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Malaysia's experience

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INFORMATION TECHNOLOGY AND DEVELOPMENT - MALAYSIA'S EXPERIENCE *

Dr. Tengku Mohd Azzman Shariffadeen

Abstract: *In this paper we present some of the fundamental notions and concepts that underlie the development paradigm with the rise of IT. In the ensuing discussion we summarise some of the findings that are applicable to Malaysia as a small developing country that has recognised the strategic importance of IT. These findings cover issues of planning as well as implementation. The status of Islamic countries is also briefly summarised.*

1. Introduction

Information technology (IT) is widely believed to be the foundation of an emerging socioeconomic environment which will shift the dominant parameters of development from land, labour and capital to information and knowledge. While most countries appear to have taken serious cognizance of this fact, few can lay claim to have formulated a comprehensive programme of development that fully exploits the potential of IT. Two basic difficulties confront planners and implementers alike.

First, IT is itself experiencing rapid change and evolution, giving little room for people and programmes to adjust themselves.

Second, IT is placing heavy demand on human resources in specific new areas which are in short supply especially in developing countries. These difficulties make it imperative that development programmes are re-examined from a new perspective.

The basic principle influencing this presentation are the following.

First, IT will affect all societies regardless of their present socioeconomic status.

Second, the pervasive impact of IT implies that the very foundation of economic activity and social organisation will see a radical change.

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Third, because most of these changes have to occur, a proactive approach is essential in analysis and decision making.

Fourth, by emphasising the value of information and knowledge, IT has enhanced the position of the main protagonist in development the human participant.

2. Infusion Of Electronic And Information Technology.

Malaysia's electronics industry in its present form began in the early 70s when it successfully attracted multinational corporations (MNCs) to relocate their more labour-intensive operations into the country, principally in semiconductor assembly. Rapid growth and diversification resulted. In 1990 the industry's output had reached US\$7.5 billion in value, accounting for 47% of manufactured exports, and providing employment for about 150,000 people. Between 1978 and 1990 the industry grew at a compound annual growth rate of 22% in real terms. Lately the industry structure has gone through rapid transformation, moving from an exclusively semiconductor assembly operation to a more diversified mix, achieving 58% components, 22% consumer and 20% industrial goods in 1990.

Having laid this industrial foundation, it is natural that the country should perceive itself to be well placed to benefit from the recent emergence of information technology (IT). However, the situation is not as simple or straight forward.

First, since the industry is largely owned by MNCs, there is little control over its trajectory of growth. Each company has its own business plan driven by its particular commercial goals.

Second, the technologies practised in and acquired by the industry are limited to specific narrow disciplines such as semiconductor assembly, testing and production. Critical skills in areas such as IC design, wafer fabrication and product design are not acquired simply because these activities are not performed locally.

Third, the linkages between MNC-owned companies and local suppliers are weak. Most of the materials and components used in production are imported. Thus the presence of MNCs generally does not necessarily generate new opportunities for indigenous companies.

Although computers began to enter the Malaysian workplace in the 60s, the country only

began wide-scale application of IT in the 80s. Economic, social and organisational forces dictated that more automation be introduced in the work place. The market for IT products has increased rapidly, achieving an expected market size exceeding US\$740 million in 1991. This is more than US\$40 per capita expenditure which is high by developing country standards. Telecommunications has also enjoyed rapid growth especially in the 80s. The network is now capable of handling effectively both voice and data with ISDN about to be launched soon.

Rapid developments in the electronics industry per se and in IT generally have prompted the recent National Industrial Technology Action Plan (MOSTE 1990) to highlight microelectronics and IT as two of the emerging technologies which are strategic to national development. More importantly, the Prime Minister in his speech - (Mahathir 1991) outlining the country's agenda to become a fully developed country by the year 2020, declared that "in the information age that we are living in Malaysian society must be information rich". Electronics and IT, therefore, feature prominently in the country's development programme.

3. Trends In Development And Role Of IT

For many years development was believed to be linked largely to economic performance. Influential agencies such as the World Bank promoted this view by emphasising GDP growth and per capita income. Lately however it has become increasingly clear that factors are more significant. Thus, for example, the United Nations Development Programme (UNDP 1990) asserts that "human development is a process of enlarging people's choices" and that "the most critical of these wide-ranging choices are to live a long and healthy life, to be educated and to have access to resources needed for a decent standard of living". It cannot be denied that economic wealth is an important enabling factor especially providing critical infrastructure for development, but other factors are becoming increasingly dominant.

