CHAPTER 2
LITERATURE REVIEW

2.0 INTRODUCTION

Information and Communications Technology or ICT as the main driver of enhanced efficiency, effectiveness and productivity, several initiatives to encourage the development of ICT-based projects have been carried out. The focus was on the implementation of the e-Government flagship.

"Government computerization programs today, have achieved significant levels of automation. However, the objectives of the e-Government go far beyond the mere computerization of government. Simply introducing computers to existing government structures and processes will not achieve the objectives described above. Successfully realizing the vision of e-Government means fundamentally changing how the government operates and implies a new set of responsibilities for civil servants, businesses, and the people. Offering new services, information, service channels and improved service levels will call for changes in mindset and the development of new skills. As such, a successful implementation of e-Government can bring about fundamental changes in the fabric of society and be an important contributor in Malaysia's overall effort in becoming a fully-developed nation". (Dr. Mahathir Mohammad, 1998).

As mentioned above, e-Government plays an important role in promoting ICT and changes in public organization operations, structures, and employees/people mindset and also their new responsibilities, services and skills.

2.1 DEFINITION AND CONCEPT OF ICT IN PUBLIC SECTOR

Basically, IT refers to any processes, practices, or systems that facilitate processing and transporting information (Dessler, 1998) and ICT refers to the inclusion of communications technologies (i.e. the improvement of how knowledge transferred and coordinated) in the information revolution (Seneviratne, 1999). Thus, generally, when we discuss ICT, we are not merely discussing hardware (includes all physical devices and materials used in information processing i.e. machine such as computers and media such as floppy disc) and software (includes all sets of information processing instructions i.e. programs such as operating system programs and procedures such as data entry procedures), but we are also discussing communications equipment (Seneviratne, 1999).

According to Quibria and Tschang (2001), ICT can be categorized into three components: (1) computerization (2) communication and (3) internet. Computerization is a significant technology at the end of 20th century. "At the most general level, computers augment and improve our human and organizational thinking capabilities. In this,
computers have many different uses and have affected many spheres of economic activity like enterprise resource planning (ERP) software and computer-aided design and manufacturing (CAD/CAM). They added, communication is classified into two levels, which are one-way and two-way communications. One-way communication includes media broadcasting such as radio and television. Whereas two-way communication comprising of telephone, telegraph, pager and internet that is connected through telephone network and personal computers (PCs).

And internet makes communication and computerization (including World Wide Web) provides a new medium of communication method, which allows activity such as e-mail and chatting. Through the World Wide Web, individual can search and access information faster and comfortable.

On the other hand, public sector is defined as ‘engaged in providing services whose scope and variety are determined by the decision of government bodies i.e. in democracy, instead of by the direct wishes of the consumers (Hicks, 1958 cited from Hughes, 1994). The key issue that could be captured from this definition is that public sector is the result of public, political decision-making rather than involving market process.

Therefore, from the above definition of ICT and public sector, it could be understood that, the adoption of ICT in Malaysian Public Sector refers to the process of using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate and create information to enhance the efficiency and effectiveness of the organizations performance.
2.2 ICT ADOPTION

The Malaysian government has speed up the entry of Malaysia into the Information Age by launching Multimedia Super Corridor (MSC) in 1996. Prior to this MSC project, in fact, since early 1990s, the Malaysian government has provided strong support for the IT development in the public service. This is reflected by the number of approvals given to government agencies to acquire new computer systems and to upgrade existing facilities (Ahmad Sarji, 1992). It is expected that the ICT adoption would enhance the IT vision i.e. to provide opportunity for all components of society to communicate and transact their operations in more effective and efficient manner (Muhammad Rais, 1999).

In order to materialize ICT as a major contributory factor towards achieving greater productivity of government operations and improving the quality of services to the public, a comprehensive implementation mechanism need to be designed (Anuar et. al., 1999). One of mechanisms is the introduction of MSC flagship. The Electronic Government (e-Government) is one of the MSC flagships. The e-Government, in the Malaysia context refers to ‘A multimedia networked paperless administration linking government agencies within Putrajaya with government centers around the country to facilitate a collaborative government environment and efficient services to business and citizens’. It aims to form the foundation of the Government’s information infrastructure to provide more efficient, effective services and operations. Thus, it is expected that e-Government would be able to offer the citizens and business more effective access to service delivery; higher quality services; greater impact through better processes and
systems; better and more efficient communication; more transparent and faster decision making; and more empowered people (Muhammad Rais, 1999).

2.3 CONCEPT OF ELECTRONIC GOVERNMENT(e-Government)

The e-Government initiative, a Multimedia Super Corridor (MSC) flagship application, envisions a Civil Service with the capacity to harness the potential of information technology and multimedia towards greater productivity and service excellence. The implementation of the e-Government projects will not only improve the efficiency of the internal processes of agencies but also impact the delivery and the quality of services to customers. With e-Government, services can be delivered on-line through high-speed multiple delivery channels and transactions will be paperless.

