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THE JAPANISATION PROCESS IN MALAYSIA

By

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July 1997

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THE UNIVERSITY OF ASTON IN BIRMINGHAM

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Doctor of Philosophy

1997

This thesis examines the empirical evidence for the transferability of Japanese soft technology (JST) or Japanese work organisation within two government-initiated, Malaysian-Japanese strategic alliances: PROTON and PERNEC. The government, through its Look East Policy (LEP) began in 1982, taking Japan (and South Korea) as models and partners in Malaysian economic and industrial development process, and expected these alliances to learn the good aspects of Japanese work organisation and management styles in order for them to become independent companies, both technologically and economically. The thesis found that the alliances have been successfully taking and utilising Japanese parts, components, tools, robots and machines; i.e. the 'ready-made hard technology'. [Whereas the important element of soft technology has been ignored]. The soft technology has been slowly and marginally transferred because neither local parties nor their Japanese counterparts within the alliances consider the acquisition or transfer of soft technology to be the main concern or a part of business plan. Although many factors influence management transfer, the thesis has focused on the eagerness and the capability of Malaysian managerial teams to acquire and, to a lesser extent, the readiness of the Japanese to transfer the technology. It was found that there is a lack of demand on technology acquisition by Malaysian managers and lack of responsibility to transfer the technology among Japanese experts. However, the political and social pressures on these alliances, the industrial climate and labour market, leaderships and management system of alliances, and Japanese MNCs regional and global corporate strategies have contributed to the high level of transfer of JST at PROTON compared to PERNEC. The research also found that Malaysian industrial and investment policies have favoured foreign investment but there is a lack of strategies for nurturing indigenous technological development. On the other hand the Japanese MNCs and public agencies have been operating in Malaysia and guided by their regional and global corporate strategies and less concerned with Malaysian technological development. In conclusion, empirically, the JST transfer is minimal. The transfer has been influenced by internal contingency factors of organisation; external industrial, political and cultural environmental factors; and last but not least the Japanese MNCs' global and regional corporate strategies. The transfer of Japanese management in this research is inclined towards core-periphery transfer model, it is also related to organisational and national technological capability.

KEY WORDS: JAPANESE SOFT TECHNOLOGY (JST); TRANSFERABILITY; STRATEGIC ALLIANCES; MANAGEMENT CAPABILITY AND COMMITMENT; LOOK EAST POLICY; JAPANESE READINESS TO TRANSFER.

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ABBREVIATIONS

CEO	Chief executive officer
CWQC	Company-wide quality control
FDI	Foreign direct investment
FTC	Firm technological capability
JST	Japanese soft technology
JIT	Just-in-time
HRD	Human resources development
LEP	Look East Policy
MD	Managing Director
MITIj	Ministry of International Trade and Industry of Japan
MITIm	Ministry of International Trade and Industry of Malaysia
MMC	Mitsubishi Motor Corporation
MNCs	Multinationals companies
NEC	Nippon Electronics Corporation
NPC	National Productivity Corporation
PDCA	Plan-do-check-action
PERNEC	PERNEC Corporation Sdn. Bhd.
PROTON	Perusahaan Otomobil Nasional Berhad
PWU	PROTON Workers' Union
TPS	Toyota production system
TQM	Total quality management
QCCs	Quality control circles
SMIs	Small and medium industries

Chapter 1: Introduction

The 'Japanese model' of how to run the state and industry has been followed by many countries and companies. In 1982 the government of Malaysia also introduced its Look East Policy (LEP), taking Japan (and Korea) as models for development and partners, in the industrialisation process. Under this policy, both private and public sectors were expected to improve their efficiency and effectiveness through the adoption and adaptation of Japanese work-organisation and management techniques, or what I call 'Japanese soft technology' (JST).

This thesis will basically study how far the transferability of JST has taken place within Malaysian companies, specifically into what are called 'build-operate-transfer' (BOT) Malaysia-Japan strategic alliances. The thesis is important not only from the point of view of an industrial policy evaluation process. It could suggest new contributions to management practices, but also because it adds to the existing theoretical body of Japanese management transfer literature and debate. The literature surveys suggested that there are disputes about JST transfer. The first camp views JST as the supreme model of work organisation (after Fordism and Taylorism) and could be transferred even into the hostile environment of foreign soil (Turnball 1988; Ackroyd et al. 1988; Womack et al. 1990; Kenny & Florida 1991, 1993; Oliver & Wilkinson 1992; Abo 1992, 1994a, 1994b). The second argues that Japan implements its best management practices only in Japan but not in foreign economies (Smith, J.M. 1986; Wong 1990; Milkman 1991; Dedoussis & Littler 1994). However, most of the literature come from mature economies, and the experiences of developing countries have been neglected, which makes the debate about the JST model incomplete. This research aims to fill some of the lacunae through a study of the transfer of JST within a developing economy, and specifically of the purpose-built alliances for technological acquisition. The research explores whether the transfer fits either of the models or whether a different one is needed. The field research took place from April to November 1994 at two important Malaysia-Japan alliance companies, a car manufacturer [Perusahaan Otomobil Nasional Berhad (PROTON)] and a telecommunications company [PERNEC Sdn. Bhd. (PERNEC)]. PROTON is operating in a joint venture with Mitsubishi Motor Corporation (MMC) whereas PERNEC is with Nippon Electronic Corporation (NEC). To begin with, I shall examine how different interests in different countries learn industrial and organisational management.

Eagerness to learn from Japan, especially to learn how public and private organisations have been managed, is not peculiar to the developing countries but is also common in developed countries (Pascal & Athos 1981; Ouchi 1981; Kanter 1983; Ackroyd et al.

1988; McMillan 1989; Oliver & Wilkinson 1992; Florida & Kenny 1991; Kenny & Florida 1993; Bratton 1993). In order to react with the Japanese competition and challenges, in the 1970s the government of Britain sent a mission to Japan to examine the Japanese engineering (McCormick 1992:54). On a micro level, in 1980 Bill Hayden (head of Ford Europe), introduced flexible team work programmes on production lines, to increase productivity levels, after a visit to Japanese car producers (Elger & Smith 1994:1). Many people from industry and the universities discussed Japanese work-organisation and management practices thoroughly and their relevance to British industry (UWIST 1987; Womack et al. 1989; Oliver & Wilkinson 1992; Bratton 1992).

In the case of America, Ford Motor Corporation and Xerox were among those who did not want to be left behind in their competitiveness, and so adopted Japanese-style management techniques in the 1980s (Giles & Starkey 1987). American Telephone & Telegraph also tried to introduce the Japanese practices of worker-manager teams and quality circle activities (The Economist, 8 May 1993).

The globalisation of the Japanese MNCs with their soft technologies (i.e. management systems) has divided the Western intellectuals into at least 5 different groups. First, those who denied the uniqueness of JST (Smith, J.1993). Second, those who doubted the transferability and universality of JST (Milkman 1991; Dedoussis & Litler 1994; Elger & Smith 1994). Third, those who began to question the strength of the scientific management and mass production of the Fordist system (Pascal & Athos 1981; Ackroyd et al. 1988; Ouchi 1988). Fourth, those who see JST positively, and admire and promote it (Ballon 1967; Florida & Kenny 1991; Oliver & Wilkinson 1992; Bratton 1992; Kenny & Florida 1993). Finally, the group who used JST as a model to benchmark with (Abo 1992, 1994a, 1994b; Womack et al. 1990). However, they all fall into two major groups, one of which analysed Japanese organisation and JST in isolation, while the other analysed them as part and parcel of total Japanese society and culture.

For developing countries, the nearest example to Malaysia was the government of Singapore, which had adopted the same industrial strategy. They established the Japan-Singapore Training Centre and had a campaign to 'learn from the Japanese' (Wong 1990:45). The Singaporeans were trained not only to acquire skills, but also to be loyal, dedicated, and even to learn from the Japanese how to greet their bosses. They were also encouraged to bring in three aspects of Japanese management, namely; company welfarism, quality control circles and in-house unions (Smith J.M. 1986; Wong 1990).

For many developing countries, capital and technology are the most important ingredients in the industrialisation process. They can either get these from foreigners who retain ownership, or purchase from them, or acquire them through indigenous efforts (Dahlman & Westphal 1983; Lall 1992; Ali 1992, 1994a; Tolentino 1993; MIDA 1993; MITI 1994a). Even though there are arguments on taking foreign capital and technology to industrialise the country (Jomo 1994c; Ali 1992). It seems that Malaysia took the first one.

In the 1980s, the Malaysian government worked closely with Japan through various programmes, after a long period of working with the West (especially Britain). One of the reasons why the Malaysian state has worked closely with the Japanese is a belief that they have good work ethics, social consciousness, honesty and discipline, a strong sense of social purpose and community orientation, good management techniques and aggressive salesmanship (Insan 1989 cited in Bartu 1992:54; Nester 1990).

After working for a decade with Japan, some Malaysians realised that there was a need to check and evaluate the achievement of Malaysia-Japan cooperation efforts, at both national and organisational levels, (The Star July 1994; The New Straits Times, July 1994; Dewan Masyarakat, October 1994; Jomo 1994a, 1994b; Lim C.P. 1994a, 1994b; Aslam & Piei 1994; Marappan & Jomo 1994; Malaysian Business, 1 September 1994; Ali 1994; Malaysian Industry, July 1995). They were worried about the slowness of technological transfer and they felt that LEP had given too many benefits to Japan rather than Malaysia (Bartu 1992; Jomo 1994a, 1994b, 1994c; Lim C.P. 1994a, 1994b; Aslam Piei 1994). They argued that the Japanese MNCs were reluctant to lead the way towards a holistic Japanisation of Malaysian industrial relations (Wad & Jomo 1994:228) or else it was only 'partially implemented' (Smith, W.A. 1994). They also claimed that lack of technological acquisition was due to 'incompetent management' (Lim, C.P. 1994a) and 'lack of interest in new technology' (The Star, July 1994).

The problems of over-dependence on foreign MNCs might not have been as serious as they are today if efforts had been made to enhance the indigenous technological development within small and medium industries (SMIs) in the 1960s (Lim C.P. 1994a; Ali 1992). Emphasis on self-help or indigenous technological development was lacking from the beginning within the manufacturing industries. There was also lack of efforts to link MNCs with the locals SMIs (Dahlman, C. et al. 1987; Dicken 1992; Lim C.P. 1994a).

It is therefore time to assess what has actually been happening in the factories. The research will investigate empirically and reveal to what extent Japanese work

organisation and management styles (JST) are being practised within Malaysian-Japan strategic alliances. It will then try to link it with the existing theory of the transferability of Japanese management techniques.

Although the thesis is related to traditional technological transfer from developed to developing countries (Al-Ghailani & Moor 1995), it is also a study of technology innovation and a study of how a developing country manages industrial technology (Lall 1992). It is an evaluation of the efforts and money spent so that Malaysia could emulate the positive aspects of JST (Japanese good management practices) i.e. an evaluation of technology transfer (Autio & Laamanen 1995).

Why soft technology rather than hard technology? Because hard technology, such as procedures, manuals, machinery, automation, robots and the like is the output of the intelligence, work habits, management secrets, philosophy and visions of creativity, and innovation of any society. Such machinery and robots, readily available in the market, can be purchased and utilised. On the other hand, soft technology is the managerial know-how and know-why that certain people possess, which is alive, evolves and needs to be learned, diagnosed and practised within a local environment and improved from time to time.

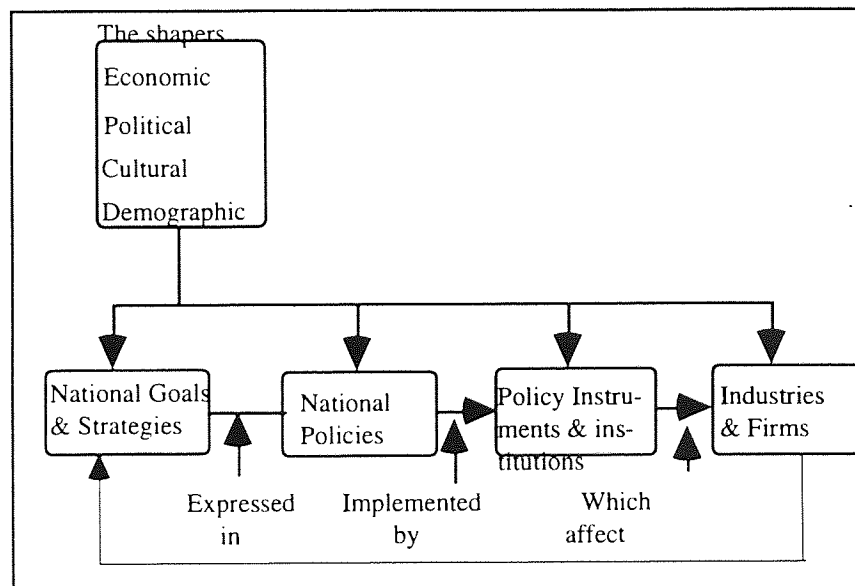
The soft technologies to be studied cover five important management systems as classified and discussed by Florida & Kenny (1991), Kenny & Florida (1993), Oliver & Wilkinson (1992), Bratton (1993), namely: (i) flexible manufacturing system; (ii) company-wide quality control; (iii) human resources management and development; (iv) labour-management relationships; and (v) supplier-buyer relationships. These type of technologies are actually more important to be acquired by joint ventures, mergers, collaborations or in buying foreign companies.

Joint ventures are believed to be the most practical way of learning and acquiring the technology, because they offer the opportunity for direct exposure and hands-on learning while working with foreigners, i.e. technology suppliers (Dahlman & Westphal 1987; MIDA-Business Times 1993; Ballon 1967:73; Ali 1992). The most essential techniques of technology transfer and acquisition is the process of learning by doing and learning by adapting (Ali 1992). Through strategic alliance there are possibilities for technological innovation to take place, which is a key aim of developing countries in developing technological capabilities (Dahlman & Westphal 1983; Dahlman et al. 1987; Lall 1992). Moreover, with Malaysian equity control, management is supposed to be able to devise policies and strategies which favour

Malaysian technological innovation. This thesis will investigate whether the process really is occurring in the strategic-alliance manufacturing Malaysia-Japan companies.

