



(Continued from page 1)

Technological Capabilities

Presently there is a lack of data on R&D in Penang and in Malaysia as a whole. Table 2 compares the ratio of research scientists & engineers as well as the ratio of research expenses. Malaysia's one research scientist & engineer for every 10,000 labour force is way below those of the newly industrialised economies, which comprise South Korea, Taiwan and Singapore, even though their data is more recent.

Table 2: R&D Capacity

Country/Location	RSE/10,000 Labour Force	GERD/GDP ratio (%)
Japan (1996)	105	3.0
USA (1993)	75	2.6 (1997)
Switzerland (1996)	52	2.8
South Korea (1996)	62	2.8
Taiwan (1996)	58	1.9
Singapore (1997)	60	1.5
Korea (1995)	26	2.8
Thailand (1991)	2	0.2
Philippines (1984)	1	0.1
China (1993)	5	0.6
Malaysia (1992)	1	0.4

Source: Ministry of Trade & Industry, Singapore (1998), *Committee on Singapore's Competitiveness*
Derived from Sanjaya Lall (1998), "Thailand's Manufacturing Competitiveness: An Overview"
Note: GERD – Gross expenditure on R&D, RSE – Research Scientists & Engineers

However, on a more positive note, Penang is more industrialised than many of the other states in Malaysia. The skills intensity of Penang's manufacturing labour force has actually risen significantly over the past decade. Table 3 shows the rising skills intensity in Penang's manufacturing labour force.

Table 3: Skills Intensity of Penang's Manufacturing Labour Force

	1980	1990	1998 (June)
Skills intensity	0.13	0.15	0.23

Source: Derived from PDC Survey of the Manufacturing Industries, various years.
Skills intensity is calculated based on the ratio of management & technical staff over the total employed.

Similarly, accompanying the rising skills intensity is the declining dependency on labour-intensity. Table 4 shows that the percentage of production workers over the total manufacturing workforce has declined significantly over the same period. However, it should be noted that production workers still account for the majority of the manufacturing workforce in Penang and to develop towards a higher technology platform, skills intensity of the present workforce needs to be enhanced significantly.

Critical skills area such as design, software engineering, logistics and marketing are still lacking and efforts are required to enhance the Penang's manufacturing workforce in these

(Continued on page 3)



(Continued from page 2)

skills areas if Penang aspires to become the centre of manufacturing excellence in the region.

Table 4: Production Workers as a Percentage of Total Manufacturing Workforce in Penang

	1990	1995	1998 (June)
Production Workers/Total Manufacturing Workforce (%)	74.3	68.9	67.1

Source: Derived from PDC Survey of the Manufacturing Industries, various years

Implications

In terms of education and skills training, Penang and Malaysia in general may be better off than some countries, however, it does not mean that the government and populace of Penang, Malaysia can be complacent with their achievements thus far. In order to become competitive globally, skills upgrading is pertinent. Skills upgrading and enhancement is a means towards the adoption, absorption and application of technologies, which are being rapidly upgraded.

There is also a lack of technological capability among the industrial entrepreneurs and workers in Penang and Malaysia. There may be many engineers employed in industrial companies in Penang but these engineers still do not meet the criteria of R&D engineers. Training in the areas of design and R&D is still at the infant stage and many industrialists still perceive the local environment not conducive enough to carry out R&D activities.

Furthermore, local universities and private colleges still fail to comprehend the requirements of the industries and thus, are unsuccessful in facilitating the industries in meeting their human resources needs. Even parents are more receptive to their children becoming white-collar workers and thus, discouraging their children to acquire skills that meet the demands of the industries. This resulted in more students taking up arts related courses rather than technical courses. An eventual result is a mismatch between the supply of and the demand for human resources.

It should be noted that dependency on comparative advantages has evolved to competitiveness and to be competitive, a country can no longer rely on its abundance cheap labour, but instead, should depend on its skills-, knowledge- and technology- capabilities to create a productivity-driven society. As such, there is also an urgent need for the government to prioritise the development of human resources and higher value added services in order to develop and retain Penang's core competency in the manufacturing sector, in particular the electronics industry.