The concept of e-Government is one of an inter-networked government. It links new technology with legacy systems internally and in turn links such government information infrastructure externally with everything digital. Inter-networked government can overcome the barriers of time and distance and give people information and services when and where they want them. Governments can use electronic systems to deliver better quality services to the public more quickly, cost effectively and conveniently. The result will be programs designed primarily around the needs of citizens, rather than just old structures or for the convenience of public officials (Tapscott, 1996).

MAMPU, as the lead agency for e-Government, are responsible for the overall planning and coordination of e-Government projects. In the first wave of implementation, five pilot projects are being implemented:
i. Electronic Services

ii. Electronic Procurement (EP)

iii. Prime Minister’s Office-Generic Office Environment (GOE)

iv. Human Resource Management Information System (HRMIS)

v. Project Monitoring System (PMS)

2.4 VISION OF ELECTRONIC GOVERNMENT (e-Government)

The vision of e-Government is a vision for people in Government, business and citizenry working for the benefit of Malaysia and all its society. The vision calls for both reinventing the Government by using multimedia/information technology to dramatically improve productivity and creating a collaborative environment that fosters an ongoing development of Malaysia’s multimedia industry. The vision focuses on effectively and efficiently delivering services from the Government to the citizens thereby enabling Government to become more receptive to the needs of its citizens.

2.5 CONCEPT OF ELECTRONIC GOVERNMENT – ACCOUNTANT GENERAL (EG-AG)

Five of the e-Government application pioneer projects have been identified to be developed. This includes Generic Office System (GOE), e-Procurement (EP), Human Resource Management Information System (HRMIS), Project Monitoring System (PMS) and e-Services.
All e-Government applications, except GOE will involve finance and accounting. With that, the application involve must be link to National Accountant Department (JAN) legacy system. To simplify interface process, EG-AG project exists. Every Responsible Center (PTJ) involve in the project will be supplied with vod book system that is known as eSPKB. This eSPKB system is link to JAN legacy system and after that to the Bank for payment electronically (EFT).

**Concept of e-SPKB**

E-SPKB is actually Electronic Budgeting Control and Planning System. It simplifies the integration between e-Government applications with JANM legacy system. Besides, it makes the information and data flow smoothly in the organization through the electronic communication. It leads to increase efficiency and employees’ performance through the effective use of ICT benefits.

The system is introduced parallel with the government mission to implement e-Government application. Main function of eSPKB is to quicker the process of payment and accounting.

### 2.6 PERSPECTIVES AND POSSIBILITIES OF E-GOVERNMENT

Lee Kwok Cheong and James SL Yong (2002), said that “e-Government has been high on the list of priorities for most nations the world over”. Here, we try to reflect on what e-Government means or can mean in different contexts and from different perspectives.
They believed there are eight perspectives that are simple, easily recognizable objects that can carry deeper meanings when applied to the field of e-Government. The eight perspectives of e-Government were to improve productivity by reducing the overall costs of government operations and services, while preserving the quality, efficiency and integrity of the overall system. There is also the need to overcome irrelevant bureaucratic procedures, such as “red tape”. These are the initiatives for reengineering public administration.

In addition, the initiative can also link together different ministries, agencies and departments to form a more integrated government. Traditionally, government agencies tended to work independently and often in isolation.

E-Government can be represented by a “vehicle” that can “support” or “carry” industry sectors forward. This is an indirect way for e-Government initiatives to contribute positively to the growth of the economy, such as to nurture related local industries and the people who work there.

E-Government should not be viewed simply as technology but rather, as a wide-ranging program with the potential to transform public administration by leveraging on the creativity and innovativeness of public sector officials. Innovation is essential to sustainable competitiveness. E-Government should play the role of the flame that kindles the imagination of the public sector.

In addition to bridge digital divide between the information “haves” and “have-nots”, the aim of ICT is also to spread knowledge and bring relevant information to the rural
communities. Thus, bridging the digital divide requires both the top-down hierarchy of
the government and the bottom-up involvement of its citizens.

Furthermore, good government should be transparent and e-Government can play an
essential role in revealing to the public the policies their government adopt or the actions
taken.

Thus, e-Government has the potential of transforming the public sector’s relationship
with citizens, businesses, and as other societal organizations. E-Government services
present a new mode of communication and interaction between the government and the
people. Therefore, concerns over personal privacy do not become a barrier to the
adoption of such services by the public.