Since the launching of the Look East Policy (LEP) in 1982, very few in-depth studies have been carried out to see what implementation of the policy has achieved within industry, particularly as regards soft-technology transfer, that is, to what extent Malaysian companies are adopting Japanese work organisation, management habits and behaviours. Therefore, this study can be seen as a test of the LEP strategy. The research investigates the public-policy impact chain which has taken place in Malaysia, as shown in figure 1.1.

Figure 1.1: The public-policy impact chain.



Source: Adapted from Austin 1990, Figure 4.1, page 77.

Malaysia wants to learn the Japanese (and Korean) ways of managing firms to upgrade managerial skills and competencies (INTAN 1986; Nester 1990; Bartu 1992; Jomo 1994a; Machado 1994). The LEP was also introduced in order to promote and lead the way to a heavy industrialisation programme (Jomo 1985, cited by Edwards 1993:302). To be competitive, management must be able to bring in organisation that is more productive and innovative (Oakland 1993; Macdonald & Piggott 1990; Drucker 1994). The LEP has existed for 14 years, and the Japanese management systems (JST) are supposed to have been learned by the local managers. Has the JST been absorbed? If not, why not?

Previous studies have focused on Japanese management in Malaysia, but examined the Japanese personnel welfare management only (Chee 1983; Nakano 1985; Thong & Jain 1988). There was also a study of Japanese management practices within Malaysian

subsidiaries or joint ventures of Japanese origin by Imaoka (1982). The samples of his questionnaire survey study were from the manufacturing sector. According to Imaoka, after ten years in operation (from the 1970s to the 1980s), these companies were hardly considered as independent business enterprises, because decision-making authority in important areas of management policy was retained by the parent company in Japan. On the transferability of Japanese management or JST, according to him, all these companies were at the very early stages of implementation. As he put it;

Within their limited range of decision-making authority, however, Japanese subsidiaries or joint-ventures in Malaysia are consciously trying to apply Japanese style management, particularly in the fields of long-run remuneration and organisational policy.

Imaoka 1985:355-6

However, he found that the application of the Japanese management style was limited (Imaoka 1985:349). Do these practices still remain very low in the Malaysia-Japan strategic alliances after 20 years of operation? If they have improved, in what form? This research work will answer these questions.

Ten years later, there was another study done on Japanese foreign direct investment (FDI) and the transfer of Japanese consumer electronics production in Malaysia (Guyton 1994). Guyton studied 40 electronics factories, and he found that 60 per cent of the Japanese electronics companies and their vendors were practising the just-in-time manufacturing systems and Japanese welfare human resource management. He also found that 95 per cent of the sample companies were non-unionised. However this study was not able to explain the application-adaptation process which may take place as researched by Abo (1994). Another point is that those high levels of JST practices were very much related to Japanese-dominated ownership. Hence, this research will not only investigate the high level of JST practices or transfer, but also study whether the application-adaptation process is taking place.

There are two major factors which interact in the technological transfer between the recipient and the supplier (Dahlman & Westphal 1983; Dahlman et al. 1987; Lall 1992; Al-Ghailani & Moor 1995). The first factor is the ability of the recipient to learn the technology or firm technological capability, in which they have been influenced by their contingencies, political economy and cultural circumstances (Child & Tayeb 1982; Al-Ghailani & Moor 1995:694). Beside firm technological capability, national technological capabilities are also important in bringing in the transferability of technology into any organisation (Lall 1992). Do Malaysian management teams have a technology acquisition plan as regards the Japanese ways of managing organisation? Second, how far have the agents for technology suppliers, in this case the Japanese

experts or dispatched personnel, genuinely imparted their know-how to their local partners?

There have been claims that the locals/ recipient are not keen to learn from foreigners (MIDA 1994; New Strait Times 1994), and that the Japanese experts are not keen to transfer their technology (MIDA 1994; New Straits Times 1994, Malaysian Business 1995; Malaysian Industries 1995). How far and to what extent are those claims true? This research will empirically investigate those claims.

Environmental factors also affect the transferability of JST (Florida & Kenny 1993; Jamieson 1982; Smith J.M. 1986). How far is the Malaysian environment namely, the labour market, technical and vocational education, technological research culture and other industrial environments conducive to JST? The size of the firm and the equity ownership, whether big or small, and the types of technology used will create different abilities and powers to implement certain techniques of managing the organisation (Weick 1979; Child & Tayeb 1982), which also needs to be investigated in this research

Since the partners within strategic-alliance companies have a continuous connection with their parent company in Japan (Jomo 1994a; Machado 1994), what is the influence of the vision and policies of that parent company on these alliances? After many years of operating in Malaysia, most Malaysian-Japan ventures and affiliates are still under the control of parent companies (Imaoka 1985; Guyton 1994). Do Malaysian-dominated alliances enjoy considerable autonomy in decision-making and managing the organisation?

In the light of the Japanese MNCs' globalisation strategy, this study will find out whether the management practices within affiliates or subsidiary ventures are the same as those at the Japanese parent companies. One important point to remember is that there is a conflict of interest between the transfer of the best technology to others and the maintaining of Japanese global competitiveness or of MNCs' oligopolistic and monopolistic power as discussed by Tolentino (1993).

Moreover, there is evidence that JST is transferred significantly in Britain (Turnbull 1986; Akcroyd et al. 1988; Oliver & Wilkinson 1992) and in the USA (Cusumano 1985; Florida & Kenny 1991; Kenny & Florida 1993, 1995). On the other hand, there is also evidence that JST is not transferred significantly to countries such as Thailand (Komai 1986), Singapore (Smith, J.M.1986; Wong 1990), Australia (Dedoussis & Littler 1994) and the USA (Milkman 1991), especially in the area of personnel welfare

management and consensus decision-making. The only thing which might be different in the present study is that the Japanese equity in the samples is small. In a way, the Japanese counterparts have little influence over the selection of management style to be adopted by their partners. But can they still play a big role because the objective of the joint venture is to expand its business to Malaysia?

As the history of JST transfer is very much associated with the auto industry as compared to electronics industry, especially in the US and in the UK (Florida & Kenny 1991; Kenny & Florida 1993; Smith C.1994; Abo 1994a), would the same trend take place in Malaysia? These findings need to be tested in Malaysia as the country is very keen to encourage industry to adopt and emulate JST (Lim, C.P. 1994b)

In the light of general management development, this study will find out whether the Malaysia-Japan strategic-alliances have their own management style. It has been argued that there was no such thing as a Malaysian management style (Thong & Jain 1988). That argument needs to be tested empirically. Multi-racial, eastern values and culture in Malaysia are enough to produce some influences on the management practices there (Sin 1984; Maniam 1986). In fact, management in Malaysian industry is claimed to be at a cross-roads, because there are significant interactions and influence of local cultural, contingency and political-economic factors on management behaviour, especially within foreign MNCs operated in Malaysia (Abraham 1988).

Do Malaysian manufacturing companies practise the same management fashion as companies in the West or in Japan? Malaysian labour is not strongly organised (Wad & Jomo 1994). Most managers are locally and Western educated (Thong & Jain 1988). Moreover, there is strong state pressure on firms to have in-house unions, especially in the electrical and electronic industries (Wad & Jomo 1994; Jomo 1995). Against this background, have Malaysian companies adopted American Fordist mass production, or non-union Industrial relations, or the Japanese/ Toyotism model? (Milkman 1991).

The findings of this study will enrich the general management and manufacturing work organisation models, and develop Malaysia's own management practices based on this empirical research. This research will not only investigate the differences in management practices within the Malaysian manufacturing companies compared to others, but also look at the technological and industrial management or development taking place in Malaysia. In other words, it is an attempt to look into the technological capability of a developing country (Dahlman & Westphal 1983; Dahlman et al. 1987; Lall 1992).

Bearing in mind the above points, the objectives of the research were set as follows;

(i) the main objective was to gain an understanding of the transfer process of Japanese management practices or Japanese soft technology (JST) from one national context to another, in this case from the mature economy of Japan to a developing country; Malaysia. The study will investigate what has been transferred, and how and why the process within current theories. Is it a case of 'innovation mediated production' (Kenny & Florida 1993), whereby Japanese management, through large and powerful organisations, can be transferred successfully to foreign soil? or of 'core-periphery' (Dedoussis & Littler 1994) transfer models, whereby Japanese companies practise their best management techniques only at home? or does the Malaysian case have particular qualities of its own?

(ii) The research will examine the similarities and differences of JST transferred between the automobile and telecommunication sectors, and reveal any distinctive Malaysian management features. It will, in particular, examine the value of contingency factors (different capabilities) that cause the differences between two strategic-alliances (PROTON and PERNEC).

(iii) The research will study the interrelationships between the two forces, that is, between the Malaysian managerial capability and eagerness to learn, and the readiness of the Japanese to transfer JST within firms.

(iv) The relationships between and the effects of national technological capabilities (NTC), i.e. investment policies, incentives and R&D foundation, on firm technological capabilities (FTC) i.e. technology creation and development will be considered. Does Malaysia have a balance between policies and strategies of encouraging foreign capital and technology, and her own indigenous technology development programmes?

(v) With regard to Japanese involvement in the Malaysian industrialisation process, this research will explore how Japanese public agencies, private agencies, MNCs, SMIs and the Japanese Embassy have been working in Malaysia.

With regard to objectives (i), (ii) and (iii), the research took place within two strategic-alliance companies and their suppliers operating in Malaysia. Work was also done within Japanese and Malaysian agencies to furnish research questions for (iv) and (v). The emphasis of the study will be on the five popular aspects of JST, namely: lean or flexible manufacturing systems, company-wide quality control, high-cost human resource management, harmonious labour-management relationships, and long-term

and close assembler-supplier relationships (Oliver & Wilkinson 1992; Florida & Kenny 1991; Kenny & Florida 1993; Milkman 1991).

The main assumption of this research is that the JST has been transferred but not in full. Japanese expatriates and Malaysian management teams are the most important parties in the transfer process. This latter is a critical factor in the transfer of JST within these strategic-alliances, because these managerial groups (mostly engineers) are trusted to manage and develop the organisation productively and efficiently (Koontz 1967; Ouchi 1981; Kanter 1983; Serry & Verderber 1991).

The thesis opens with an evaluation of the core theoretical literature of JST and its transferability and general theories of inter-firm learning. One theory of joint ventures suggests the joint venture company will operate fairly and share the benefits and profits (Ballon 1967; Wilczynski 1976; Trevor 1985; Al-Ghailani & Moor 1995). We can find the truth of this by analysing the behaviour of MNCs operating abroad. On the other hand, is there any difference between the behaviour of Japanese and other MNCs? Chapter 2 discusses this too.

Since the objective of the research is to understand to what extent the Japanese management style has been transferred to Malaysian industry, which involves an in-depth study (Smith, J.M. 1972; Bryman 1989; Yin 1993, 1994). Case study method with qualitative analysis are utilised. Multi-window ways of information gathering were used. The measurements used in semi-structured interviews, observations and document searches are explained. All the methodology is discussed in chapter 3, together with the limitations of this method.

In chapter 4, the thesis explores the role of the state in encouraging foreigners to take part in the nation's building. There is an analysis of the groundwork (preparation) for the JST transfer, that is, the creation of a friendly environment by the Malaysian government (investment policies, employment policies and institutional efforts) towards Japanese investors. The 'spirit of capitalism' has pushed the country towards industrialisation and turned the eyes of Malaysians from modelling and partnering the West (i.e. Britain), to the East (i.e. Japan and Korea). Here we can see how Malaysia has been opening its doors to the Japanese through the Look East Policy (LEP), with a high degree of hope and trust that Japan will transfer and share its competitive advantages with Malaysia. Malaysian ministries, agencies and private companies are collectively opening their houses for Japan to enter. At the end of chapter 4, we will also see the net effects of the high trust and hope in Japan on the LEP.

As is well known, MNCs are capitalist agents, migrating from one place to another. But, in Japan, they operate under a 'command capitalism' (Pascal & Athos 1982) or 'interventionist' (Lall 1992) state. Therefore, the picture is different. The government and the private sector work together to develop the nation, at home and abroad. Chapter 5 will explain how the Japanese have come to Malaysia in full force as a strong team (1000 MNCs, 12 public agencies and 22 private agencies) with strong weapons (capital and advanced technologies).

The foundations of JST transfer, that is Malaysian offers and Japanese acceptance are laid out in chapter 4 and 5 respectively. Chapters 6 and 7 reveal what is really happening in the two strategic alliance companies. The actual JST (work organisation and management practices) is explained case by case. The five types or areas of management practice will be explained one after the other, and Japanese influence on each of these five aspects of how JST has been transferred will be also discussed. How the JST has been transferred will be explained, as will the variations between the expected and the actual transfer of JST. Although most of the analysis was done qualitatively, there were also some complementary quantitative approaches which are discussed.

In chapter 8, I critically evaluate the Japanisation process in Malaysia, by linking the findings from both cases to the theory of Japanisation and also by comparing the transferability which has taken place in mature economies like the US, the UK, and Australia and in other parts of the world. The similarities and differences between Malaysia's and others' experiences will be revealed. The similarities and differences between sectors are discussed alongside and related to the global experiences. The Japanisation process debates will be highlighted here: whether Japanese management transfer to Malaysia is inclined towards 'Innovation-Mediated Production' and 'Lean Production' models as proposed by Kenny & Florida (1993) and Womack et al. 1990), or towards the 'Core-periphery' model as proposed by Dedoussis (1994). The author also analyses organisational Japanisation as part and parcel of the national and regional Japanisation process. In chapter 9, the Japanisation debate is summarised. Some small valuable contributions of the research to the pool of knowledge are suggested. Future potential research ideas are also suggested

The overall Japanese economic achievement since the Second World War; the scarcity of capital, knowledge and technology in the industrialisation process; the desire to become a developed country; and the similarities of Asian values: all these things have led Malaysia to take Japan (and South Korea) as a helper and partner. Moreover, Japan is the only Asian country to have achieved the status of developed country, and it is

near to Malaysia. Therefore, Japan may be thought of as the best model and example for Malaysia. Though there have been many comments from intellectuals and the public on the way LEP has been implemented, and some argue that Malaysia should not become too reliant on Japan (and foreign MNCs) in the making of the country, the process continues. Today, the debate on Japanese involvement in Malaysian economic and industrialisation development is at a peak. Most of the critics say that Japanese involvement has benefited Japan rather than Malaysia.