§ Anna Ong



Information & Communication Technology: Implication & Significance in Malaysia's Business Environment : A Survey Report

Introduction

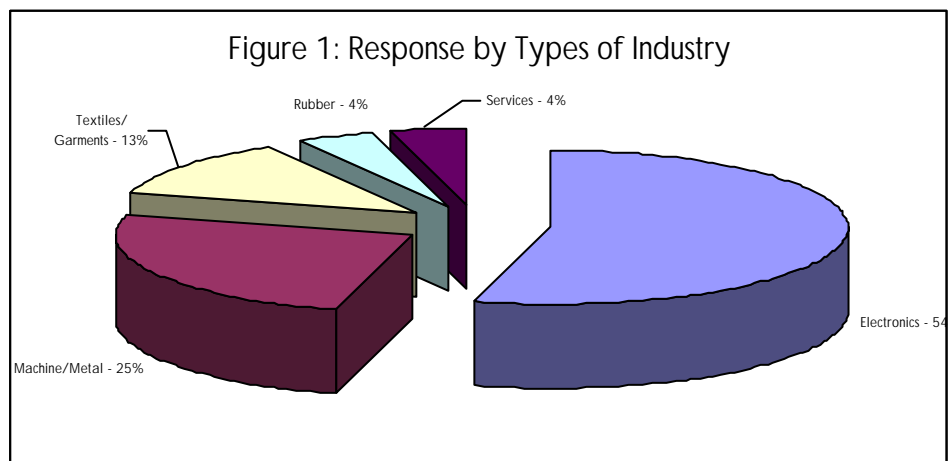
The upgrading of the infrastructure for information & communication technology (ICT) is considered one of the most dominant emphasis of development in recent years. The ICT infrastructure comprises the mechanisms/media for the transfer of information. These include newspaper, radio, television, telephone, mobile phone, facsimile machine, Internet, etc. The key purpose of these mechanisms is to provide greater equality in the distribution of ICT parameters to facilitate development.

More recently, the usage of Internet has been on the rise and facilitates greater distribution of information and communication. Furthermore, with the advent of WAP (wireless application protocol), greater utilisation of the Internet for commercial and business transactions through the application of ICT would be enhanced. Other hand-held devices like the mobile phones would then be useful for all e-commerce and business transactions. Today, manufacturers have begun to utilise this infrastructure for their customer relationship management to increase their competitiveness in the global market. In short, e-commerce is the business trend of this new millennium.

Penetration of ICT is also viewed to have contributed to economic competitiveness as well as socio-economic development worldwide. However, ICT's penetration into the less developed nations as well as the developing nations is still considered ineffectual. For instance, despite the increased usage of computers and mobile phones in businesses, e-commerce is still weak in Malaysia, as shown in the survey findings below.

Survey Findings

SERI recently conducted a short CEO Survey on Internet Usage among selected manufacturers in the northern region of Peninsular Malaysia. A total of 67 survey questionnaires were sent out via email to manufacturing companies and a response rate of 36% was obtained. The responses, according to the types of industry are shown in Figure 1.



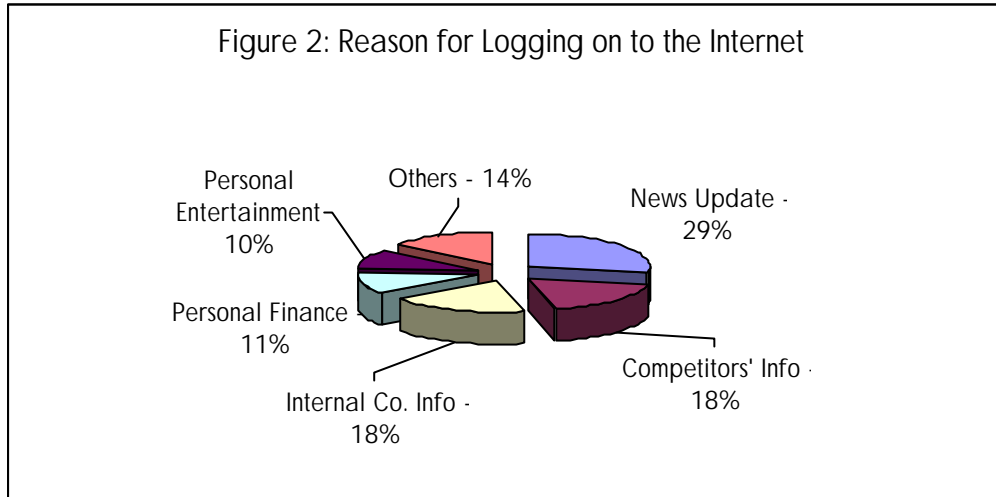
Of the total respondents, 54% indicated that they have made purchases via the Internet, while 33% have not done so. A non-response rate of 13% was obtained for this question.