And e-Government is a “package” that includes knowledge, skills, competencies,
experiences, intellectual property, and even “modules” (applications, software, hardware,
infrastructure, etc). In this new phase, more government administrations will need to
make a strong case for directly linking e-Government solutions to national
competitiveness.
2.7 ICT AND E-GOVERNMENT

This part of discussion is merely on the ideas and perspectives on ICT and e-Government. It could be argued that from the second half of the 1970s:

“The public sector has faced a more radically changing environment than in the earlier periods, for example, by the rapid development in information and communication technologies (ICT), globalization and changes in the economic, social and political orders” (Taylor and Williams, 1991).

This is where New Public Administration (NPA) has been introduced in public sector. As what H. George Frederickson (1978) called as “The Lineage of New Public Administration”. The NPA is proceeding on new knowledge in the social sciences and focusing of those sciences on public problems.

“The first indication of a government’s maturity is the betterment of its service provision and service delivery mechanisms. The other is better inter-agency cooperation and collaboration” (Anon, 1997).

This is what the government is trying to do by adopting e-Government and hoping that it will result in better, more efficient and excellent quality of service delivery.

In IT-dominated world; public service can play an important role in the promotion of a transparent and accountable administration (Anyaoku, 1998). In contrast with Baljko, (1998) and Lyons, (1998) that in the IT revolution, there is changing relationships between government as service providers and the citizens as customers. In the era of ICT, it is as a determined thrust to improve public service, rise of information society and
growing demand for more efficient government (Henry, 1998). Similarly, it is identified that successful organizations were ‘fast, friendly and flexible’. In nature, public service is overly bureaucratic and focused more on procedures rather than delivery. Therefore, it leads to the creation of information society and knowledge economy which focuses on reengineering public service (Kanter, 1990).

Concomitant with Reinventing Government, there should be a competition in service delivery, earn more, teamwork and participation, and also prevention rather than cure (Osborne and Gaebler, 1992). E-Government is one aspect of the change agenda referred to as reinventing or modernizing government. This agenda requires that both the citizen and the service user are the focus of efforts to improve government organizations. It requires organizational and cultural transformations to reconnect to the public (Corrigan and Joyce, 2000). As such, the concern of e-Government is not only to improve the efficiency of processes using ICT.

E-Government provides a rare opportunity to reinvent government. It will redefine how government relates to citizens and to business as well as how its own components relate with one another. Through improved connectivity and communications between all parties, e-Government will facilitate the various programs designed to make Malaysia a fully developed nation (Muhammad Rais Abdul Karim and Salmah Khairuddin, 1999).

Experience has shown that routine and bureaucratic public administration leads to obstacles and paralyses initiatives of private enterprises and citizens.
According to strategic management theory's view, public agencies can and do have the option of forming alliances with other agencies to develop interconnected strategies (Heymann, 1987). "In contrast the theory of bureau shaping (Dunleavy, 1991) assumes bureaucrats shape government organizations to maximize their own utilities (e.g. by outsourcing boring work and creating a non-conflictive environment in their organizations)."

The relative utility of the theory of strategic management in government stands a good chance of being tested in practice by the implementation of strategies for Information Age Government, also known as e-Government strategies. It is difficult to access precisely how successful will be the efforts to introduce e-Government over the next five years and just how functional the strategic triad will be in making it a success.

E-Government in the UK is being implemented within newly established and still evolving strategic and performance management frameworks. This suggests it may be worth paying special attention to one element of e-Government innovation: the organizational capacity of the public sector.

Information technology innovations in the United States during the early 1990s show that most are initiated by managers and that innovators work to get staff and clients to accept the new technology, and work to get inter-organizational co-operation (Borins, 1998). Nevertheless, there might be a need to look at how strategic plans can reinforce the drive to innovate and steer the innovations to key areas of the e-Government agenda.
Communication technologies in developing countries have always regarded as links between tradition and modernity and 'movers' or 'innovators' for social change (Rogers, 1969). The communication system was both an “index and agent of change” (Lerner, 1958, 56). Moreover, there is a technological approach which shares the conviction that the development and application of technology that can resolve all the varied problems of humankind (Servaes, Jacobson and White, 1996).

According to Ms Tan Swee Hua, Director, Infocomm Development Authority of Singapore (IDA Office, Singapore, 2002); on another front, try to present information and services as user-friendly (easy to use) and to simplify the processes so that it is simple to transact online with the government. E-Government is not just putting our services online. There is also a need to focus on governance in the digital economy, which is different from governance in the traditional environment. The challenge lies in the ability to adapt or change existing policies, rules and regulations to better meet the needs of the new economy. There must also be a consideration on how we can provide better services to the public and enhance the government-citizen relationship.

According to Lenk, K and Traunmuller, R (2000), e-Government also seeks to analyze issues from the perspectives of “knowledge”, “process” and “tele-cooperation”. The “knowledge” perspective recognizes that the role of public administrators and their work are sources of knowledge in public organizations. From the “process” perspective, the utilization of ICT to enhance service delivery efficiency in public organizations can fundamentally reorganize and redesign business processes within the public
administration. The “tele-cooperation” perspective deals with the interactions involving various agencies and trading partners in a work process.