Chapter 2: Japanese soft technology (JST) & its transferability: The debate on Japanisation.

2.1 Introduction.

This chapter concentrates on the theoretical analysis of Japanese soft technology (work organisation and management practices), covering its definition, origin, generalisability, transferability, universality and, finally, its dynamism or flexibility. Discussions of strategic alliances as a vehicle for technological transfer, the technological/industrial learning process, Japanese transplants, multinational companies (MNCs) and Japanisation process theories, which are related to the thesis, are also incorporated. These theories and practices act as a foundation for the thesis and are referred to the discussion and analysis of JST transfer within the alliances studied.

2.2 What is Japanese Soft Technology?

A lot of research has been conducted in order to establish the differences between societies, organisations and management in the East and the West. Examples include, the comparison of different people and management styles in American and Japanese organisations (Azumi et al. 1986; Ouchi 1981), the comparison of American-Chinese-Japanese management (Chock 1986), the comparison between Western and Eastern management (Walters 1991), and the comparison between North American-Western European and Asian/Japanese management (Humes 1993). Most of these comparisons are very general, and therefore have to be empirically tested.

According to these writers, the main contrast between the East and the West is that between opposites: collectivism versus individualism, team versus individual performance and achievement, multi-skills versus single skill (specialist), holistic versus segmented concerns, life-time versus short-term employment, collaborative versus confrontational government, co-operation or compromise versus confrontation between labour and management, participative and consensus versus authoritative decision-making style, two-way versus one-way communication, cutting costs through productivity and quality improvement programmes, or *kaizen*, versus redundancy and downsizing.

It has been also argued that Western companies often delegate product development to technologists with a lack of managerial knowledge. The Japanese, on the other hand, produce managers who mix technical expertise with management skill (The Economist, 4 March 1995). The Japanese apply the soft system, whereby problems are solved in total, not partially. There is high mutual trust between employees and managers, and firms are given freedom to rotate their employees between various departments and locations (Cavaleri & Obloj 1993:131).

Milkman (1991) distinguished between American - Fordism - Mass-production, American non - union industrial relations and the Japanese - Toyotism - lean production - team concept. In the American - Fordism - mass-production model, decision-making is highly centralised, communication is poor and there is no worker input. The job is very specialised, rigid and has low flexibility. The payment system is job-based. Job security is based on seniority and lay-offs are frequent. There are also sharp status distinctions between workers and managers. The degree of trust is minimal. The trade unions are very strong and labour relations are always in conflict.

In American non-union industrial relations, there is some worker participation and communication in decision-making process. There is some job flexibility, payment is based on job and seniority, job security is based on merit, and lay-offs are avoided. However, the sharp status distinction between workers and managers still exists, the degree of trust is medium, and there is no union. In the Japanese model, there is extensive worker participation, smooth communication in the decision-making process, jobs are rotated, team-work is very strong, and there is high job flexibility. The payment system is seniority-based. Jobs are secured by lifetime employment and there are no lay-offs. Status differences are muted between workers and managers, trust is high, unions are weak but labour relations are very co-operative. A summary of the distinctions is given in table 2.1:

Table 2.1: Three models of work organisation and industrial relations.



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Source: Milkman 1991, Figure 3, p. 68.

Milkman's model of work organisation is based on a high-tech automobile manufacturing industry in a developed country, although the testing of it was in the

electronics sector. In Malaysia, manufacturing industry was basically labour-intensive (Ali 1992; Henderson 1990). Malaysian companies have been strongly influenced by the work organisation and industrial relations of the West, particularly Britain, in which trade unions are craft-based, salary and promotion are based on merit, and there are significant status differences between workers. However, government intervention in pursuing the Japanese union model within industry has had a significant impact on the mushrooming of company-wide enterprise unions since the 1980s (Jomo 1993; Wad & Jomo 1994). Therefore, there is a tendency for mixed work organisation and industrial relations to be practised in Malaysian factories.

Many studies have claimed that JST is human-centred (Pascal & Athos 1982; McMillan 1989; Inohara 1990; Kanter 1992; Cavaleri & Obloj 1993). They have also projected five distinctive features of it such as: a flexible manufacturing system, company-wide quality control, lifetime employment and company welfarism, in-house unions and consensus decision making, and long-term supplier-assembler relationships or high dependency on workers and suppliers (Schonberger 1978; Turnbull 1988; Womack et al. 1990; Florida & Kenny 1991; Bratton 1992; Oliver & Wilkinson 1992; Kenny & Florida 1993).

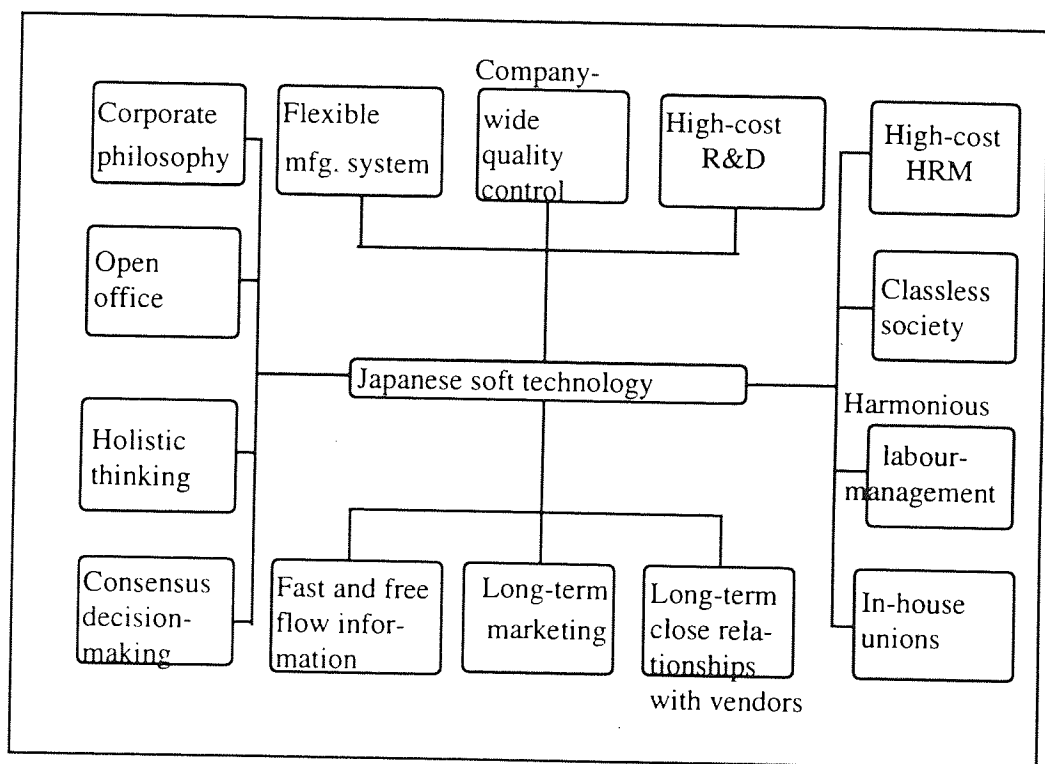
The organisation is governed by holistic thinking whereby everyone is taught that their work is equally important and is a part of the chain and linked to others, to achieve total company performance. All activities are guided by one corporate philosophy (Inohara 1990; Ouchi 1988; Kanter 1992). The Japanese organisation is supposedly a classless society (Wilkinson et al. 1993). With flexible and multi-skilled teamwork and flexible machines, a production line can produce various models (Oliver & Wilkinson 1992; Kenny & Florida 1993). Production is based on the just-in-time (JIT) system, in which the company holds no stock and parts/ components are supplied direct to the production line (Schonberger 1978; Womack et al. 1990; Oliver & Wilkinson 1992). The continuous improvement programmes (*kaizen*) and R&D activities are implemented in cooperation with suppliers and distributors.

In strategic marketing, their product strategy is based on marketing research and experience in a given market, and normally followed by a series of product lines and after-sales services (Dace 1987). In other words, as they globalised products they also localised them according to market needs (Humes 1993). To ensure control over price, quality, cost and delivery, Japanese companies normally possess some equity in their subsidiaries, affiliates and subcontractors (Cusumano 1989; Dyer & Ouchi 1993). Information exchange and joint R&D between assemblers and suppliers are commonly practised, in the form of immediate phone contact over defective parts and components,

on-site visits when setting up operations, and site visits to deal with production and quality problems (Florida & Kenny 1991). It was found that the JIT production system, quality circles movement, seniority-based payment, in-house unions and strong interfirm relationships are the most frequently mentioned characteristics of Japanese firms the authors cited in their discussions.

From these discussions, a Japanese soft technology model (JST) has been developed as shown in figure 2.1.

Figure 2.1: The Japanese soft technology (JST) model.



For the purpose of this thesis, only five management areas will be elaborated, namely: lean/flexible manufacturing system, company-wide quality control, welfare or high cost human resource management and development, harmonious labour-management relationships and finally long-term supplier-buyer relationships. Before we turn to these five areas, I will give an overview of the general characteristics of Japanese organisations.

General characteristics of Japanese organisations.

To secure lifetime employment and internal promotion, the Japanese organisations tend to have a tall hierarchy. Job classifications are small and there is a single job entry (Abo 1992, 1994a). To create loyalty and a sense of unity or togetherness, they have corporate philosophy and songs. The Japanese organisation is a 'classless society' where all employees are called '*shain*' (members of the company), without a clear-cut

dividing line between management and rank and file. The organisation chart, if available, doesn't state managers' names; only departments and sections are identified (Inohara 1990:29). Everyone wears the same uniform and utilises the same facilities; there is a single canteen, one car park, one set of sport facilities: another reflection of classless organisation (Azumi et al. 1986; Ouchi 1988; Inohara 1990; Florida & Kenny 1991; Suzaki 1993; Wilkinson et al. 1993).

Personal (individual) communication is the most important medium, rather than paper communication, and the exchange of information between department, subsidiary and parent company is very fast and wide (Inohara 1990; Kanda 1990). Plans take a long time to develop, but are implemented quickly and smoothly (Ouchi 1988). The planning exercise involves both management and workers in the consensus decision-making culture. Everybody in the organisation moulds their personal and departmental goals to achieve the organisational objectives (Imai 1986).

The flexible manufacturing system.

In flexible production or manufacturing systems, production is based on the 'just-in-time' (JIT) process, *kanban* stock control is used, and workers are organised flexibly according to demand or product variations. To achieve the same end flexible parts, methods, machines and tools are used. The 'quality circle' or 'small group activity' is practised, i.e., informal permanent volunteer teams of workers are set up to solve quality problems. A variety of product models can be produced from a single production line by exchanging the moulds, dies, machines and jigs (Schonberger 1982; Emmott 1992; Florida & Kenny 1991; Oliver & Wilkinson 1992; Kenny & Florida 1993).

The products are user-friendly, and easy to maintain. On the other hand the development of new products is shortened from 7 or 10 to 2 or 3 years. New models or varieties are made and brought to the market more quickly, with powerful information and service systems and a feedback loop of customer knowledge (Stalk & Webber 1993). The parts and components are supplied direct to the production line, leaving storage free (or with only minimum) of stocks. Replacement parts are available in the market for several series of products. Machines are grouped by family rather than by function (Womack et al. 1990; Oliver & Wilkinson 1992).

Information on parts and component requirements is shared with vendors right from the designing or drawing stage. The making of moulds and dies is started as product designing takes place (Womack et al. 1990). The designing and building body-stamping dies are begun before all the drawings are finished. The engineers give sets of

design alternatives to vendors and they bring varieties of samples to the supplier-assembler meetings (Ward et al. 1995). The design is done by using CAD and CAM and CIM (Oliver & Wilkinson 1992; Bratton 1992). The manufacturing process is highly automated and robotised (Ryoichiro 1994). Repair areas in the factory are small because quality is being built along production process and there is little repair work done off line (Womack et al. 1990).

The Japanese manufacturing system is normally associated with the Toyota production system (TPS) which has been used as a standard for international benchmarking (Schonberger 1982; Womack et al. 1990; Oliver & Wilkinson 1992; Oakland 1993; Williams et al. 1994; *The Economist*, March 1995). The TPS is a flexible system. Originally (in 1947), the system was that one worker tended 3 or 4 machines laid out in parallel or C-shaped lines. It was improved (in the 1950s) to U-shaped cells with teams of workers engaged in machining and sub-assembly tasks. In 1977 the system was improved for the third time, to interconnected cells in honeycomb layouts where multi-functional workers could be transferred between as well as within cells. The cellular worker continuously initiates value-adding by loading and starting machines as (s)he moves around the cell, varying the walk paths so that it is possible to adjust the workers according to demand fluctuations, and the main concern is the efficiency of the team (Williams et al. 1994:111).

In 1995, the TPS (in the making of the front-wheel drive car RAV4) was again improved, not by replacing workers with machines, but by restricting the machines to activities that make life easier for the workers. The line is sub-divided into five sections, with buffer zones in between to make work less stressful. Three or four cars enter a given sub-section. A team of workers stand on their own little rubber belts that follow the car they are working on as it moves through their area. With an automation level of 66 per cent for production line, using rolling devices, overhead conveyer, and an increasing number of maintenance workers, the number of defects was reduced and productivity increased. Today, Toyota can produce 428 (RAV4) cars per line per day, and 9,000 cars a month, with a productivity level of ten man-hours per vehicle (*The Economist*, March 1995:81).

