Jomo (1999). For the official view of Malaysia’s national innovation system, I relied on Omar (1, 2).

¹⁰ This document is intended only for internal use and is only advisory; Akademi Sains Malaysia, Consultancy Report from Academy of Sciences Malaysia to the Ministry of Science, Technology and the Environment, Review of National Science and Technology Policy Final Report (2001).

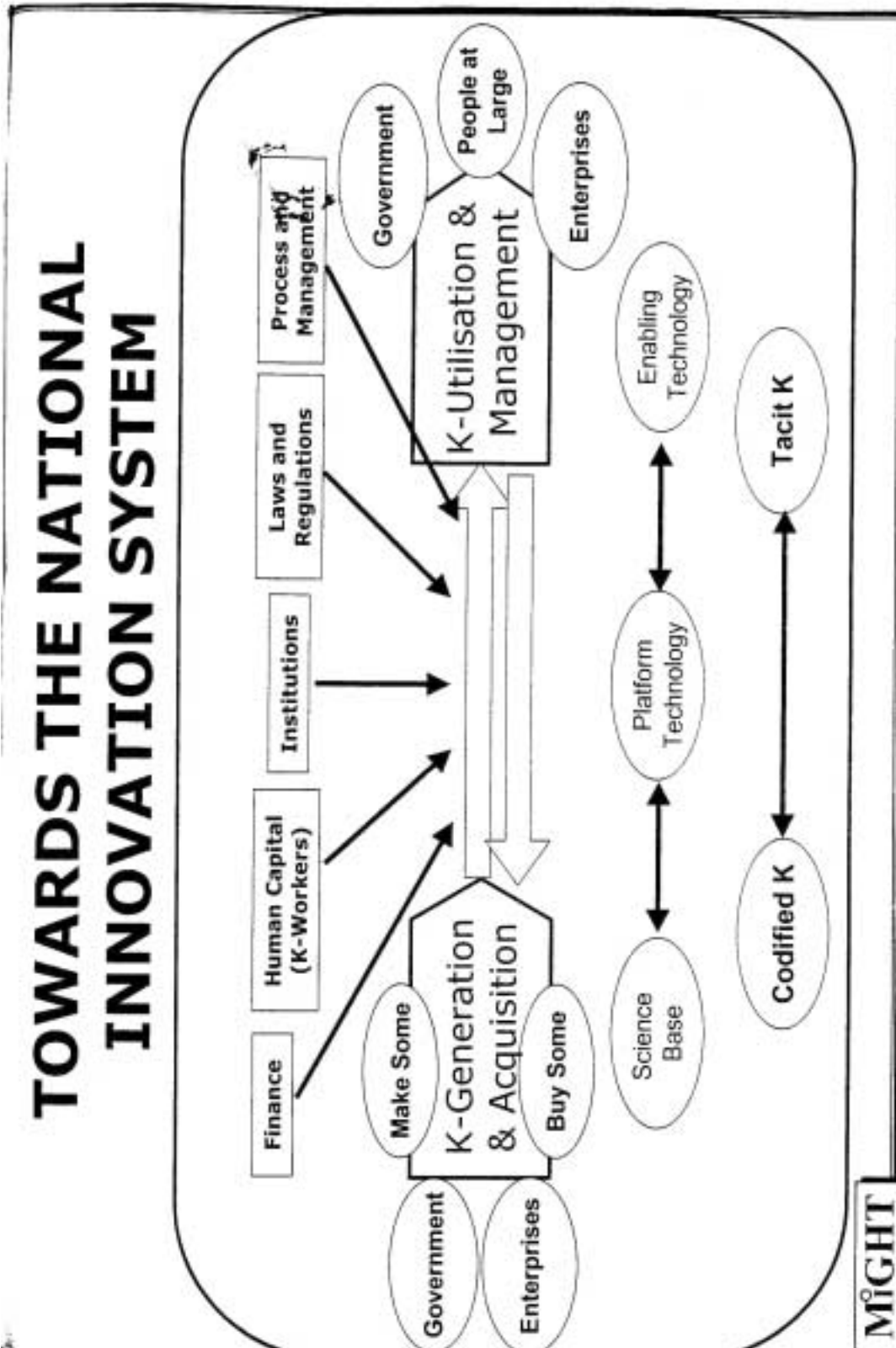


Figure 4. Outline of the Components of Malaysia's National Innovation system.