Overall, issues on ICT and e-Government bring about knowledge workers, information society, and reinventing government, transparent and accountable administration, changing relationships, knowledge economy, organizational and cultural transformations.

The Direction of E-Government Towards Government Excellence

According to Dr Chong Yoke Sin (2001), E-Government is said to have four categories of government interaction to exist and within these categories are opportunities for government to transform service delivery, in order to become an excellent government:

Government-to-Citizens (G2C): Enabling existing over-the-counter services and in some cases providing a “first-stop, one-stop” access to all online government services for the convenience of citizens;

Government-to-Business (G2B): Reducing bureaucracy and cost in licensing, regulating and approvals for businesses;

Government-to-Government (G2G): Promoting government-to-government and international relationships; G2G initiatives could be from country-to-country, international or regional groupings; and

E-Government enables government excellence by improving interactions with the citizens, businesses and government (intra-governmental and inter-governmental). Besides, government also focuses on improving service delivery and innovation by transforming existing government processes so as to function more productively.

E-Government is also about creating an integrated environment for the development of online solutions and services. Government needs to explore collaborative efforts, to share experiences in e-Government planning and implementation, and to identify areas to strengthen economic integration and enhance competitiveness. With this infrastructure, government can enable a powerful network of information, knowledge and commerce. Moreover, users of government services will benefit by greater 24 x 7 x 365 (24 hours a day, 7 days a week and 365 days a year) access to higher quality services. Success in e-Government is, therefore, only a means for government to achieve a larger end that is, serving citizens, businesses and employees, better.

The concept of e-Government is one of an inter-networked government and it is important for the government to seriously implement the application for the benefit of the country as a whole. That is a whole idea of creating the “reinventing government” and “public sector reform/NPM/NPA”.

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2.8 E-GOVERNMENT AND PUBLIC SECTOR REFORM

The traditional portrait of many governments worldwide such as massive bureaucratic machinery operating at high cost, agencies delivering inefficiently, unresponsive officials shirking accountability is gradually fading. Over the past two decades, a series of initiatives to transform government processes, "reinvent the government", create the "new public management (NPM)" has been widely discussed and selectively adopted in an attempt to make government "work better". As pointed out by B. Guy Peters (1980),

... the definition of "working better" may differ across governments, and even across components of the same government. The basic point, however, is that if government is to be able to overcome the discontent and distrust of its citizens, it must find ways to become more efficient and effective in the processes of making and implementing policy. At the same time, however, there are also pressures for government to become more responsive to the public and to be more transparent in the way in which it makes decisions.

These reforms seek to replace traditional rule-based, authority-driven processes with market-based, competition-driven tactics. The NPM or public sector reform trend was seen to be geared towards downsizing government. Different nations have chosen different paths for implementing public sector reform. In the 1990s, work by consultants Osborne and Gaebler has influenced some of the governmental policies and strategies with their proposals of principles for reinventing government - steering rather than rowing; empowering rather than serving; injecting competition into service delivery; transforming rule-driven organizations; meeting the needs of the customer, not the bureaucracy; earning rather than spending; prevention rather than cure; from hierarchy to participation and teamwork.
This is what the NPM as new administrative paradigm intentions to bring about a better and more efficient government. It is a question of whether NPM has achieved it or not. However, the lack of an enabler to achieved significant leaps needed to effect reforms. One such enabler came into the form of Information and Communications Technology (ICT). Rapid advances in computing technology and connectivity have forever changed how people live and work. The use of technology by government to enhance access to and delivery of public services to benefit citizens, business partners and employees has been labeled “Electronic Government”, or “e-Government in short.

The e-Government creates a new paradigm of public service. Although much of the attention have centered on public service delivery through the Internet, e-Government affects every aspect of a public organization. It is not just about technology, infrastructure, business processes or human resources. It is more than that combined and integrated. The integrated services require inter-agency cooperation, coordinating and collaborating between different departments and levels of government. It provides new way, reshaping workflows and innovating new processes.

Thus, ICT as an enabler for the government to use technology in introducing and implementing e-Government to provide better and more efficient service to the citizens. As discussed by Osborne and Gaebler (1992); in reinventing government, they stressed that there is a need for competition in service delivery, the needs of citizens must be met, earn rather than spend, prevent from whatever that will happen, participate more and must have teamwork. As a consequence, the researcher is agreed with the idea of
reinventing government and reforming the public sector will result in making a better government.

Besides in reforming the public sector, the transformation to information age is evitable and knowledge is important in order to have access to information.