The 'Just-in-time' manufacturing system.

The 'just-in-time' (JIT) system of production is the process in which goods and products are produced just in time to be used (Oliver & Wilkinson 1992:25). To be more precise, in the JIT system, finished goods are produced and delivered at the time they are to be sold, parts are sub-assembled at the time they are to be assembled into the final products, parts are fabricated at the time they are to go into the sub-assemblies,

and materials are bought at the time they are to be transformed into fabricated parts (Schonberger 1982:16). The system minimises inventory and cost, and materials are delivered as needed (Kenny & Florida 1993:168).

The suppliers make frequent on-time deliveries of small quantities of materials, parts and components, often straight to the point of use, and stocks are kept to a minimum. This requires an effective supplier network, to ensure that the right quantities are purchased and produced at the right time and there is no waste. In-process stocks and batch sizes are reduced to very low levels and equipment maintenance is of high enough quality to eliminate breakdowns (Oakland 1993:88).

To make the system run smoothly, the *kanban* (visible record) inventory system is utilised, whereby parts are co-ordinated through cards and part containers supplies. Under the *kanban* system, a worker from one process goes to collect parts from the previous process, leaving a *kanban* signifying the delivery of a given quantity of specific parts. When the parts have all been used, the same *kanban* is sent back, at which point it becomes an order for more parts (Imai 1986:4). Through the JIT production system, all suppliers, assemblers and distributors are brought into both the production system and product development (Imai 1986; Womack et al. 1989).

The Japanese model links together the intellectual capabilities not only of researchers and engineers in R&D and shop floor workers but also those of product development engineers and various other departments. As Kenny & Florida (1993:304) put it:

In innovation-mediated production, the intellectual capabilities of a variety of different type of workers are integrated and explicitly harnessed to turn knowledge into commodities. This overcomes artificial divisions and facilitates efficient production. Thus, there is a fusion of researchers who create innovations, engineers who develop them and turn them into commercial products, and shop-floor workers who produce them. Overlapping membership allows R&D workers to work alongside product development engineers and even factory workers, blurring the boundaries among them. This creates an interplay and synthesis of various types of knowledge and intellectual labour in an explicitly social context. Such integration of functions is required so all the relevant actors can interact, exchange thoughts, and create new ideas, as a unified 'social brain', and then translate and embody those ideas into new products and production processes.

***Kaizen* and company-wide quality control.**

Japanese management also has a distinctive business concept known as '*kaizen*' (continuous improvement) and total or company-wide quality control (CWQC). This concept motivates everyone in the organisation, continuously to seek ways and means to produce and deliver better quality. Quality systems, techniques and measures are always improved by various methods - total quality management, plan-do-check-action (PDCA), zero defects, quality circle, in-process control, suggestion system, awards

and appreciation (Ouchi 1982; Juran 1992; Oliver & Wilkinson 1992). As Imai (1986:5) put it:

these concepts have helped Japanese companies generate a process-oriented way of thinking and develop strategies that assure continuous improvement involving people at all levels of the organisational hierarchy. The message of the *kaizen* strategy is that not a day should go by without some kind of improvement being made somewhere in the company.

In checking quality, there is no room for quality tolerance, it is sharp and precise. Parts and components received go straight to production lines without inspection because quality is built-in with vendors (Oakland 1993; Oliver & Wilkinson 1992).

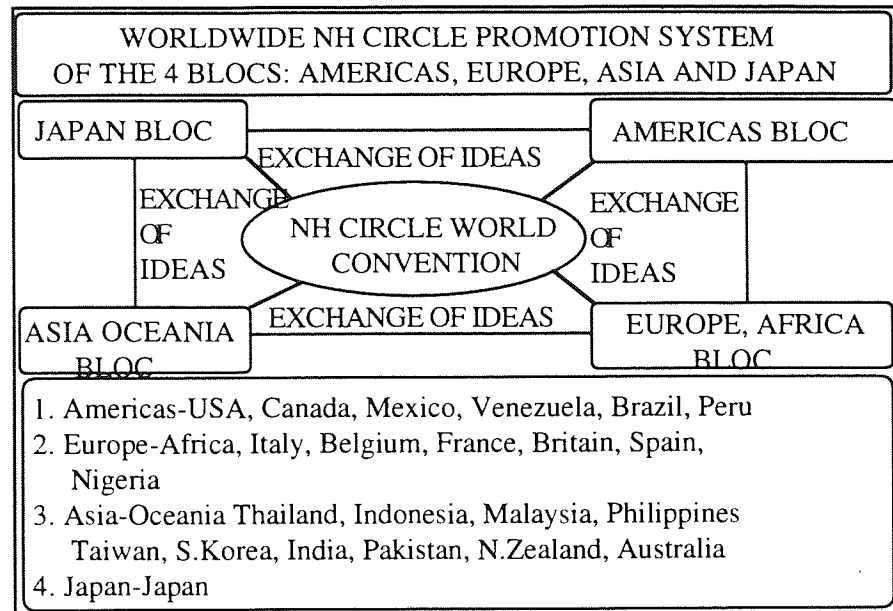
Everyone in the company is responsible for producing and building quality. In other words there is a quality chain value which links everybody into the process (Oakland 1993). Waste and repetitive work are minimal (Oliver & Wilkinson 1992). As the quality is build into the production process, if there are defects repair is done on line, so only a small repair bay is provided in the plant (Womack et al. 1989).

Quality circles.

Line workers are grouped into quality circles under their respective work cells and are led by a team leader not a foreman. They meet every day or week outside working hours voluntarily. They work among themselves to find ways to make their jobs better and more productive. There are annual or six monthly factory, national and international levels of presentation for productivity and quality improvement achievement programmes (through QCCs activities) and rewards are given to the best circles and circles who qualify for the final of the presentation (Imai 1986; Ishikawa 1988).

For example, Honda have their annual exchange of ideas in what they call the NH Circle World Convention, where the best QCCs from four blocs of the world present their improvement projects and the participants are awarded as a sign of recognition from Japan. See figure 2.2.

Figure 2.2: World-wide *Nippon Honda* (NH) promotion system.



Source: Adapted from Sugiura 1992, Figure 3, page 11.

In 1978, when Honda had their first meeting, there were only 1,062 circles. The participation of its subcontractors took place in 1979, and two-third of the participants came from these subcontractors. That year, one overseas circle and a few dealers took part in the convention. But in 1990, there were 13,351 circles, including 13 per cent (1,712) from overseas, made up of 108,000 individual (70 per cent of the Honda population) participating in the convention. Management was not satisfied and aimed to have 90 per cent of the employees participating in QCC activities (Sugiura 1992:9).

In 1984, 60 per cent of all business establishments in Japan with over 100 workers had QCCs or the like. The percentage has increased to 84 per cent for firms with 5000 workers, and in those companies which have QCC activities, more than 90 per cent of workers participate (Milkman 1992:74).

To complement QCC activities, an open suggestion system is also established to get opinions from as many workers as possible. The workers' morale and the total creativity of the organisation are highlighted, as can be seen from the large number suggestions received from the workers. Group and individual suggestions are displayed, and the emphasis is on ideas that workers can implement themselves (Suzaki 1993). The number of ideas per employees is counted and monitored year by year (Robinson & Schroeder 1993:52). These suggestions are taken seriously and rewards are given to contributors. Even though the average reward in Japan is less than in the USA, Japanese creativity, implementation rates and participation are much higher. See Table 2.2 for further details.

Table 2.2: Comparative statistics of suggestions system at the national Level, 1990.


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Source: Robinson & Schroeder 1993, Table 2, page 53.

Like any other skill, quality is taught in the company-wide quality education programmes for everybody in the company. A special budget is given for this purpose and a special organisation is formed (Suziura 1992; Suzuki 1993; Oakland 1993; Westbrook 1995).

Welfare/ high cost human resource management.

In most literature, Japanese management is known as 'human centred' and associated with three pillars: 'lifetime employment', 'promotion through the seniority-merit system', and 'enterprise unions' (Macmillan 1989; Inohara 1990). Internal promotion is widely practised, and workers are hired directly from among fresh graduates (Abegglen & Stalk 1985; Inohara 1990). The emphasis is on on-the-job training, jobs transfer and rotations. The workers' participation or consensus in decision-making is widely used and these workers are flexibly organised, for which they have been multi-skills trained.

Large Japanese companies do not lay-off their workers. For example, when Nissan closed its Zama factory, Tokyo, in March 1995, all 2,000 redundant workers were re-employed by other bits of the company (The Economist, July 1995). In Japanese companies, employees are given central role in improving the competitive power of the company. Management do not simply replace their workers with robots to improve productivity and quality levels. What they do is ask the employees to identify the elements hindering the productivity improvement from their point of view, and then introduce robots to eliminate such elements.

Japanese industrial relations.

Although Japan has a Trade Union Confederation (*Shin-Rengō*) and Industrial Federations (*Tansan*), a federated body of enterprise unions by industry, they are not expected to participate in collective bargaining at the enterprise level. In Japan, only the Seamen's Union has organised all seamen, i.e., workers, irrespective of company and rail workers used to belong to an industry union. The Seamen's Union negotiates directly with the Association of Shipowners on terms of employment and working conditions for all seamen in Japan (Inohara 1990:126).

The vast majority (94.2 per cent) of labour unions in Japan are in-house unions that organise only the employees of the respective companies and most (58 per cent) come from big organisations (with 1,000 employees or more). Another 2.6 per cent are industrial unions, 1.0 per cent are craft unions, and the remainder are miscellaneous (Inohara 1990:127). The smaller the firm, the less likely there is to be a union. It has been estimated that firms with 100 workers are roughly 95 per cent non-unionised (Oliver & Wilkinson 1992:53), and about 60 per cent of the labour forces works in firms of with fewer than 100 employees (Oliver & Wilkinson 1992:59). The rate of unionisation in Japan decreased from 46 per cent in 1950 to 28 per cent in 1987 (Inohara 1990:128). As the unionisation rate decreased, disputes also decreased from 4,551 cases to 2,002 cases respectively (Inohara 1990:137).

Japanese organisations and employees assume that they are working as one family, where the elements of collaboration, consultation and cooperation between management and union are very high. If a union is formed, it typically supports the management in achieving its organisational goals (Azumi 1986; Inohara 1990; Milkman 1991). They smooth the communication by practising daily or weekly morning meetings, company newsletters, feedback reports, daily communal singing and open offices. This potentially dissolves artificial barriers. The main function of a company-wide union is to promote group cohesiveness, to ensure management in making profit does not disregard of social norms and justice, to settle grievances through the Joint Consultative Committee (JCC) without outside interferences, and also to develop a continuous harmonious labour-management relationship (Inohara 1990). All permanent workers are eligible to join the union except the managing director and top management team (according to a Japanese expert at PROTON). Representatives from the union and management serve as chairman of the JCC alternately (Inohara 1990). Through unions, the management involves the workers in the consensus decision making (Imai 1986; McMillan 1989). As the late Konosuke Matsushita put it:

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Akita 1991: Appendix 3

In California a study of Japanese-owned factories showed that, only 8 per cent of Japanese-owned manufacturing plants with 100 or more workers were unionised (Milkman 1992:104). By contrast, 67 per cent of Japanese transplants in Ireland were unionised (Gunnigle 1995). From these readings, it can be concluded that Japanese companies tend to adapt to local industrial relations practices. Wherever unionisation is strong they will adapt to it. And wherever workers are weak and disorganised, they will let the workers remain non-unionised and weak.

Long-term and close supplier-buyer relationships.

Florida & Kenny (1991) grouped those practices which have been discussed as the intra-organisational forms. Japanese factories are concentrated geographically, and there is a high degree of interaction and information exchange, joint product development, integration of and diffusion to suppliers. It is known as 'supplier relations' (Oliver & Wilkinson 1992), Japanese-style partnership (Dye & Ouchi 1993), obligatory close relationships (Sako 1992), or collaborative advantage (Kanter 1994).

Sako (1992) explained that there are two kind of relationships between final assemblers and suppliers, arms-length contractual relationship (ACR) and obligatory contractual relationship (OCR). In arms-length and short-term relationships, assemblers get their resources through an open tender bidding system. The relationship is over when the tender is over. There is no joint products or parts development process between assembler and vendors. In an obligatory close relationship, assembler and vendors have a long-term relationship. There is joint products and parts development between the two. One component is supplied by one vendor. There may be two, but no more than three suppliers. Orders are placed by commissioning rather than by tender. Assembler and vendor solve problems together. Electronic and verbal communications are widely used, instead of formal black and white paper works/ contract documents (Sako 1992).

Kanter (1994) explained that mutual benefits are gained by the partners through a high degree of trust (also in Sako 1992). The suppliers are involved not only in materials management but also in design and manufacturing. Incoming goods are not inspected at receiving stations, but move directly from the supplier's production line to the assembler's production line. The combination of performance and trust developed in the partnerships allows assembler and suppliers to save the cost of inspections, queuing and storage. Suppliers are brought in at an early stage to help with design and manufacturing decisions. New technologies such as CAD, CAM and JIT collaboration are brought in throughout the entire planning process, and this reduces lead time in purchasing and ensures steady quality, and productivity, shortening the development process and the manufacturing cycle (Han et al. 1993).