The respondents log on to the Internet for an average of 10.3 hours per week for various reasons. These include news update (29%), competitors' information (18%), internal company information (18%), personal finance purposes (11%), personal entertainment

(Continued on page 5)

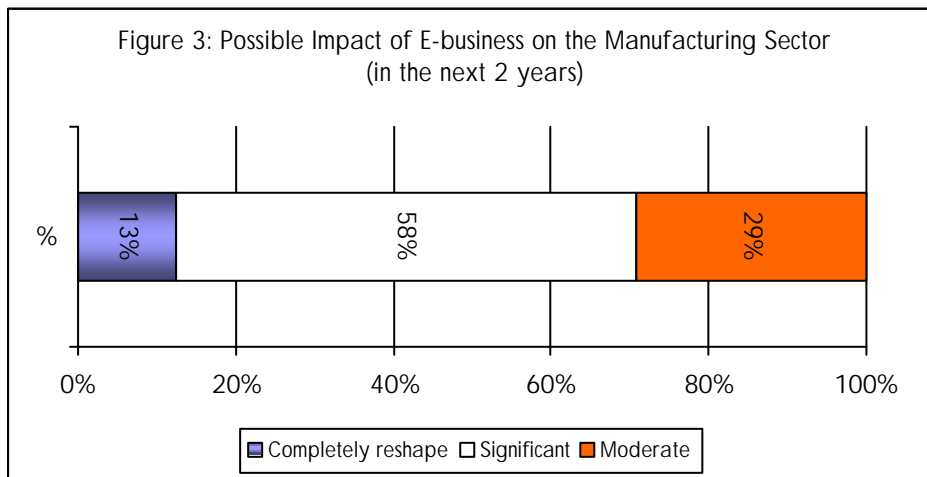
(Continued from page 4)

(10%) and others (14%), which include searches for information other than what have been specified above. (Figure 2)



58% of the respondents are of the opinion that e-business would have a significant impact on the manufacturing sector in the next 2 years, while 13% of the respondents feel that e-business would completely reshape the manufacturing sector.

58% of the respondents are of the opinion that e-business would have a significant impact on the manufacturing sector in the next 2 years, while 13% of the respondents feel that e-business would completely reshape the manufacturing sector. The rest of the respondents (29%) believe that e-business would only have a moderate impact on the manufacturing sector in the next 2 years. These include even those in the electronics industry. (Figure 3)



..... the majority of the respondents who are currently involved in e-business fall under the electronics industry category.

Half of the respondents are currently involved in e-business while the other half are not. As shown in Figure 4, the majority of the respondents who are currently involved in e-business fall under the electronics industry category. None of the respondents in the services and rubber sectors are currently involved in e-business. As for those who are currently not involved in e-business, 83% of them plan to be involved in e-business within the next 2 years. The respondents (17%) who do not plan to be involved in e-business within the next 2 years come from the electronics industry.

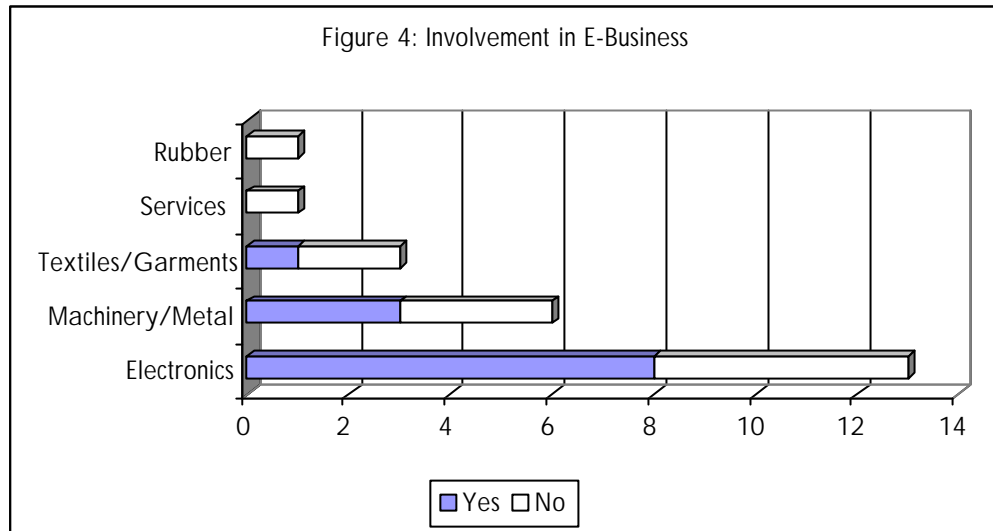
Although 8% of all the respondents are not likely to be involved in e-business within

(Continued on page 6)

(Continued from page 5)

the next 2 years, only 4% do not believe that e-business would make them more competitive in their business. The rest of the respondents (96%) believe that e-business would make them more competitive in their business.