2.9 E-GOVERNMENT AND KNOWLEDGE-BASED ECONOMY (K-ECONOMY)

The important role of knowledge in organizations has been widely accepted and documented. It is also the foundation for the productivity-driven growth strategy in the Seventh Malaysia Plan.

Peter Drucker (1996) was the first to come up with the concept of the information-based organization. In 1994, Drucker also pointed out that the importance of knowledge largely came about because of the shifts in sources of wealth creation from labor, capital and land during the industrial age to knowledge in the post industrial age. Lotus (1998), focused on organizations that utilize knowledge, enhance responsiveness to the needs of customer/citizen, increase productivity and upgrade the competency of the people who have been assigned various tasks and responsibilities.

"The old foundations of success are gone, for all of human history; the source of success has been the control of natural resources-land, gold, oil. Suddenly, the answer is "Knowledge". The world's wealthiest man, Bill Gates, owns nothing tangible-no land, no gold or oil, no factories, no industrial processes, no armies. For the first time in human history the world's wealthiest man owns only knowledge. Knowledge is the new basis for
wealth. In the future, when capitalist talked about their wealth they will be talking about their control of knowledge" (Thurow, 1999).

Therefore, knowledge in the organizations is very much needed and it is important for the public sectors nowadays to build a total awareness in providing as much knowledge as possible to the civil servants. As what is called a "Learning Organization", civil servants are required to have a continuous learning in order to equip themselves with plenty of knowledge.

Labor and capital were recognized under neo-classical economics as the twin factors of production for 200 years prior to the 1980's. "The work of economist such as Joseph Schumpeter, Robert Solow and Paul Romer, a Stanford University economist amongst others proposed the inclusion of technology and the knowledge of which it is based as an intrinsic part of the economic system. Knowledge is now accepted as one of the factors of production that drive the economy" (Romer, 1986, 1990). "More than 50% of the Gross Domestic Product (GDP) of the Organisation for Economic Cooperation and Development (OECD) economies such as the U.S., Australia, U.K. and Canada are directly linked to the creation of new knowledge, its application and distribution" (ITAG, 1999). Through knowledge, new technologies are created to facilitate economic growth.

"Knowledge creation, acquisition and exploitation are important abilities in the knowledge economy. A country's capacity to take advantage of the knowledge economy depends on how quickly it can become a learning economy. Learning economy means not only using new technologies to access global knowledge but also to communicate with other people about innovation. In the learning economy individuals, firms and
countries will be able to create wealth in proportion to the capacity to learn and share innovation”. (Foray & Lundvall, 1996)

Table 1: Migration to a K-economy

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<tr>
<th>P-Economy</th>
<th>K-Economy</th>
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<td>2. Factors of production: land, labor, capital and decreasing returns to scale.</td>
<td>2. Intellectual capital, knowledge and increasing return to scale.</td>
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<tr>
<td>3. Hierarchical organizations.</td>
<td>3. Networking and horizontal</td>
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<tr>
<td>5. Output and resources traded in the marketplace.</td>
<td>5. Output and resources traded in the market space through information-based channels.</td>
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<tr>
<td>7. Based on production work.</td>
<td>7. Based on k-work and growth of e-commerce.</td>
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In the production economy (P-Economy), markets rely on varying factors of production; time is needed to combine such factors to create wealth. Hence, it is organized in a mass form and the key driver of growth is capital and labor.
Under the neo-classical theory, there were only two factors of production: labor and capital. But today, technology and knowledge are the key factors of production. This is what we called as K-Economy and we are now an information society.

The Prime Minister of Malaysia announced on 1 November 1995 that the country has stepped into an ambitious programme to establish the Multimedia Super Corridor (MSC) aimed at creating a caring as well as digitized society by 2020. The establishment of MSC is to assist in the economic transformation of Malaysia from a production-based economy (P-Economy) to a knowledge-based economy (K-Economy). There are three phases to be followed in the development of the MSC. Under phase 1, there are seven flagship applications being introduced. The focus here is one of the seven flagships, which is Electronic Government (e-Government).

One of the flagships is e-Government, which has its headquarters in Putrajaya, the new seat and administrative capital of the government. It will be equipped with multimedia technologies to become a paperless administration centre. Putrajaya will have the office of Prime Minister and 15 other ministries and a range of other state and federal agencies. To be more responsive to the needs of its citizen, the e-Government will use extensively the electronic and multimedia channels to seek and to improve the accessibility and quality of interaction with citizens. Some important ministries and departments will also be equipped with multimedia mobile offices, video conferencing, digital archiving, shared database and digital signature facilities. Government will be acting as a 'smart buyer', procuring goods and services through online. The officials of the government would be equipped with a quick and easy method to access up-to-date information and
data. Cyberjaya, another digital city of the MSC in the west of Putrajaya will be serving the private sector. World-class local and foreign companies will execute their technological and commercial activities with the help of 'knowledge workers'.