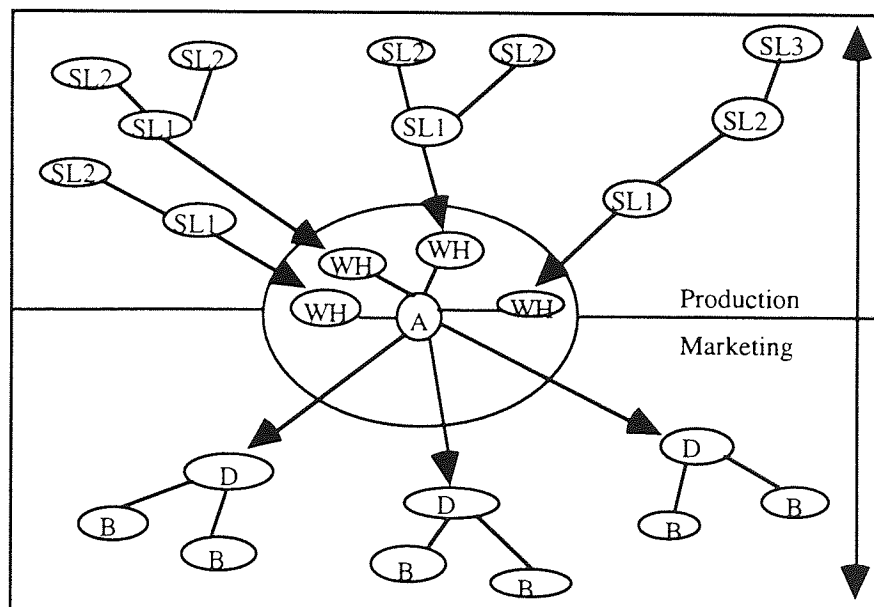
According to Dyer and Ouchi (1993), Japanese-style partnerships provide companies with a competitive edge to both *kankei-gaisha* (affiliated) and *dokuritsu-gaisha* (independent) suppliers. The partnership is focused on maximising the efficiency of the entire business system to create a see-through value chain, to increase quality, minimising the total value-added costs that both the supplier and the purchaser incur, take the advantage of economies of scale in both production and transaction costs, and

to capture most of the synergy that would exist if the two firms were under common ownership. The key characteristics of JSPs are: long-term relationships and commitments, with frequent planned communication; mutual assistance and focus on total cost and total quality; willingness to invest in plant, equipment and personnel; intensive and regular sharing of technical and cost information in order to improve performance and to set prices; and trust-building practices such as owning stocks, transferring workers, receiving guest engineers, and using flexible legal contracts.

In many cases, these vendors are owned by the assembler even though the latter is small. The purpose is to ensure that quality, price and delivery requirements are met. Within 29 selective suppliers of Nissan, on average, 50 per cent of direct sales was for Nissan, 33 per cent of shares were owned by Nissan, 100 executives were transferred from Nissan and 31 per cent of the supplier's management team came from Nissan (Dyer & Ouchi 1993). There are also close and continuous relationships between the R&D staff of assembler and suppliers, and mould-die makers, i.e., between engineers and designers from both assemblers and part suppliers, mould and die makers (Womack et al. 1989).

In the JIT production systems, frequent delivery is required. Affiliate vendors place their warehouses near the assembler, creating a JIT city.

Figure 2.3: The just-in-time (JIT) city.



Notes: A = Assembler B = Buyer D = Dealer WH = warehouse
 SL1 = Supplier Layer 1 SL2 = Supplier Layer 2 SL3 = Supplier Layer 3

In 1980, for example, Toyota had 10 important subsidiaries, 220 primary sub-contractors (80 per cent of these had plants within the production complexes) or supplier layer one,

5,000 secondary sub-contractors or supplier layer two and 30,000 tertiary sub-contractors or supplier layer three (Oliver & Wilkinson 1992:61).

The demand from the markets will be gathered by the dealers, passed over (in the form of orders) to the business division, then go into the procurement and production planning schedules. Ideally, fluctuations in market demand can be easily accommodated by the flexible production line.

2.3 The contribution of Japanese soft technology (JST).

Japan has projected a new model of economic development called the 'East Asian model', with its interventionist policies (McMillan 1989; Nester 1989; Henderson 1990; The Economist, October 1993). The Japanese organisations, on the other hand, projected their business strategic planning and strategic management style (Abegglen & Stalk 1985). The global spread of Japanese MNCs gives new colour to the existing literature of management sciences. The domination of scientific management, Taylorism and Fordism in the earlier 20th century has been weakened by the humanist and socialist management (Suzuki 1989; McMillan 1989). Even though the Japanese management system is claimed to be 'management by stress', 'workaholic', and has been linked with 'death because of over-work' (karoushi), workers in NUMMI (a Toyota-GM joint venture) were asked whether they preferred the previous (GM) or the current working style, the answer was that they preferred the latter (Milkman 1992).

Japanese organisations combine the concepts of 'competition' and 'co-operation' (Oliver & Wilkinson 1992). They believe in long-term relationships and trust their workers and vendors (Sako 1992). They spend their time on *kaizen* instead of innovation (Imai 1986). They promote the idea of reducing costs, but also increasing productivity and quality (Womack et al. 1990). They have a six-month budget, believe in fixing the problem not putting the blame on others, stay focused, quantify everything, know the whole operation, get people to buy into the division, empower the international sales group, visit customers, build market share and demand active directors (Rehfeld 1990).

As a Japanese expert interviewed at PROTON claimed:

We even go for small profit, not like businessmen here (in Malaysia) who mostly look for high profit margin. What most important is to establish market share and long-term growth. Another thing which is different is that, we talk less but work more. In other words we have a doing rather than talking culture.

Japanese expert, Engineering Department 1

From the above discussions, the Japanese contribution was observed as culturally based. Their loyalty, cooperativeness, respect, and social responsibility towards workers, or what

McMillan (1989) termed the Japanese spirit, have been brought into the factory and working life (Athos & Pascal 1981).

2.4 The debates on JST.

The negative aspects of JST.

As a coin has two sides, so Japanese management has some negative aspects, such as passing the bulk of storage and quality to vendors and subcontractors and long working hours. Japanese industrial workers work 2,000 hours yearly, 200 to 500 hours more than workers in the United States and Europe. There are some cases where their production line is stressful, difficult, even unhealthy. Furthermore, benefits are only for the one-third 'core' of permanent employees who work with the large companies, and does not apply to 'periphery' workers who work with suppliers and subcontractors, which are normally small and medium industries (Dedoussis & Littler 1994; Kenny & Florida 1993:10; Oliver & Wilkinson 1992).

There is a need to establish a body of empirically based knowledge about the real practice of Japanese management in Japan (Imaoka 1985). The non-core within major enterprises such as subcontractors, women, part-time and temporary workers, are excluded from the benefits and the welfare employed by big corporation (assemblers). It is known as the 'dual economy' (Oliver & Wilkinson 1992:57). Morishima, further argued that:



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Morishima 1990:64.

In other words the transferability of JST is just like Taylorism (scientific management) and Fordism (mass production) which has transfer limitations.

Since jobs are done through 'cellular technology' (Turnbul 1988; Oliver & Wilkinson 1992; Bratton 1992), the effort and the cost of co-ordinating become expensive, the information flow must be very efficient, more non-routine work is done by team work, and it is difficult to replace multi-skilled workers (Bratton 1992:32). Moreover, almost all the time of male workers is devoted to their companies and less time spent with the family. As one of the Japanese experts who was interviewed confirmed:

You Malaysians are so lucky, because as you work, you also give your time to your family. In Japan our work culture makes us have not much time to do so. We should also be fair to our family.

Japanese expert, PROTON

Furthermore, it is argued that because of the practice of single or dual sourcing, there is a tendency for high interdependence between assembler and suppliers. When cost, quality and delivery are not met continuously for some time, the assembler will find it difficult to change suppliers (source dependency). On the other hand, because of specialised capital investment, suppliers are highly dependent on the assembler (market dependency) (Dyer & Ouchi 1993).

In Japanese transplants, all chief executives are Japanese, decision making is done from head office, and foreign managers have no chance of promotion. Design work is done in Japan, leaving the overseas factory as just an assembly plant for imported components (Emmott 1992:46). This is confirmed by the dispatched Japanese experts working in ASEAN (Association of South East Asian Nations), as reported by Fukuchi in his survey:



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Fukuchi 1993:97

Because of work pressure, and so as not to impair their promotion opportunities, many older workers are reluctant to take their allotted leaves, and there are cases where they die with 300 days of vacation still owing (Bartu 1992:8). Moreover, outsiders are less welcome and have a long ladder to climb in the promotion exercise (Rehfeld 1990).

Furthermore, it has been argued that QCCs, the suggestion system, flexible work organisation, fewer job classifications, seniority-based payment and consensus decision making are indirect ways for management to increase pressure for productivity and quality improvement, and to avoid unionisation (Graham 1994; Humphrey 1994).

The origin of JST.

Japan's lifetime employment tradition was instituted by large oligopolistic firms in the 1900s as a moral commitment inspired by feudal values. They also offered job security. Salary and promotion based on seniority have been rooted in Japanese society since then (Child & Tayeb 1982-83: 53). In the 1930s, as the technological level of the cotton industry changed, there was a need for new engineers (new graduates were taken on) from university, since it was then customary within industry to hire a fresh graduate labour force (McCormick 1992:59).

Likewise, the practice of not laying off workers is closely related to corporate social responsibility values (McMillan 1989) and workers are regarded as the company's most important assets (Pascal & Athos 1982; Kanter 1992). Cooperation within *keiretsu*

(Japanese conglomerates), between *keiretsu*, with government agencies, between labour and management, loyalty to company and elders, punctuality, cleanliness, high patriotism, a high degree of groupism or cohesiveness, all these are cultural aspects of the Japanese (Ishikawa 1985; Morishima 1990). These values and cultural aspects are similar to those of other countries in the East (Lehmann 1982; Hofstede 1980; Morishima 1990).

The enterprise or in-house union originated in the Second World War SAMPO (Patriotic Labour Organisation), which embraced all employees in an enterprise involuntarily, and gave some experience of organising white and blue collar workers in a single union. At the same time, the government introduced a policy to reduce or narrow pay differences between white and blue collar workers (Arthurs 1987).

From the literature reviewed, it can be seen that the Japanese origin of JST is confined within human resource management/ development and human relations aspects only, which are closely related to their values and culture. And these are the Japanese strengths.

However, many parties, including the Japanese themselves, also agree that their management techniques were learned from the West. They learned total quality management, quality circles and simple applied statistics from Juran and Deming after the Second World War (Schonberger 1982; Ishikawa 1985; Imai 1986; Giles & Starkley 1987). Toyota and Nissan studied car mass production system at Ford, General Motor and Graham-Piaget, Detroit in the 1930s (Chang 1981:45; Womack et al. 1989). They went there to learn and brought their findings back to Japan, then applied these within the particular context of car manufacturing in Japan (Womack et al. 1989:48).

In the same manner, Toyota copied from Chrysler and Ford value engineering which minimised the number of parts in a new model (The Economist, March 1995). In fact, the Japanese learned naval and ship building from Britain, law and chemistry from Germany, management, engineering and baseball from the United States (McMillan 1989:10). It was argued that Nissan introduced the suggestion system in 1955, copying Toyota, which had borrowed the idea from Ford in 1951 (Cusomano 1985). Even though all these lessons were originated on foreign soil, they were implemented with Japanese values, culture and were polished and improved, as Humphrey (1994:327) puts it:

While these methods may not have originated from Japan, they have been developed furthest by Japanese companies, and the world-wide impulse towards their adoption is largely the result of Japanese manufacturing success.

For many years after the Meiji Restoration (1868), Japanese engineers, businessmen and educators spent considerable time in the West, studying competitive management philosophies, quality control, business practices and consumer needs (Macdonald & Piggott 1990:4). They visited centres of government, commerce and industry in the US and Britain in the early 1870s (Dore & Sako 1989: ix). As mentioned by one assistant general manager (from PERNEC): They [the Japanese] learned the hard way from the West, before they could spread their products and services through the world. Japan also learned from the US and German governments how to protect its steel industry in the 19th century.

In the 1960s and 1980s, Japan urged foreign electronics companies to license semiconductor chip technology to the Japanese as a condition of doing business in Japan. That by 1990 became the base from which Japan rose to dominate the world chip market (Fallows 1994). He further argued that the Japanese and Koreans believe and practise the teaching of the 19th century German economist Fredrich List, that a nation's wealth depends on its skill at producing rather than consuming, and that individual wealth is therefore dependent on that of the group.

The dynamism of JST.

Lifetime employment is one of the JST's distinctive characteristics. But this system is not unchanging. By 1994, in Japan, most *keiretsus* offered their workers early retirement, arguing that Japan's tradition of lifetime employment might weaken their competitiveness because their staff cost were high compared to those of their international competitors (Financial Times, 11 November 1994). Yen appreciation had raised manufacturing costs and cost competitiveness was reduced. This led Nippon Steel to introduce a three-year cost-cutting scheme for executives (10 per cent in 1992 and 5 per cent in 1994) (Financial Times, 5 December 1994). In January 1994, Toyota announced it would hire designers on one-year contracts, which would be renewed according to performance, and 10 per cent of the car company's new white-collar recruits may have short-term contracts. It seems that lifetime employment has become a burden, especially when the problems of low white-collar productivity, an ageing population, and an increase in sales and administration personnel as a proportion of the whole workforce, which rose from 29.2 per cent in 1984 to 33.5 per cent in 1992. It was argued that Western employment practices, such as merit-based pay, the employment of R&D staff on a contract basis, and flexible working hours threatened Japanese work practices. In support of the claim, M. Nakamoto wrote from Tokyo:

employers are saying they can no longer take care of their employees from recruitment to retirement or guarantee a yearly rise of salaries. Instead they want greater flexibility in adjusting pay and employment depending on individual performance and business conditions.

Financial Times, 19 April 1995.

A study carried out in 1992 by Japan Productivity Corporation for Sony suggested it reduce its staff by 39 per cent in order to match the productivity of American companies. Several Japanese firms are already moving to replace seniority with performance as the basis of determining salary and others are urging their managers to leave early. Nissan, in fact, began offering its white-collar workers aged 45 and above early retirement, with the inducement that they would get the same benefit as if they stayed on till 60. Alps Electric, in 1993, wanted 440 managers to take early retirement, and in fact 830 did (The Economist, January 1994).