Although ICT is considered to be very important in the global business outlook in this millennium, companies are still not adopting ICT as rapidly as they should be.



Presently, 83% of the respondents have their own websites. As for the companies that do not have their own websites, 75% of them plan to set up their websites within the next 2 years.

Of the total respondents, 83% have their own IT (information technology) departments. These companies employ an average of 33 IT personnel although some of them employ as many as 120 IT personnel while some only have less than 4. All the respondents (17%) that do not have their own IT departments are from the machinery/metal sector. 75% of the respondents who currently do not have IT departments plan to set up their own IT section within the next 2 years. In general, the respondents set aside 0.5%-25% of their annual budget for IT improvements.

.... the number of worldwide Internet users are expected to increase
the worldwide wireless local area network market is expected to increase

Implications

Although ICT is considered to be very important in the global business outlook in this millennium, companies are still not adopting ICT as rapidly as they should be. As the electronics industry is considered the leading technology sector in Penang, it is rather unexpected that some of the electronics companies are not presently engaged in e-business nor are they planning to do so in the near future. As such, it would probably be even more difficult for the rest of the manufacturing sector, or other economic sectors in Penang to adopt, absorb & apply the rapidly changing ICT in their operations.

However, on a more positive note, most of the companies are moving towards ICT development as indicated in their plans to set up IT sections within their companies, set up their websites and go into e-business. It should also be noted that the respondents are aware of the impact of e-business on their competitiveness as well as the availability of information at their fingertips if they log on to the Internet.

Furthermore, projections from IT analysts like eTForecasts also indicate that the number of worldwide Internet users is expected to increase by 36% in 2000, from the 276 million users in 1999 to 375 million users. In addition, Cahners In-Stat Group has also projected that the worldwide wireless local area network (LAN) market is expected to increase 124% from US\$391 million in 1999 to US\$ 877 million in 2000. Malaysian users are expected to contribute to this increase. **§ Anna Ong**



Sustaining Competitiveness In the Advent of Free Trade

Overview

The present trend towards globalisation and the introduction of World Trade Organisation (WTO) has set new rules in competitiveness for newly industrialising economies like Malaysia. There are rapid changes presently occurring in the Southeast Asian region and these changes reflect the dynamism of the constantly transforming economic scenarios that influence the region's economies in view of the age of globalisation and information technology (IT). In this age of globalisation and IT, we need the knowledge and skills to address the challenges that are presented in the new arena for international trade and commerce.

Even, our Prime Minister, in the recent Islamic Conference of Foreign Ministers (ICFM), warned of the impending danger of opening up the economies of the newly industrialising countries to more competition. The WTO Seattle Summit (November 1999) is a landmark event in the on going transformation of the global economy. The underlying forces – technological, social and political – driving the global economy are so deeply entrenched that we can no longer return to a bygone era.

This new competitive setting is inevitable in the new millennium. The new settings include 3 key features:

- 1) rapid changes are taking place in the region. These include shrinking economic space, saturating markets, increasing competitions due to innovations as well as clustering and networking effects.
- 2) governments involved must be able to recognise that liberalisation of trade would bring about intense and rapid exposure to greater competition. As such, how the governments react to the effects of such exposures is vital for the survival and development of the countries concerned.
- 3) globalisation involves foreign direct investments (FDI) as well as mergers and acquisitions (M&A). With globalisation, it is inevitable that the larger companies will swallow up the smaller ones. Smaller companies that are not associated or affiliated with the larger ones would suffer losses, as outsourcing and technology transfers will only be confined within the predefined clusters/networks. Furthermore, once a country is opened to liberalisation and globalisation, the effects will be irreversible.

The advent of WTO has further endorsed free trade and liberalisation and has expanded GATT's (General Agreement on Tariffs and Trade) powers from its original rules in trade in manufactured goods into "new areas", which include *services, investments and intellectual property rights*. This comes along with the various trade agreements, which now act as key instruments of economic liberalisation and mechanisms used by the developed nations to *impose disciplines and rules* on developing countries.

With the introduction of TRIPs (trade-related intellectual property rights) agreement, TRIMs (trade-related investment measures), social clauses (trade measures linked to labour standards and human rights), and environmental standards (such as in PPMs or process production methods), developing nations are forced to be more competitive and to change their modus operandi.