Source : Dr Omar (1)

As can be seen in Figure 4., the policy envisions both “buying” and “making” various strategic technologies that can be turned into commercialized products. The chart also indicates that there is a necessity to develop a sequence of intermediate components that lead from knowledge creation through institutional incubation, financial support, enabling laws and legislation, commercial processing and management to the packaging and production of the final product. When the initial funding to potential R&D scientists and engineers was granted in the 1980’s, none of the intermediate structures and institutions were place, except perhaps, university research facilities.

There are a number of additional components of this fledgling system that need to be carefully examined, but for present purposes this sketchy overview should suffice. These policies and their implementation are at the center of the Malaysian national innovation system that includes not only this essential governmental planning and institution-building, but universities (both public and private), private industry, technology parks, “incubators,” various components of infrastructure, and above all at this juncture, the MSC. The broader point is that the Malaysian leaders are not stuck in failed modernization and that Malaysia stands out as a successfully modernizing Muslim country that generally has generally embraced modern science and technology, with all their ambiguous offshoots. It stands in marked contrast to many Middle East and North Africa countries are having considerable difficulty, not only with Internet development, but coping with and adjusting to globalization (see Henry and Springborg 2001).

Discussion and Conclusion

Malaysia embarked upon a bold national project of Internet development in the early 1990’s. The blueprint for the development of the MSC has been laid out with considerable care. The basic infrastructure has been put in place, two new “cyber” cities (Cyberjaya and Putrajaya) have been established, and government functionaries have relocated to the new headquarters in Putrajaya. Five hundred eighty-five (585) MSC-status companies have located in Cyberjaya, and Malaysians have been transitioning to the Web with reasonable alacrity. The path to the knowledge economy has been surveyed and the steps necessary have been identified. Enabling governmental structures have also been put in place and major steps have been taken to establish a viable national innovation system.

It is entirely appropriate that a national innovation system be the object of governmental design and policy making, above all in a developing country. It is also true that in developing countries such large enterprises as Internet development (e.g. the MSC) have to be undertaken by the government rather than the private sector.

On the legal front, new “cyber laws” have been enacted and others adjusted to allow and encourage the emergence of the new “e-worlds,” though this is an unending process. Part of it entails allowing the admittance of foreign workers and foreign capital; part requires the fashioning of new laws to govern Internet activities, “property” rights, and appropriate Web conduct; and still another task requires grappling with the nature and consequences of encryption in a variety of Web contexts.

A new "multi-media university" has been built and is fully functional (on two campuses with up to 8,000 students); a variety of venture capital funds have been created (both private and governmental) to aid aspiring entrepreneurs, along with other grant schemes designed to encourage ICT entrepreneurs. In addition, multiple locations have been chosen where "incubators" have been established to house and support ICT developers and technopreneurs, not just in Cyberjaya, but in other locations as well. Plans are now underway to create a whole network of such incubator clusters (Computimes August 27, 2001, p.4).

Likewise, several technology parks have been constructed, some with real research capacity while others are hopeful business ventures.¹¹ All of these efforts suggest that the Malaysian leadership is on the right track. At least in principle, it seems reasonable to assume that the MSC-- the Malaysian Internet-- in its enabling function, could serve as a new “engine of economic growth.” Wisely used it also has the potential to serve as the integrating linchpin of a national innovation system that would coordinate the salient elements of such a system.

Internally, however, there has been a debate about how large the k-economy will be, and whether or not the MSC and ICT are the vehicles for growing the k-economy, or whether ICT is the k-economy itself. This is a natural question, and no doubt others around the world are trying to work out this theoretical and conceptual puzzle. It is essential to recognize, however, that the MSC is only one piece in the national innovation system, and that high level research (“world class” scientific research) is necessary in certain fields in order for Malaysia to grow into a technologically self-sufficient economy and country.