Advances in information and communication technologies (ICT) have brought with it the ability of countries to be able to achieve quantum leaps in growth without the advantages of the endowment of natural resources. This ICT era or knowledge-based economy era serves both as an advantage and a challenge to Malaysia. It is an advantage because it enables Malaysia realizing its dream of becoming a developed nation by the year 2020; and a challenge because it involves a total structural change of the country's industrialization policies and focus that have served it well over the years. Also it needs the construction of the requisite info structure, infrastructure and human resources which are not an easy feat to attain. A good ICT infrastructure requires massive capital investments, and it is not easy to produce the requisite human resources to fuel such an economy in the short run. Yet, if Malaysia is to develop and prosper, it has no choice but to move towards a knowledge-based economy. To justify why Malaysia must move towards such an economy and how it is going to do that, let us first look at some general characteristics of this new economy (David Abdulai, 2000).

One of the important characteristics of this new knowledge-based economy is that it can be located anywhere. Operations of companies in this kind of economy can be located anywhere on the globe. With the aid of computers and telephones, satellites and other advance methods of communications, goods and services can be exchanged around the clock without the physical presence of parties. Payments can be made electronically and
in much faster fashion. However, because ICT are the pillars of this new economy, a highly educated labor force, which is also technology savvy are important for the functioning of such an economy. The skills and knowledge of the highly educated labor force then would serve as the key assets for any country, which wishes to move towards a knowledge-based economy. It has thus seen the scramble amongst countries to attract such talents to its shores.

Furthermore, because of ICT, the world has become smaller spatially and each node or knowledge –centre is connected to the other making exchange of information, ideas, and trade faster and easier. It thus makes it possible even for resource poor countries to attain high levels of growth by transiting to a knowledge-based economy.

The key driver to growth in a knowledge-based economy is no longer labor and capital, even though such factors are important to help in a country’s growth efforts; innovation and knowledge are now the key driving factors. Thus even capital, land and labor poor countries can now attain higher growth rates with knowledge and the production of innovative products. Finally, in a knowledge-based economy, markets are global not national. Hence for small open economies like Malaysia, having the whole globe as its market is advantageous. It can afford to export as many knowledge goods and services without saturating its market. These few characteristics are offered to set the stage to argue why Malaysia should move towards a knowledge-based economy.

Malaysia needs to move towards a knowledge-based economy if the country realizes its dream of becoming a developed nation by the year 2020, it must move from a production-based economy to a knowledge-based one. In addition, moving towards a
knowledge-based economy would enable Malaysia produce highly competitive goods and services for the global marketplace. Competitive goods and services would enable Malaysia penetrate markets previously unavailable to it while at the same time consolidating its market share in its traditional markets. This will enable the country to realize the increase revenues for its growth and development efforts. Furthermore, the aim of Malaysia to become a developed nation by the year 2020 if attained would mean that its current edge in producing goods and services for the global marketplace, which hinges on low wages, would be eroded. If Malaysia becomes a developed country by the year 2020; its cost levels as it pertains to the production of goods and services would approach those of developed countries. Hence, for Malaysia to be competitive, it must produce goods and services that are of comparable levels with those of developed countries. It would enable Malaysia to identify niche areas to have that competitive advantage it would need to become a developed country by the year 2020.

Lastly, one of the most important reasons why Malaysia must move towards a knowledge-based economy can be put politely as the growing economic power of China. According to reports by the Economic Intelligence Unit (EIU), “China now gets four-fifths of all foreign direct investments that come into the Southeast Asian region. The export goods of Malaysia and other Southeast Asian countries in their domestic and international markets would face stiff competition from cheaper and equal quality goods from China, especially labor intensive textiles”(The Economist, 2001). To avert such stiff challenge of which Malaysia may not have the cheap labor advantage, it must thus move into the area of the production of high-end sophisticated goods and services of which it
has the competitive advantage. Moving into the knowledge-based economy would provide such a competitive advantage.

The concept of K-economy evolves around knowledge and information as the important contributors to economic growth and development. In the K-economy the emphasis is on knowledge workers or k-workers.

**Knowledge Workers (K-workers)**

According to Peter Drucker (1996), “Knowledge workers are those whose work primarily requires the use of mental power rather than muscle power”. This is in contrast with Ahmad, Abdulai & Cheng (2001), who stated that knowledge workers are those whose most of their activities are information-based, knowledge sensitive and knowledge generating which includes the degree in which information and specialized knowledge are brought upon work and they have the following characteristics:

- Have a strong formal education
- Have learned how to learn
- Have a habit of continuing to learn throughout his or her lifetime
- Be an expert or specialist
- Be able to work in a team

International Labor Organisation (1997) identified five special characteristics of knowledge works and knowledge employees. The characteristics are similar with what Ahmad, Abdulai & Cheng being identified, except that ILO identified that knowledge employees are highly mobile, both within and outside the country, and move to locations
where opportunities for them are greatest. Their capital, which is not labor but knowledge, is easily ‘portable’. They form the core of an organization.