As to the no lay-offs policy of Japanese companies, there was also a downsizing trend among shipbuilders, textile, and steel companies, which cut their staff by up to 80, 50, and 60 per cent respectively in the 1980s (Financial Times, 11 November 1994). So far there has been a high degree of business transactions between Japanese parent company, affiliates, subsidiaries and sister companies (Jomo & Marappan 1994; Machado 1994). Some of these *keiretsu* have slowly become more open to doing business with foreign partners, for example, Mitsubishi watering down cross-share holding and broadening the purchase of materials outside their groups (Financial Times, 30 November 1994). However, it is the usual practice in the auto industry, which has featured in joint venture ownerships and in which getting parts and components from venture-related companies is the normal practice.

Under the pressure of the '*endaka*' (high yen phenomena) to minimise costs, in the making of its RAV4 model, Toyota changed its factory work organisation by reducing the use of robots and increasing the use of workers (The Economist March, 1995). The discussions above show that JST is a dynamic management technique, which is not necessarily tied up with computerisation and mechanisation. It will change as and when the need arises.

Therefore, Japanese businessmen and industrialists are very sensitive and responsive to the changing environment. When the profit buffer is slim, costing and management will become more careful. The company will continuously rationalise capital-labour ratios along with the production function(s) and when it is no longer profitable/ viable, they may shift the whole production function(s)/ curve(s) to a better position or shift the whole plant to foreign soil, where the cost is minimal. But costs are not the only reason for expansion.

The superiority of JST.

How far is JST or Japanese management superior compared to other ways of managing companies? Most of the discussion to measure the superiority of JST has focused on productivity, creativity and quality aspect (Kanter 1988; Womack et al.1989; Abo et al 1994; Andersen Consulting 1995). But at the end of the day, it is profitability and growth

that count. According to a survey on the financial statements of big American companies and Japanese *keiretsu* (conglomerates), across time (1985-88), it shows neither country's firms appear to generate systematically higher profit margins (Brown et al. 1994). But the rate of return on assets of the US firms exceeded those of Japanese firms, mainly due to consistently higher assets turnover rate. The US firms also had higher receivable turnover. The Japanese firms, however, had higher inventory turnover compared to the US, and the non-*keiretsu* profit margin seemed higher than the *keiretsu*. The automobile companies in American had a higher profit margin than Japan, but the Japanese electrical/ electronic companies had a higher profit margin than the Americans. For further details see Table 2.3:

Table 2.3: Mean comparable financial statement ratios for US and Japanese industries (1985-1988)

Industry		Profit margin	Assets turnover	Return on assets
Auto	US	4.6%	1.62	7.5%
	Japan	2.1%*	1.48**	3.1%*
Electrical/ Electronic	US	1.7%	1.21	2.5%
	Japan	3.3%*	1.06*	3.4***
Average	US	3.2%	1.32	4.6%
	Japan	3.3%	1.13*	3.5%*

Notes: * =0.01, ** =0.05, *** =0.10 level of significance

Source: Adapted from Brown et al. 1993. Table 3 & 5

Another comparative study shows some different financial strengths of the Japanese, American and European car companies. According to them, management emphasises production skills (Genbashi of Japan and Technik of Germany). It was argued that what is practised within car manufacturing companies today is what American engineering used in 1916, that is, the use of general-purpose machines (Williams et al. 1994). However, the machines used today are more flexible, have more functions and higher speeds. In other words, the previous engineering was based on craft production, whereas contemporary engineering is mass and flexible production based (Womack et al. 1990).

The Japanese tend to have a higher purchase-to-sales ratio, lower labour value-added, a lower number of employees per establishment (many small establishments), and capital is tied up with physical investment. The labour cost per employee hour is almost the same between Japan, US, Germany and Sweden (from \$ 21.52 to \$ 27.52 in 1991). In 1989, Japan's build-hours per vehicle was 132, much less than the US (170) and Germany (286). It has improved since 1969 and 1979 as shown in Table 2.4.

Table 2.4: Build-hours per vehicle industries
(selective years 1969, 1979 & 1989).

	1969	1979	1988
US	173	179	174
Germany	269	294	256
Japan	280	147	132
France	n/a	241	162
Korea	n/a	917	352

Source: Adapted from Williams et al. 1994, table 4.5, page 60.

Regarding the profit-to-sales ratios, although the Japanese have a low rate compared to US and European companies, they did not experience a negative ratio in the bad years. See Table 2.5 for details.

Table 2.5: High and low profit-to-sales (1980-1991) for twelve major car manufacturers.

	Good year		Bad year	
	Year	Profit to sales (%)	Year	Profit to sales (%)
Toyota	1985	6.0	1982	3.7
Nissan	1981	3.5	1987	0.5
Honda	1981	10.2	1991	3.1
Mazda	1985	1.9	1989	1.2
GM	1983	7.2	1991	-3.2
Ford	1988	11.1	1980	-2.1
Chrysler	1985	12.9	1980	-11.1
VAG	1985	8.0	1982	0.6
BMW	1984	9.6	1991	3.1
Fiat	1987	9.0	1991	5.5
PSA	1990	12.9	1986	0.8
Ford UK	1987	10.1	1991	-8.9

Source: Adapted from Williams 1993, table 5.7, page 77

The above comparison to some extent shows the different profitability of Japanese and American companies. One might assume that JST is practised much more in Japanese than in American companies. But the American companies might practise what they call world-class manufacturing systems, total quality management, productivity and quality improvement projects; and participative management as a reaction to JST (Ackroyd et al 1989; Hayes & Pisano 1994). Thus, one needs to develop a comparative time series study of financial performances between companies which practice JST and non-JST in a proper manner. One could also observe the difference in financial performance of a particular company before and after implementing JST. Working with National Productivity Corporation (NPC) of Malaysia, through the regional and national QCCs Convention in Malaysia, this author observed that there are various effects of QCCs activities to product and process improvement, cost saving and so on. Unfortunately records of industrial cost saved were not compiled. However, for a base of calculation, in 1990, from a Malaysian national and four regional QCC conventions, a quality circle made average savings between RM. 20,000 and RM. 30,000, i.e., £5,000 to £7,500 per annum (Khatib 1991:5).

2.5 The transferability of JST.

Management transfer model.

When an organisation is transferred to foreign soil, there is a possibility that management techniques are also transferred. How far is this true? For multinational companies (MNCs), whether or not to transfer their best management techniques may be a matter of global corporate strategy (Hymer 1976; Smith J.M. 1986; Nester 1989; Hume 1993). In other words, MNCs may keep to themselves the best management techniques in order to maintain their superiority and competitiveness (Turner 1987; Henderson 1989). Nevertheless, today in order to maintain its competitiveness an organisation faces the dilemma of whether to apply its best management techniques or to adapt to local management and industrial practices (Abo 1994a), because the firm is very much influenced by the local (new) environment (Florida & Kenny 1991). According to Elger & Smith (1994), the transfer of management technique is a complex process. One has to look into the national context, the sector and industry concerned.

On the other hand, lately management transferability or 'learning from others' and the transfer of technology has been raised more than before to increase local developing countries' organisational effectiveness (firm technological capability) (Dahlman & Westphal 1983; Wong 1990:190; Milkman 1991; Lall 1992; Tolentino 1993; MIDA 1993; MITI 1994a). The same process was experienced by the Americans, who learned from Europe when they were still at the stage of the 'New World' in the eighteenth century (Miller 1974), and Japan learned from America after the Second World War (Chang 1981; Nester 1989; Womack et al. 1989). Therefore, there are two parties looking at, and with different expectations of, the transfer of management, i.e., soft technology. That is the supplier and the recipient of the management technology. This is particularly relevant to the multinational companies that operate in foreign countries, where they are transferred to a different political-economic-social environment (Saksia 1988; Florida & Kenny 1991; Dicken 1992; Kenny & Florida 1993).

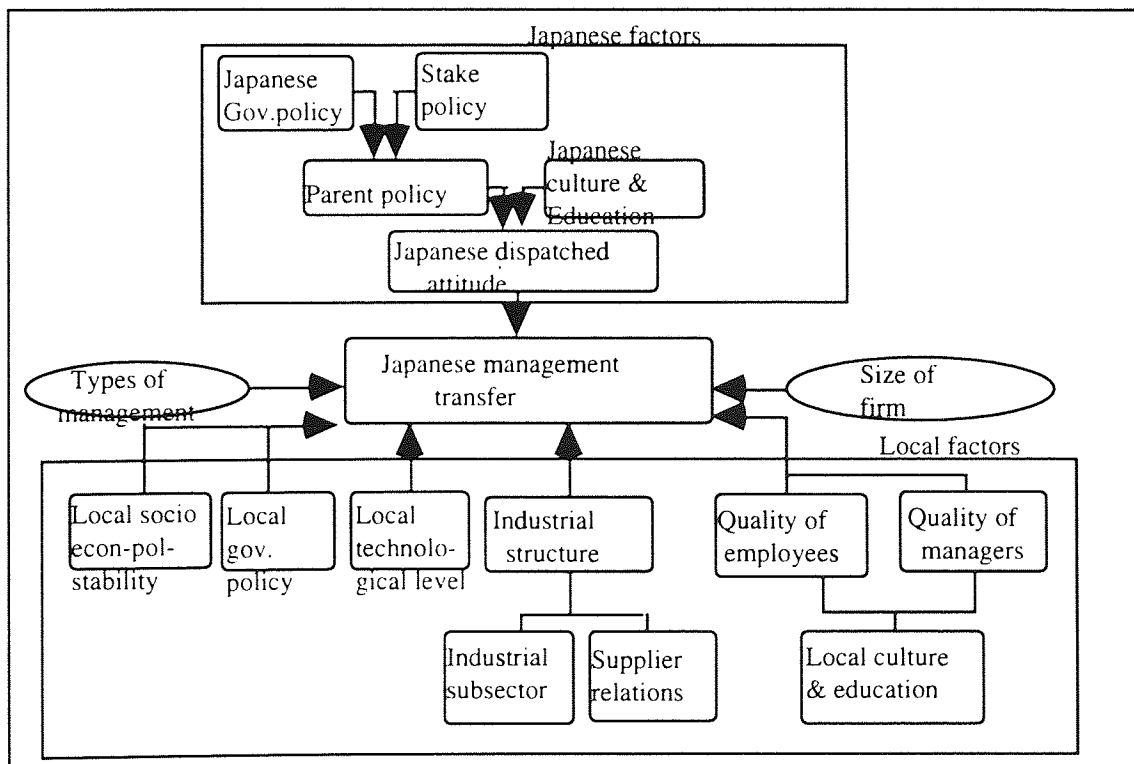
For the purpose of this study, a model developed by Amba-Rao (1993) is used as a base. The model shows that there are strong relationships, interactions, and influences between MNCs, with international agencies, the Third World government, the subsidiary in the Third World country, the parent company and the home government that affect the technological transfer.

It is a complex chain rather than a simple transfer of technology from developed to developing country. According to Rao, though MNCs and their suppliers have their own profit interests, the international agency also has its own global socio-economic

development objectives. And the developing countries which thirst for technological development programmes have been asking these MNCs to transfer their technology. JST has been transferred out of Japan either through the globalisation of Japanese MNCs (Dahlman et al. 1987; Henderson 1989; Nester 1990; Dicken 1992; Humes 1993) or the emulation by local companies (Oliver & Wilkinson 1992; Ackroyd et al. 1989). It was also transferred through the technological learning process within strategic alliances (Trevor 1985). The transfer however is hindered by factors like insufficiently skilled labour forces, which hinder the ability of new firms to utilise their economic scale and to optimise their monopolistic advantages (Hymer 1976; Sassen 1988; Dicken 1992; Humes 1993; Tolentino 1993). The nature of the company, its sector, the size of the firm, technological levels, attitudes/ skills of the employees, management and dispatched experts also have some influence on the transfer (Schumpeter 1976; Smith J.M. 1986; Henderson 1989; Wong 1990).

Based on my reviews of the different literatures, I have developed what I call a Japanese soft technology transfer model. This is depicted in figure 2.4. It is called 'political-socio-economic-contingency' transfer model because the transfer of JST is related to political, socio-economic, and contingency factors. This model becomes the basis of discussions for the two cases (PROTON and PERNEC) in the thesis:

Figure 2.4: Japanese soft technology transfer model



There is evidence that the transfer is taking place if the company is big and powerful (Florida & Kenny 1991), a high-tech company (Henderson 1989), a creative organisation (Schumpeter 1976), making strategic use of its resources (Young 1988), and in the

automotive industry (Cusumano 1985; Milkman 1991; Florida & Kenny 1991; Oliver & Wilkinson 1992; Kenny & Florida 1993). Alternatively, the JST transfer is not taking place due to Japanese MNCs' global corporate policy of retaining off-shore plants as simple assembly factories with inferior technology (Smith J.M. 1986; Henderson 1989; Nester 1990). In other words, there is a high cost of employees welfare, training and education compared to their transplants in foreign lands practice by the JMNCs (i.e. 'core-peripheral' dichotomy management), due to profit maximisation interests, and lack of long-term commitment to the host country (Dedoussis & Littler 1994). There were few efforts to apply JIT techniques and a reluctance to spend money on training (Milkman 1991). In other cases, such as electronic assembly, the management adapted to the local (authoritarian) management style, although the employees were positive toward QC circles, house unions and consensus decision-making (Wong 1990). The transfer of JST also fails to take place if there is a high degree of job-hopping (Smith J. M. 1986; Wong 1990; Jameca-Majeca 1994; Malaysian Business, 1 September 1994). There are cases where the Japanese transplants have been advised by a local management consultants which favoured local practices, such as union avoidance (Milkman 1991). The universality of JST will be divided into five discussions. First, is there any difference in the transfer of JST to developed compared with developing countries? Second, of the five management functions discussed, which is the most transferable and why? Third, is there any difference in transfer between sectors? Fourth, how is JST transferred? And finally, a summary of JST transfer.

Transferability of JST to developed countries.