On this question the Prime Minister has seemingly given the official view. While he affirms that it is necessary to have a “paradigm shift” from the production-driven economy to the knowledge-driven economy, “the basic structure of the Malaysian economy will not be fundamentally altered in the short to medium term,”

¹¹ For those related to the Malaysian Technology Development Corporation see <www.mtmdc.com.my/tc/ssp.html> For the “relaunch” of the Selangor1 Science Park, see Netv@lue2.0, September 24, 2001, p. 2f.

and the shift to the k-economy “does not mean the abandonment of our industrial backbone, which today contributes more than 37 percent of our GDP, which provides 30 percent of all jobs” (spoken on 8 March 2000, as reported in Dr Omar 1:[10])

When it comes down to the actual configuration of government, private industry, universities, research parks, incubators and the MSC, there will be ample room for debate. Some commentators may doubt that the multimedia super corridor will itself be the location of “world-class” high tech research. Recently the Intel Corporation has said that it intends to establish a research facility in Cyberjaya, the geographic heart of the MSC (New Straits Times August 3, 2001, p. 21). At the same time, it is to be recognized that the fledgling Cyberjaya is only in its infancy and only slowly will it produce both indigenous and international ICT firms with world-class research capabilities. But it appears to have made a very good start, given the 585 firms now located there. Already Lucent Technology in collaboration with MMU faculty have filed multiple patent applications.¹²

Expecting the MSC to be responsible for generating all high level scientific research in Malaysia, however, is misguided. The country, after all, has more than 20 colleges and universities and it should be their responsibility, though not exclusively, to undertake such research. It is difficult to imagine a fully developed modern economy without a robust Internet infrastructure, but it is mistaken to think that the k-economy is totally absorbed by the Internet, or that all major research should be conducted via the Web, or even mostly in a single “cyber” city (or “Silicon Valley”) such as Cyberjaya. In the United States Silicon Valley is only one of many other (at least four) ICT centers, and still more ICT research is conducted by the nation’s universities. Likewise in Malaysia, the island of Penang is an independent source of first rate ICT research and development.

When the MSC is viewed as a large scale national project designed to give Malaysia a new and efficient access point to the global Internet work, as well as a “platform” for economic growth in the context of the highly competitive region of Southeast Asia, it deserves fairly high marks. As pointed out earlier, if we make the comparison between Malaysia and the larger Muslim world, then Malaysia has indeed done well and is ahead of the pack. On the other hand, if the comparison is with other Southeast Asian countries (Table 4), then it falls in the middle of the pack, below Singapore and Hong Kong, but above Thailand, the Philippines, Indonesia, and probably Viet Nam. At the same time it has been noted that Malaysia’s Internet project has been presented in excessively boastful terms, talking about its “gift to the world”

¹² Interview with Sumitra at MDC in Cyberjaya, August 15, 2001.

and its ambitions to be a major regional hub. Such hubris unduly attracts criticism. Malaysia should devote all its efforts to making Malaysia as efficient as possible. Visitors to Malaysia get the impression that there is a great deal of inefficiency, that it seems to take three people, especially in governmental bureaucracies, to do anything. Malaysian banks are well known for their inefficiency, with plans underway to eliminate thousand of redundant workers (estimates go as high as 30,000) via outsourcing (New Straits Times, August 24, 2001). It is on these issues that Malaysia should focus attention. It is to be hoped that the MSC and its new flagship applications will have a real impact on this aspect of Malaysian daily life. At the same time, Malaysian ambitions to do at least some world class scientific research and to be a leader, “not just a follower” in some fields, is commendable.

Malaysia deserves considerable praise for its steady and impressive economic growth over the last two and half decades, and for the general civility of its public life—notwithstanding the Anwar affair. Whatever one’s feelings about the justice of that case, it is a feather in Malaysia’s cap that it did not abandon the openness of the Internet during the crisis, and that precedent will surely be an asset in future political contests. Likewise, during the aftermath of the attacks on the World Trade Center in New York, Malaysians were both very sympathetic to Americans (though in disagreement regarding the Afghan war), and very civil in the minor demonstrations that some carried out in opposition to the International Coalition’s bombings in Afghanistan. Notwithstanding the present national skepticism regarding the MSC, the MSC has been reasonably well designed and launched. But it is, in the final analysis, only a part of the larger structure of national innovation systems that function equally as “engines of economic growth.” Whether Malaysia’s NIS is more or less adequate or developed than that of other Asian countries is an important research question.