In particular, the human factor has come to the forefront in the modern development scenario, especially when human development is viewed from a more integrated and holistic perspective. It is now recognised that development entails the opening of new opportunities for people to improve themselves. Furthermore, the availability and access to resources and infrastructure are essential to enable them to make effective use of these opportunities. Working in tandem with this notion, knowledge and the knowledge worker are now perceived to be the new competitive factors in socioeconomic performance (Drucker 1969) Thus the emerging trend in development is that the widening

of opportunities entails the ability to acquire knowledge and subsequently to be able to use it effectively. A specific form of knowledge has also emerged as the leading competitive factor for nations and organisations (Drucker 1969, Porter 1990), and that is knowledge in science and technology. They provide the ultimate source of value added, productivity and competitiveness in modern economic activities.

In promoting human development, IT plays two critical roles.

First, IT projects a technological dimension. Through global telecommunications networks, IT provides the mechanism for the interconnection of computers into a worldwide information system, thus facilitating the rapid flow of information which are strategic to development. This enabling mechanism greatly enhances the generation, availability and accessibility of information.

Second, IT possesses a cognitive dimension which is manifested in the information content itself. Here the information carried by the system can be employed by its human users to think, analyse, understand and apply for purposes of development and progress. This immediately enhances the ability of users to acquire knowledge and to apply it for their own needs. To summarise, IT therefore not only makes information more easily available, but also provides the means to apply it for personal and collective development.

IT is also reinforcing another trend in modern communications - globalisation. Modern trade can no longer be perceived in the domestic or even regional context. It has now become completely globalised where suppliers vie for markets worldwide in direct competition with each other; product quality, price and availability on time are becoming the new competitive factors. This trend is being further strengthened with the advent of the GATT Uruguay Round of trade negotiations, through which world trade is expected to be further liberalised. The Uruguay Round is renegotiating trade in goods, but more importantly, has placed on the agenda global trade in services.

Economists have traditionally classified the direct production of goods and services as core economic activities, distinct from the peripheral activities that support the production process (Miles et al. 1989). With the rise of IT, however, there is a blurring of the line between core and peripheral. Although information has become the critical factor in both production and support functions, it is the

information-based support services that are more information intensive. Such services have increased in importance since they provide the necessary support functions to the more production processes.

With the rise of the Uruguay Round of trade negotiations, services, as core as well as support functions, have become even more important. Trade ability of goods and services is one of the new emerging issues (Larvin 199). IT based services can now be generated anywhere on each and then consumed at any other location. Such services, being storable and highly portable and mobile, are keenly tradeable. When they support trade in good, they make the goods themselves also more tradeable. IT is therefore changing the pattern of global trade and their fundamental competitive factors.

The above discussion asserts that IT has a role far greater than the traditional view of computers and telecommunications. Its implications now touch every aspect of human life and human concern. It has social and economic impact, but now rising strongly are political and strategic ramifications that will ultimately determine the course of national progress and human development in the true sense.

4. IT Planning

As a highly pervasive technology, IT will exert powerful influence on individuals in society as much as social groups and organisations. Since it is also technology-driven, where the technology itself is evolving rapidly, technological change will have profound impact on social change and vice-versa. One of the new strategic issues faced by society today is

the rapid acquisition and diffusion of critical technologies. Effective planning mechanisms are therefore essential if society is to gain optimum benefit from technological change, which now constitutes an important source of social change.

The OECD (1988) argues that IT application development must be seen as a social process, not simply a technical process. Due recognition must be given to the interdependence or technical, economic and social change, calling for " institutional adaptation and a process which mediates between differences of interest".

There is a need to perform technology assessment and for the state to assume the function of "creative" regulator of technical change, despite the trend towards deregulation. In another study, the OECD (1989) observes that there is nothing automatic or inevitable about the response of the market to the opportunities of emerging trends in IT. Inefficiencies and dislocated movements will result from a lack of planning.

However, an overcontrolled environment will also have an adverse effect, restraining innovation by individuals and organisations alike. A proactive yet balance approach the key to successful exploitation of IT.

A planning and decision-making model has been presented by the author else where (Tengku Mohd Azzman 1991a), as shown schematically in Figure 1. Several distinct features of this model may be highlighted.

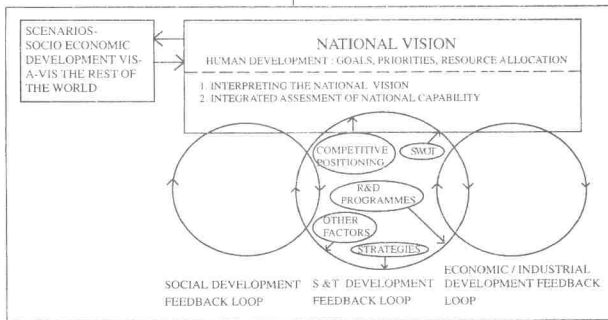


Figure 1 : Decision-Making Model