One of the main challenges of the 21st century is the change in the emphasis of economic development from a production-based economy to a knowledge-based one. The changes imply that the knowledge-based economy will have serious impacts on the work environment.

“Economic activities in the new economy mainly involve knowledge workers. Knowledge workers are defined as ‘symbolic analyst’ that is workers who manipulate symbols rather than machine assisted by ICT. In advanced economies such as the U.S., more than 60% of workers are knowledge workers” (ITAG, 1999)

Therefore, organizations today recognized the importance of their human resources at the heart of their competitive advantage. While all organizations have access to virtually the same information and technology at the same time, and recognize it as the people within these organizations that make the real difference. The success of any organization, then, depends to a large extent upon the work force and the skills they possess (Buhler, 1999).

The importance of training to employees and organizations lies largely in the emergence of knowledge work, technological advances and the demand for information and their relationship to globalization. These trends and influences are highlighted in one of the studies conducted by the International Labor Organization (ILO) in 1997. The ILO’s study (1997) lists two main trends that affect human resource development in Asia, emergence of knowledge work, technology, information and globalization.
Technology including the information revolution and globalization continue to exert major effects on human resource development. Information technology, like knowledge, is easily and widely accessible, but is valueless without the knowledge and skill to use it productively.

Technological changes and competition in the fast moving competitive marketplace have changed work organizations and working patterns. Decision-making is being decentralized and the organizational hierarchy is flatter and the gap is narrowed. As a result, employees now need wider complement of skills.

2.10 E-GOVERNMENT AND HUMAN RESOURCE MANAGEMENT

One of the impacts of ICT is that it would improve coordination and control of activities within the public sector especially in the areas of financial control and human resource management (Spanos et. al. 2002). Realizing its benefit in the human resource management, the introduction of Human Resource Management Information System (HRMIS) is seen as the most significant effort to develop and enhance e-Government. HRMIS is a data warehousing which capture a large volume on the various attributes of public sector personnel. Such data is very important to generate demographics and trend information for human resource planning such as staffing, training, promotion, etc., in the public sector as a whole (Halim Shafie, 1999). Through a single window interface, HRM functions could be performed effectively and efficiently by 950,000 government personnel in an integrated environment as it provide better opportunity to communicate horizontally and vertically.
With the introduction of HRMIS, HRM operational processes which are currently done manually will be automated. For example, submission and processing of leave and claims application will be done electronically, so do the yearly appraisal performance and automatic updating of employee salary information based on grades obtained. In addition to that, HRMIS will also enable the electronic distribution of human resource policy manuals and circulars which will then reduce the use of paper. This electronic system would reduce the probability of committing mistake by the personnel in charge as most of the databases designed suit to the requirement of the human resource function. On top of that, failure to receive application form of leave, circular or other important notices would no longer be valid excuse. In this context, the success of the system is depending mostly on the acceptance of these technologies by the civil servants. If they remain with negative attitudes as described in Douglas McGregor’s Theory X, such as lazy, resist changing and adapting to new process and learning new skill, would be a major obstacle to implement and ensure the success of HRMIS.

In order to overcome these obstacles, civil servants need to be equipped with appropriate analytical abilities, skills and knowledge which are required by new methodologies in performing their task which is totally different from the traditional way. Various training programs, have been designed to cater the needs for all levels of public servants from the technical to the professional. Thus, the training programs organized and conducted by MAMPU and INTAN must ensure that the Malaysian public servants capabilities and competencies especially in the ICT are parallel with the rapid advancement of the technology.
2.11 E-GOVERNMENT AND MANAGEMENT

With e-Government, time and distance would no longer be the constraints in the information flow. The Government allocated a big portion of fund i.e. RM 434.8 million in the 8MP to ensure the success of e-Government. The aim of e-Government is to ease the customers both internal and external to get information about the government-services, regulations, announcements, speeches and news, social and economic information, etc; through the medium of Intranet as well as Internet. This method is receiving due consideration from many public sector organizations because (i) size of networks; (ii) fast access to data; (iii) high quality interaction among staff, consumer, and suppliers; (iv) improved efficiency of operations; and (v) enhanced participation (David, 1999). Thus, it makes government more visible, efficient and transparent to public.