Acknowledgments

The research for this paper was conducted while I was a Visiting Professor in the Department of Science and Technology Studies at the University of Malaya, July through October, 2001. Early versions of the paper were also presented at the University. I want to thank Dr. Hazim Shah and other members of the Department for their hospitality. I owe special thanks to Chai Chong Lee and Ng Boon Kwee for their assistance, especially for discussions of Malaysia’s national innovation system, and for logistical support. Thanks also to Dr K. Thiruchelvam of MASTIC.

References

Accenture

- 2001 Rhetoric versus Reality—Closing the Gap. March 30, 2001. www.accenture.com/xd/xd.asp?it=enWeb&xd=industries/government/gove_method.xml

Archibugi, Daniele , Jeremy Howells and Jonathan Michie, eds.

- 1999 Innovation policy in a global economy. Cambridge University Press.

Freeman, Charles.

- 1997 “The ‘National System of Innovation’ in Historical Perspective.” Pp. 24-49 in Technology, Globalisation and Economic Performance, eds. D. Archibugi and Michie. London: Cambridge University Press.

Castells, Manuel.

- 1996 The Rise of the Networked Society. New York: Oxford University Press, 3 vols.

Bell, Daniel

- 1976 The Post-Industrial Society. New York: Basic Books.

Felker, Greg and K. S. Jomo eds.

- 1999 Technology, Competition and the State. Malaysia’s Industrial Technology Policy. New York: Routledge.

Freeman, Chris.

- 1995 “The ‘National system of Innovation’ in Historical Perspective. Cambridge Journal of Economics 19: 5-24.

Henry, Clement M. and Robert Springborg

- 2001 Globalization and the Politics of Development in the Middle East. New York: Cambridge University Press.

Huff, Toby E.

2001. “Globalization and the Internet: Comparing the Middle Eastern and Malaysian Experiences,” The Middle East Journal 55 #3 (summer) 2001: 439-458.

Jayaseelan, Risen

- 2001 “Lessons in e-Government.” The Edge/ Netv@lue2.0: 2f.

John, K. J.

2001. “The Malaysian GEM Story: Leapfrogging to a K-Society.” 7 May: 16. <www.nitc.org.my/resources/papers.html>

Kaku, Michio.

1997 Visions: How Science Will Revolutionize the 21st Century. New York: Anchor Books.

Lundvall, B. A.

1988. National Innovation Systems. London: Pinter

1999 "Technology Policy in the Learning Economy," pp. 19-34 in Innovation Policy in a Global Economy, eds. D. Archibugi, J. Howells and J. Michie. London: Cambridge University Press.

Mahathir, Mohammad.

1998 Mahathir Mohammad on the Multimedia Super Corridor. Subang Jaya, Malaysia: Pelanduk Publications.

Malaysia

1991 Sixth Malaysian Plan, 1991-1995.

2001 Eighth Malaysia Plan, 2001-2005.

Nelson, Richard R.. ed.

1993. National Innovation Systems. A Comparative Analysis. New York: Oxford.

Nelson, Richard and Nathan Rosenberg

1993 "Technical Innovation and National Systems." In National Innovation Systems. A Comparative Analysis: 3--21.

NITC/MIMOS

1999a "The K-Economy and Its Implications". December 17, 1999. (Dr Tengku Azzman). Mimos Berhard: Technology Park, Malaysia.

1999b "K-Economy Policy Paper 1." Mimos Berhard: Technology Park, Malaysia, 35pp.

1999c "K-Economy advanced Paper". Mimos Berhard, Technology Park, Malaysia, 48 pp

2000 Access, Empowerment and Governance in the Information Age. Building Knowledge Societies Series, vol. 1. Mimos Berhard: Technology Park, Malaysia.

Omar, Dr Abdul Rahman

nd-1 "Competitiveness in the Knowledge Driven Economy. A Briefing on the Proposal for a Policy Framework." www.might.org.my

nd-2 "Technology Management Best Practice in Malaysia- Imperatives for the K-economy." Akademi Sains Malaysia.

World Bank.

2001 World Development Report 2000/2001. New York: Oxford University Press.

Toby E. Huff
Department of Sociology & Anthropology
University of Massachusetts-Dartmouth
USA