If YKK was the pioneering Japanese company in Britain in 1972 (Popham 1995:86), Honda was for the US in 1977 (Kenny & Florida 1993:97). By the mid-1990s there were 1,275 and 702 Japanese transplants operating in America and Europe respectively (JETRO London 1995). We shall now look at JST practice, as a result of these transplants operating in the US and the European markets. A few works have shown that JST was transferred and able to change industrial practices and work organisation in the US and Europe. In the US it was led by Florida and Kenny (1991) and in the UK by Oliver & Wilkinson (1992). The issue of the transferability of Japanese management issue was pioneered by Turnbull (1986) and Cardiff Business School (1988), and further developed by Bratton (1992), Wilkinson, Moris & Monday (1993), Abo 1994, Schütt 1994, Elger & Smith 1994 and Popham (1995).

The practice of a flexible manufacturing system based on JIT production, zero inventory, flexible team-works, flexible tools and jigs was found not only by Turnbull (1986) in his 'modular production' of Lucas, but also in 'lean production' of Womack et al. (1990) and Oliver & Wilkinson (1992). This manufacturing system is also known

as 'cellular technology' (Bratton 1992) and 'innovation-mediated production' (Kenny & Florida 1993)

Their work also showed that JIT has been perfected by the co-operation of suppliers or sub-contractors with assemblers. The surveys showed that suppliers supply frequently to assemblers, deliver according to JIT schedules, and provide immediate feedback on defective parts. The customers' engineers visit the plant site frequently (for quality and production problems), and work together on design. These practices were found in a study of Japanese assemblers such as Honda, Nissan, NUMMI, Toyota, Mazda and Subaru-Isuzu (Florida & Kenny 1991) and in UK emulators such as Lucas, Rover, Ford UK and Southern Components (Oliver & Wilkinson 1992; Popham 1995:86). For example, it was also found that on average, 50 per cent of direct sales, 33 per cent shares owned, 100 executives transferred, and 31 per cent of management of suppliers were from Nissan (Dyer & Ouchi 1993:60)

Kenny & Florida (1993) revealed three defining features of the Japanese model. First, a high level of task integration. Second, integration of workers' intelligence as well as physical capabilities. And third, tightly networked production complexes. The study was not limited to auto assembly and automotive part suppliers, but also covered steel, rubber and tyres, and consumer and high-technology electronics industries. The findings show that transfer was taking place in all studied sectors, though with mixed practices in the electronics sector.

In fact Abo (1994a) found that there was a high rating of applications of Japanese management in auto parts and auto assembly, a medium rating for semiconductor industry, but a low rating for consumer electronics. It was found that generally there was a higher rate of application on ready-made things (such as labour unions, production equipment suppliers, ratio for Japanese expatriates and job classification), but a relatively low one on bring-in methods or work organisation (such as wage system, procurement methods, small group activities, job rotation and maintenance) (Abo 1994a:229). However, Smith, C. (1994b) commented that Abo had taken it for granted that the Japanese model was a supreme one. He also ignored application-adaptations of the many vendors who supplied to the transplants, and did not look at the positive or innovative fusions.

In Nissan's Sunderland factory, many lessons have been taught by the Japanese such as; diligent time-keeping, 3Ss (*seiri* or sorting out, *seiton* or systematic arrangement and *seiso* or cleaning)workshop management, pride in work, the team and the company, and the disciplines of the lean JIT system. The most innovative one is giving

responsibility for their work to the workers from traditional engineers. (Popham 1994:88). Japanese firms in Wales brought a 'new industrial relations' in the form of 'single status and formal communication' between management and labour. The same survey found that companies had newsletters, daily team briefings, and small group activities were practiced widely (but not the suggestion schemes and weekly team briefings, which not many companies practised) (Wilkinson, Moris & Munday 1993).

However, the globalisation of JST has been challenged by many researchers such as Smith J.M. 1986; Clerg et al. 1986; Komai 1989; Wong 1990; Milkman 1991, Dedoussis & Littler 1994, Graham 1994, Humphrey 1994; Abo 1994b and Schütt 1994. They have argued that the diffusion of Japanese work organisation is not necessarily the 'whole package' but rather 'dual' or 'desegregated' (Elger & Smith 1994:38). For example, of 20 Japanese transplants visited, almost all were using conventional American management style, only 4 companies practised JIT production system, only 2 had QCs, 8 had SGAs, none had flexible team-work, only 2 had job rotation, and job classifications were many (Milkman 1991). They still laid off their workers (8 companies) and employed temporary workers (18 companies). However, 17 companies already adopted the suggestion programmes system, 7 had hired locals as the top managers, most managers were locals (except 2 companies) and there was one company which had only one job classification. Ironically, one company which was headed by a Japanese and employed 100 per cent Japanese managers, did not apply any aspects of JIT except SGAs, the suggestion system and a small number of job classifications.

Another study conducted by Graham (1994), at Subaru-Isuzu Automative (SIA), Indiana, did not support the works of Florida & Kenny (1991). Instead, Japanese work organisation like orientation and training for new workers, QCCs, *kaizening*, the computerised assembly line and JIT, were argued to be social and technical forms of management control over workers (Graham 1994:132). According to her, workers were seldom given the chance to make decisions. The number of tasks tended to be expanded rather than narrowed. Cross training did not increase workers' control over the technical aspect of works, but increased management control by making workers more adaptable to job intensification and speed-up. The management also did not harness workers' collective intelligence in *kaizening*. As the management structure was flat, the authority was decentralised and workers had very little authority (ibid. 148).

In the UK, Pamela Briggs (1987) and Taylor et al. (1994), found that lifetime employment, company unions, seniority-based payment systems, lifelong training schemes and elaborate group decision processes were not considered exportable

commodities, due to the cultural differences. Therefore there was little evidence that the Japanese management dependency on workers' participation, JIT production, total quality management (TQM) and zero defects, and zero inventory storage were practised. However, British industry does seem to be keen to experiment with the kanban inventory method of control.

The above discussion shows that the transfer of JST has varied from one country to another and from one sector to another. It is not an automatic transfer process, but is instead very much subject to industrial and labour structure, contingency and to some extent to cultural factors. Do Malaysian-Japan alliances face the same experiences as in a mature economy? Probably the experiences in developing countries can provide some lessons for Malaysia.

The transferability of JST to developing countries.

The experiences of JST in Thailand, Singapore, Mexico, Taiwan and Brazil are explored in the following discussion. The Thailand experience showed that Japanese MNCs paid lower wages than other MNCs, hygiene was poor, limited welfare was provided and workers' 'groupism' was manipulated to increase productivity (Komai 1989:122). Out of four Japanese transplants studied in Australia, only one succeeded in adapting to the new environment and the rest failed completely (Clegg et al.1986:28). There was also evidence that Japanese firms tended to drop many personnel practices. For Japanese enterprises, it was argued that 'management practises must vary cross-culturally to be effective' (Dunphy 1986).

Less than 10 per cent of Japanese companies operating in Singapore have been using JST, and less than half have introduced quality control circles. Given the 'Look East' policies of the Singapore Government, surprisingly, the locals were excluded from the participative decision-making of Japanese companies (also in Dedoussis and Littler 1994). Similarly, Singaporeans have a strong preference for being specialists rather than generalists, and therefore they resist the job rotation programmes of their Japanese employers. Despite their genuine commitment to the welfare of their local employees, Japanese managers in the last resort focus exclusively on the wider organisational interests (Smith J.M. 1986:408).

In 1990s, the picture of the transferability of JST to Singapore was same. Wong (1990) found that five 'people aspects of management' of Japanese Management (namely consensus decision making, QCCs, in-house unions, lifetime employment and the seniority system) were not fully implemented, even though the employees' attitude towards those items was positive (ibid. 354). From the survey (N=1700), the employees were favourable towards consensus decision-making, QCCs and in-house

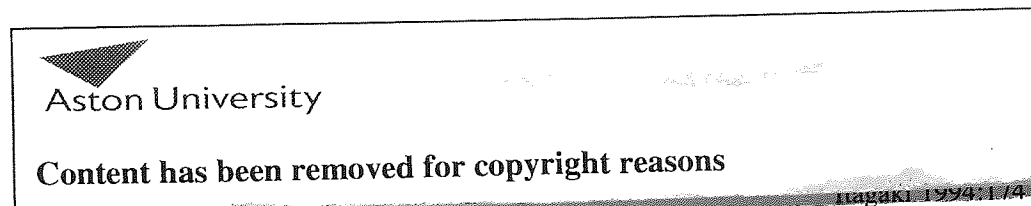
unions (ibid. 241). But they opposed the lifetime employment and seniority systems. However, for senior workers they favoured lifetime employment (page 248). The reasons behind this phenomenon were lack of management commitment and the practice of an 'authoritarian leadership style', and also job security and belief in marital promotion (page 359)

Kumon (1994) and Itagaki (1994) found that auto and electronic industries in Taiwan tend to apply JST in their operations, even though the auto plants are 'knock-down' factories. This is because historically and culturally Japan and Taiwan are alike. On average, the application of JST in the electronics industry is slightly higher than in the auto industry. The application of group consciousness (QCCs, information sharing and unity) was highest, but the lowest was parent-subsidiary relations. This indicates that the application was done enthusiastically and under the initiative of the local management.

The experience of Sanyo at Tijuana, Mexico, shows that the company was administered by Japanese expatriates and operated through brought-in Japanese equipment (Abo 1994b). The managers and equipment were supplied from Japan, but most of the parts were locally sourced. The applications of job rotation, supervisor, internal promotion, quality control, relationships with supplier, SGA, information shared and speed were lacking in this company (page 188).

Like other developing countries, Brazil is in need of technological transfer from foreign MNCs to develop its economy and country (Dahlman et al. 1987; Lall 1990). From the study by Humphrey (1994), we find that the implementation of JST in Brazil was associated with putting pressure to the workers. Their welfare was not looked after. In this case, the role of the union was very important so that the interests of workers could be guarded.

It is important to note that most equipment, methods, materials and designs were supplied by Japan for both developed and developing countries. According to Itagaki:



The discussion above shows that JST was transferred variably to mature economies and marginally to developing countries.

Transferability by industrial sector.

The evolution in manufacturing and production system has moved from 'craft' to 'batch or lot', to 'mass-production' then 'flexible or lean manufacturing'. This evolution is closely related to the automobile industry (Womack et al. 1990). In terms of transferability of JST or Japanese management by sector, the automobile and electronic industries are the sectors studied by many authors. For a summary, see table 2.6.

Table 2.6: JST transferability by sector.

Sector	Author	Country	Scope of JST
[a] Manufacturing industry.			
[a.1] Automobile industry.			
	Cusomano 1985	US	Multi-disciplines*
	Womack et al. 1990	US, Japan, Europe, Korea, Mexico	Manufacturing system
	Florida & Kenny 1991	US	Multi-disciplines*
	Oliver & Wilkinson 1992	UK	Multi-disciplines*
	Kumon 1994	US & Taiwan	Multi-disciplines*
[a.2] Electrical and electronic industry.			
	Milkman 1991	US	Labor relations
	Dedoussis & Littler 1994	Australia	Human resource
	Itagaki 1994	US & Taiwan	Multi-disciplines
[b] Mixed (auto, electronic & others)			
	Wong 1990	Singapore	Human resource
	Kenny & Florida 1993	US	Multi-disciplines*
	Thompson & Sederblad 1994	Sweden	Multi-disciplines*
	Abo 1994b	US, UK, Spain, Germany, Mexico & China	Multi-disciplines*

Note: * Includes manufacturing systems, quality management, human resource management, labour and management relationships and, supplier and assembler relationships.

Much work has been done on the manufacturing sectors and not much on primary and tertiary industries. This shows that the transferability or universality of JST represents only manufacturing industry, not industry as a whole (see also Elger & Smith 1994). In manufacturing, JST was transferred significantly in US automotive industries (Kenny & Florida 1993; Abo 1994a), but in Taiwan it was with electronics industries (Itagaki 1994).

Summary of JST transferability.

In analysing the diffusion or transferability of JST, some authors have taken it as the supreme model and used it as a benchmark while others regard JST transfer as a discrimination model between Japanese and non-Japanese applications and the regeneration of indigenous management techniques as a reaction to. A summary is given in table 2.7.

Table 2.7: JST Diffusion Models (1980s to 1990s)

JST transfer model:	Characteristics	Authors
(i) JST as supreme model.	Lean production model Innovation-mediated production Hybrid factory-evaluation Whole package	Womack et al. 1990 Kenny & Florida 1993 Abo 1994 Wilkinson & Oliver 1992
(ii) JST: A core-periphery model	Core-Japanese management at home & periphery (low cost management) at host country	Dedoussis & Littler 1994 Milkman 1991
(iii) The regeneration of management techniques as a reaction to JST	Mediated Japanisation	Ackroyd et al. 1989 Cusomano 1985 Kanter 1981

The evidence gathered suggests that JST is one of Japan's global corporate strategic tools used in nurturing the global 'Japanisation' process. JST will be or will not be transferred so that in the long run the host firms and countries will be technologically and economically dependent on Japanese MNCs and Japan. Evidence shows that JST transfer has been linked with Japanese global strategic corporate/ business management (Smith J.M. 1986). Some of the examples are, Toyota engines produced in Thailand, electrical equipment and steering systems in Malaysia, transmissions in the Philippines and management services in Singapore. Other cases are Nissan engines and stamping dies in Thailand, clutch and electrical components in Malaysia, wiring harness in the Philippines (Machado 1994:318). Japanese electrical and electronics firms have transferred their low-end consumer products design centre, and established procurement based in West Pacific Rim (Baba & Hatashima 1995). These facts indicate that specific technologies have been assigned to specific countries. In strategic management, the problems and issues are tackled through very selective approaches after studying various aspects of the internal and external environment of organisations. The approaches taken must be able to position the company and the products so as to win the market with low costs but high returns (Brown & Asch 1987:37)

2.6 Technological transfer theories.

In simple terms, 'technology is a method for doing something' (Dahlman & Westphal 1983). It includes (new) management methods and organisational practices (Kanter 1992:21). There are two types of technology, namely, 'embodied and disembodied' technology (Al-Ghailani & Moor 1995). To use technology, one needs information about the method, the means of carrying it out and some understanding of it. Information and means can be transferred, but understanding can be acquired only by study and experience.