One of the pilot projects for the electronic government is the electronic service. The adoption of ICT in the management of Malaysian Public Sector has contributed to the departure of management from the traditional to electronic method. Today, the introduction of Public Services Network (PSN) in 1989 which provide electronic services is further enhanced. Through PSN, government agencies are able to offer their counter services at post offices (which are later known as one stop center) with modification and elimination of several processes and procedures. This one stop center enables easier transactions with government and utility private companies using a variety of access methods. This would reduce longer separate queues for each service in the relevant government agencies.
In a way it is undeniable that such services facilitate the public but is it done in an effective and efficient way? Sometimes the one stop center is overcrowded with people especially when the system is ‘slow’ with only few counters are operating. Other pilot projects of MSC such as electronic procurement, generic office environment of the Prime Minister’s Office and project monitoring system are basically beneficial to a large section of business and citizens. By using the multimedia technology, their aim is to provide fully integrated system as to be responsive to the customers’ demand as well as to deliver cost savings, accurate, transparent and faster turn around services.

However, there are several management challenges that need to be tackled from time to time. Firstly, it involves the control of technology. The public agencies should have a mechanism that could detect those who are surfing the World Wide Web for non work-related which is considered as wasting time. Secondly, technology is not always stable. It evolution may cause several problems such as the existing technology are incompatible with the new one and require a large amount of monetary commitment for purchasing the new technology and training the employees. In this case, top management should set priority in handling this issue either latest technology or technological stability. Thirdly, matching the requirements and capabilities of information and communications technologies to the requirements and capabilities to the staff and the functions perform. This is because failure to have a good match of the above requirements would not be able to maximize the usage of ICT (Seneviratna, 1999).
2.12 E-GOVERNMENT STAGES OF DEVELOPMENT

"As much as it seems that a successful e-Government integrates strategy, people, process and technology, governments have been working very hard to formulate comprehensive development models and effective action plans to chart successful implementation" (James SL Yong, 2003).

Generally, the initial stages of e-Government evolution involve publishing or cataloguing information on the web. Subsequently, the internal systems are connected to online interfaces and citizens are able to transact electronically with the government.

At the final stage of evolution, the perception of different government departments will disappear and the public will view government as one entity. Through a "one-stop shopping" concept, citizens can contact one point of government and complete any level of government transaction, eliminating redundancies and inconsistencies in the information bases (Layne and Lee, 2001).

In particular, while most traditional models place "enterprise-wide transformation" as the final stage in e-Government evolution following four or five technological stages, organizational change at the enterprise level is not necessarily an end result. In fact, recent e-Government developments have incorporated enterprise-wide transformation as the driving force behind the design, development and implementation of each new service that would appear on each development stage. This allows government to continuously look for opportunities to improve service and realize economic benefit for each service at each stage.
Almost certainly, there can never be a single development model that fits all e-Government implementation and guarantees success. In particular, the issues that have been raised or will be put forward in subsequent sections. Nevertheless, we hope to provide a foundation for further analysis and offer practical guidelines for government to implement successful e-Government (Watson and Mundy, 2001).

E-Government is one of the flagship projects under the MSC program. It is about using technology (mainly IT, communications and multimedia) and other means (reengineering, change management) to reinvent government, in order to attain:

- More effective access to service delivery
- Higher quality services
- Greater impact through better processes and systems
- Better and more efficient communication
- More transparent and faster decision making, and
- More empowered people

In Malaysia, e-Government is still in the pilot stage of many of the initiatives, and the benefits cannot be clearly seen. In the long run, there is a confidence that all parties will benefit. E-Government, as part of the MSC flagships, has been widely publicized. For example, the Project Monitoring System (PMS II) launched in May 2001 is a very successful project under the e-Government. PMS II provides the capability for government agencies to monitor development projects planned and approved by the Malaysian government under the Five-Year Development Plans.
In order to monitor the progress of e-Government initiatives, MAMPU do benchmark efforts with the best in the world. The image that a country projects is not through the systems it has, but in what the country has achieved.

There is no substitute for ICT to help create faster, more transparent e-Government. The important thing is to be able to manage cost. For that reason, public sector executives need to be not only numerate but also knowledgeable about what the technology can do. They must know how to apply ICT solutions to real-life problems. Sometimes negative outcomes result from inappropriate application of technologies (Datuk Dr Muhammad Rais Bin Abdul Karim, Director-General, MAMPU, Putrajaya, Oct.2002).

2.13 GENERAL SYSTEM THEORY

Based on this general system theory, it is understood that the factors that influenced the successful implementation of ICT are interacting and operating together. "This approach also viewed organization as "open system" which exchange information, energy or material with their environment by changing some of the internal components" (Harmon et. al., 1986). "Thus, in the process to accomplish the organization’s vision, any change in one of the factor will influence and be influenced by the other factors within the organization" (Davies, 1988; Spanos et. al. 2002; Senevirante, 1999). The model was developed by Spanos et. al. which is modified from the model proposed by Leavit (1964, cited from Darvis, 1994), illustrates clearly how adoption of ICT works in the public sectors.
Figure 1: Model of System Theory

- Structure
- ICT Adoption
- Management System
- Strategy
- Human Capital