As such, the whole arena of competitiveness has changed and to be competitive, a nation requires not only cheap labour and/or primary resources but also technology and skills. The nation must have access to foreign technology, skills as well as the systems to enhance its competitive edge and domestic capabilities. To do so, the nation must have the human resources with new skills, especially advanced technological and managerial skills, to launch adaptive and innovative technological efforts. The government must also provide the necessary infrastructure to facilitate smooth flow of information and other logistics.

In the past, major structural shifts have occurred in global exports and production. Companies located in the developed nations have relocated the assembly of their low-end and low technology activities to lower cost centres, while they take on higher-end and higher-technology products. This explains the reason for China's significant increase in the exports of manufactured products (27% per annum) between 1985 and 1998. In comparison, Hong Kong's exports of manufacturing products had only achieved a marginal increase of 4% per annum during the same period. However, since the 1990s, there is an apparent shift towards the manufacture of *high-technology products* for exports. This is in line with the aspirations of the developing countries to develop their competitive

(Continued on page 8)

(Continued from page 7)

edge in the global markets.

Despite these efforts, the developing nations would always be at a disadvantage against the developed and industrialised countries because of the various trade agreements. These governments would have to take measures to enhance the technological and management know-how of the labour force as well as facilitate the development of local entrepreneurs.

Measures that could be taken by governments before the full implementation of WTO include:

- a) the provision of infrastructure;
- b) regulating foreign investments by imposing foreign equity rulings;
- c) reducing imports of services & goods by imposing local content policies; and
- d) promoting exports of goods and services by local firms.

These measures, which do not only help to spawn local entrepreneurs but also help to strengthen the balance of payment of these nations, must be accompanied by necessary measures to enhance the skills level of the local labour force and to increase productivity.

Implications for Malaysia

Although Malaysia has adopted export-oriented industrialisation since the late 1960s, its share in exports to the world import markets is relatively small, accounting for only 1.6% of the total world import markets in 1998. The shrinking economic space and saturating markets caused by excess supply coupled by dumping practice by certain countries have created more intense competitions for Malaysian-made products.

Liberalisation and globalisation will only benefit those that are strong and competitive. A common phenomenon is mergers and acquisitions (M&A). This does not only involve large foreign companies that acquire the smaller local ones but also involves large Malaysian companies that acquire the smaller ones. The effects of M&A are not always positive, i.e. helping the larger companies to become more competitive. It can have the negative impact of killing off the spirit of small entrepreneurship. Examples of such M&A are evident among the Kuala Lumpur Stock Exchange (KLSE) companies that have many subsidiaries that mostly fall under the small- and medium- enterprise category.

The various trade agreements under the WTO are deemed to have a significant impact on Malaysian companies. The TRIPs, which champion the rights of the innovators and patent holders, would inadvertently deprive the rights of the society to enhance their capabilities in information technologies (IT). For instance, softwares are priced exorbitantly, making it unaffordable and thus denying the society a chance to own and use them.

The other trade agreements also poses difficulties for Malaysian companies especially if the social clauses and environmental standards have to be met. Although a host of large Malaysian companies have emerged after more than 40 years of independence, many of the Malaysian companies still fall within the tiny, small and medium categories. These companies would face difficulties in complying with the social clauses and environmental standards required under the WTO. Firstly, these companies do not yet possess the right management and technical skills and secondly, they do not have the financial capabilities to finance changes and improvements to comply with the WTO standards. The government will have to take steps to aid these companies in improving their competitiveness instead of shielding them from the effects of globalisation in the long term.

Furthermore, under the General Agreement on Trade in Services (GATS), there will be free flow of labour from one country to another. This could create more competition for the Malaysian workforce, especially those that are unskilled. On one hand, with such liberalisation, highly skilled Malaysian could also be enticed to other countries that pay better wages. The old industrial structure of depending on low cost labour will not prevail. On the other hand, if Malaysia fails to upgrade its competitive edge and productivity, investors would shy away, which would then result in brain-drain as the skilled and professional Malaysians would find it more lucrative to work in countries that offer better remuneration and 'quality of life'.

In short, Malaysia needs to be aware of the dangers of globalisation and liberalisation. We have to realise the fact that we have moved from an international to a global economy. Malaysia needs to be cautious and anticipate the problems and circumvent adverse effects that could be generated. The nation should also upgrade its capabilities and develop an up-to-date and competitive knowledge-based economy. Malaysia should also continue to assert that the management of this global economy must be fair, democratic and effective. In fact, *global governance* and not globalisation is the issue here. ***S Khor Hung Teik & Anna Ong***