It is not enough to have the most advanced technology at a particular time, without thinking continuously how to improve it. For this, we need an entrepreneurial organisation (Kanter 1992), and learning organisation (Dore & Sako 1991), with an integrative and team-oriented environment, with highly motivated employees and a powerful leadership who can act as a 'prime movers' in making strategic decisions and in implementing change (Kanter 1992). The technology in totality covers important components of technicality, information, human resources and how all these factors are organised to achieve the goal. Environmental supports, such as other technological supports and the infrastructure, are also important to smooth and enhance technological development or improvement (Autio & Laamanen 1995:647).

Technology transfer in developing countries.

Technology can be provided by foreigners who retain ownership, purchased from foreigners, or acquired from indigenous efforts (Dahlman & Westphal 1983; Ali 1992). The technology transfer can be viewed as an active process, during which technology is carried across the border of two entities (such as countries, companies or individuals). It is an intentional, goal-oriented interaction between two or more social entities, during which the pool of technological knowledge remains stable or increases through the transfer of one or two components of technology (Autio & Laamanen 1995:647-8). If the transfer of technology is taking within a country or within an organisation it is called 'vertical transfer', and if the transfer is taking place between countries, i.e., across borders, it is called 'horizontal transfer' (Al-Ghailani & Moor 1995:688).

Transfer of technology normally concerns foreign-owned advanced technology being transferred to less developed and developing countries, where technological innovation is not the main concern. There is also an innovation process taking place in the technological transfer between two entities in the technological learning. Both processes are taking place in current technology transfer exercises (Autio & Laamenan 1995). But the ability to acquire and develop indigenous technology will depend on company and national technological capability (Lall 1992).

According to a study done by Klus (1993), there are many ways in which technology acquisition and transfer can take place, depending on the level of importance, depth and research intensity. Joint ventures are considered one of the important ways, where in-depth efforts, continuing education, and research and development must take place (Kluss 1993:459).

Market failures in the creation and the diffusion of technology are the focus of the international debate about technology transfer. The patents system permits the diffusion

of technology while attempting to protect the proprietary rights of the innovator. In exercising these rights, technology suppliers seek to restrict use of the technology so as to maximise their returns. Control over supply, plus the buyer's ignorance regarding the true value of technology, can lead to excessively high prices. High prices for technology and restrictions on its use are the basis for many developing countries' call for an international code of conduct on the transfer of technology and aversion of the international patents system. But no satisfactory agreement has been reached on either (Dahlman & Westphal 1983).

The idea of bringing in MNCs and encouraging strategic alliance companies is to have technological learning processes and independent indigenous technological development. Indigenous technological development takes place if the locals master new technologies, adapting them to local conditions, improving upon them, diffusing them within the economy and exploiting them overseas by manufactured export growth and diversification and by exporting technologies themselves (Lall 1992). It has been argued that to ensure technological learning and development, firms and government must work together (Dahlman et al. 1987; Ali 1992).

At least two major options for technological learning are shown by newly industrialised countries (NICs). There are export-oriented industries with selective protection, and inward-oriented industries with high protection. South Korea, Taiwan and Singapore make up the first group. They set up public enterprises, promote exports, intervene to coordinate import technologies, and support SMI development (Lall 1992:173). The other group consists of Brazil, India and Mexico. These countries also set up public enterprises, promote public R&D, intervene in import technologies and build up domestic industries (Lall 1992:177).

These countries cannot acquire technology unless they are ready to invest in their human capital. It has been proved that the higher the investment in human capital, the higher the capability of the country to develop the technology (such as South Korea, Taiwan and Singapore) (Lall 1992:174-5). To enhance technological learning the local team must work closely with their foreign counterparts, bearing in mind that they must acquire the technology while working together with foreign MNC partners. A good example is the success story of Usiminas as an integrated steel producer in Brazil:

The foreigners did the engineering and project management for establishing the plant, but the locals worked closely with them from the beginning. This proved to be an excellent way of learning many aspects of the design, equipment selection, installation, construction, start-up and operation of the plant. There was extensive training in Japan, including hands-on operational experience with blast furnace, basic oxygen converters, and rolling mills similar to those that would be used in Brazil.

Dahlman et al. 1987:760

2.7 Strategic alliances.

The nearest meaning for strategic alliances is explained in joint venture. Joint venture is an integrated, jointly owned and managed enterprise, where assets are pooled, managed together, and risks are shared, and it provides long-term business contracts and gains (Wilczynski 1976). It is an agreement between two or more parties to set up a company involving locals and foreigners (Tolentino 1993:121; MIDA 1994:51). This definition does not give a realistic picture of strategic alliances. Therefore I would like to suggest that the definition of a strategic alliance is: an effort by two or more parties (companies and/ or countries) in which they can solve fundamental issues within industries' and countries' development through selective approaches. Through those efforts a general political-socio-economic development process will take place. This might be done through cooperation between private and public agencies, joint production, a joint effort in industrial and commercial R&D activities, production-marketing linkage, joint education and technical training, and localisation of sourcing through local vendor and MN development programmes. It may take the form of joint ventures, licensing arrangements, turnkey plants, technical assistance, subcontracting arrangements and other forms of non-equity investment (MIDA 1993; Tolentino 1993). These alliances are initiated and highly supported by the host government (either existing or newly created companies). The objectives of strategic alliances or joint ventures in Eastern European countries (Wilczynski 1976) and other developing countries are the same, that is, to get up-to-date technology and know-how, foreign capital and greater or better access to capitalist markets (Dahlman & Westphal 1983; Dahlman et al. 1987; Ali 1992; Dicken 1992; Tolentino 1993). In other words, to acquire and develop technological capability (Lall 1992; MIDA 1994).

According to MITI of Japan, there were several reasons why the Japanese signed many ventures with foreigners in Japan. There were technological, financial, management, and marketing reasons (Ballon 1967:74,75). On the other hand, the objectives of the Japanese in having a joint venture in the UK were to have an EU production base and solve its problems with import restrictions and the British partner's need for technical assistance in the electronics industry (Trevor 1985:17). The same thing happened to the American and other Western MNCs that came in the 1960s to Japan through joint ventures, because of the difficulty of tapping the Japanese and Far East markets and of breaking into the well-protected Japanese economy (Ballon 1967:109). There were also political and ideological drives behind the formation of business alliances (Nester 1990).

Some of the advantages are access to advanced and rapidly changing technology and competitive markets, the creation of new products, restructuring of industries,

opportunities to spread the costs and risks of new product development (Tolentino 1993:446). Other benefits are easier financing, better training, advanced management techniques and better access to global networks (Ballon 1967:75; Lall 1992). On the way to achieving maximum success through strategic alliances, we can anticipate many problems, such as technical, legal, financial and the most basic problem, that is, human problems. Evidence shows that the Western partner is not generally interested in passing on current technology (Wilczynski 1976:103), because different people with different interests are trying to work together. As Ballon (1967: 74) put it:

Since, however, the operation of joint venture involves the working together of persons of different cultures, of different social backgrounds, and of different languages, the human problems inherent therein are inclined to be more acute than in mono-cultural businesses.

The problems arise due to different purposes (interest and priorities) of unification. One partner is in need of technology, and the other is only looking for capital gains and maximum profit (Dahlman & Westphal 1983; Lall 1992; Al-Ghailani & Moor 1995) .

2.8 Theories of multinational companies (MNCs) and international production.

Stephen Hymer (1960), an economist, was the pioneer in developing a theoretical explanation of MNCs (Henderson 1989; Dicken 1992; Tolentino 1993). He used the term 'new international division of labour' (NIDL) to explain the shift of production from industrialised economies (core) to less developed economies (periphery). The major concern of MNCs was to search for cheap and controllable labour on a global scale. Driven by profit maximisation motives, MNCs could reduce their production costs by shifting their production facilities to a cheap labour reservoir in the Third World (Dicken 1992:124). They could also internationalise their operation because of a global marketing strategy (Schonberger 1988).

In 1945 and 1959 most of the MNCs who globalised their operations were from the US. From the 1960s they were joined by European companies, and from 1975 onwards they were Asian MNCs. By 1989, there were 21 European MNCs in the 'global 50', 12 Asian and 17 American (Humes 1993:23).

They brought in their superior weapons or technology (manufacturing techniques and machinery) (Emmotte 1992:33). These MNCs in various forms exploited local cheap labour and abundant resources (Elger & Smith 1994). In other words, they appeared like agents of a foreign power, whose interests were different from those of the host

country. According to Emmotte; "multinationals are stateless entities, loyal to no one but themselves" (Emmotte 1992:27).

Beside contributing a large proportion of GDP, employment and capital investment, particularly to Third World countries, these MNCs normally bring in competition, a decrease in prices to the consumer, but also an attack on domestic firms (Ito et al. 1988; Emmotte 1992:28). Today and looking to the future, we can see that political and military colonialisation has been replaced by the globalisation of MNCs. A study of the global 50 (largest ranked by sales) industrial corporations (Humes 1993) for the years of 1987 to 1991, there were some similarities and differences between American, European and Asian MNCs' characteristics. Firstly, domestic sales were a major outlet of these corporations, except Nestlé. A few American (Exxon, Mobil and IBM), European and Asian firms have tended to become more dependent on global sales. Secondly, most MNCs concentrated their manufacturing facilities and assets in home countries. Thirdly, the majority of them combined their domestic and international headquarters at home. Fourthly, the headquarters of all MNCs have long been established separately in home countries. Fifthly, with very few exceptions, home country nationals hold all, or almost all, the top management posts. Lastly, the American MNCs have their international division heads, the Europeans have their geographic executive teams, and the Japanese and South Koreans have their international sales groups to manage their international sales and development. Generally, the American and European MNCs manage by product but the Japanese and South Koreans are functionally managed (Humes 1993: 64-7).

Prior to the Second World War, the majority of international production was organised by individual entrepreneurs in developed nations like the UK and US, resource based, and directed towards their colonies (Tolentino 1993; Dicken 1992). The increasing importance of MNCs in international production only came after the Second World War.

From the theory of the firm and the growth of the firm, Hymer (1960) established a theory of MNCs on the basis of capital movements, intermediate products (such as technology, management, organisational and marketing skills) associated with the international operations of firms. Here, MNCs were considered an institution of international production rather than international exchange (Tolentino 1993: 33). As the business enterprise (or firm) grows, it develops its skills and enriches its competitive advantage, and tends to maintain its economic power by stopping new firms from coming into the market (Schumpeter 1964).

The international operations were due to unequal capabilities or ownership advantages derived from scale economies (such as knowledge advantages, distribution networks, product diversification, and credit advantages). This enhanced the ability of MNCs to restrict competition and therefore increase market power. Firms also went international to exploit an advantage and because of imperfect market structures (Dicken 1992:129).

The oldest foreign MNCs in Malaysia were British tin mines (for example, Malayan Peninsula (East India) Tin Mining Company (1874) and Pahang Corporation Ltd (1887 to 1896), and also Chinese-family tin mines (Ken 1964). There were also rubber plantations pioneered by Dunlop (Dobby 1960:113). It was followed by Shell and Esso in 1800s (Malaysian Industry, July 1995). The MNCs' manufacturing companies only came to Malaysia in 1960s and 1970s.

2.9 The Japanisation process.

Ackroyd et al. (1988) argue that the 'Japanisation' of an economy (country) is a set of processes, like the 'Westernisation' of the rest of the world, which is most appropriately analysed in structural ways. According to Ackroyd, there are three definitions of 'Japanisation': direct, mediated and full Japanisation. First, 'direct Japanisation', that is, the penetration of an economy and industry by Japanese companies or direct investments. The main consequence of this penetration is that industrial administration and economic behaviour will be influenced directly by the presence of Japanese companies in the economy, and indirectly through their dealing with other firms. In 1985 Japan accounted for almost 12 per cent of total world outward direct investment, and only 1 per cent of world inward investment (Dicken 1992:55). Most Japanese MNCs in the US, Europe and Asia are examples of 'direct Japanisation'. The reasons why Japanese companies shifted to foreign soil were relatively cheap labour, availability of natural resources, high labour costs in Japan and proximity to markets.

Second, the deliberate copying of Japanese companies' strategies and practices by non-Japanese firms, which is called 'mediated Japanisation'. There are two types: 'attempts to incorporate the best of Japanese practice and to integrate the new with the old in appropriate ways', and 'the practice of using an appeal to Japanese efficiency as a way of legitimating the introduction of indigenous changes'. There were arguments about the extent of the influence of Japan on British industry in 1980s, that is about whether (or not) the practices of quality control circles, product timing, order scheduling, improved supplier quality assurance, just-in-time management, employee involvement, strike-free deals, lifetime employment, payment by seniority, quality management, a

more consensual style of management, and attempts to generate employee co-operation were borrowed from Japanese firms (Ackroyd 1988:17).

Finally, the country's economy itself reproduces Japanese forms of economic structure, as well as other things (besides business organisation) such as production procedures and employment relations, and a financial system which operates long-term credit and state directed investment. In the UK (and USA), the financial system is of short-term lending and long-term deposits under an increasingly laissez-faire system. It is called 'permeated or full Japanisation'. The evidence for full Japanisation is very sparse. If direct Japanisation and mediated Japanisation were more pronounced, then the pressure upon Britain's economic system and its structures to develop permeated Japanisation might be bigger (Akryod 1988:19).

The Japanisation process is not the same as the Westernisation process (Black 1976; Lechmann 1982). In the Westernisation process, there was economic, political and military expansion throughout the world. Western languages, sports, religions, dress and social manners were also exported to non-Western societies. In the Japanisation process, Japanese products and services have penetrated many societies. Nevertheless, by comparison, its cultural influence (except karaoke) on the rest of the world has remained minimal (Lechmann 1982:288).

2.10 Conclusion.

The chapter has revealed that Japanese soft technology (JST) or Japanese work organisation and management style emerged after Fordism-mass production. In other words, standard products produced by standard machines and by highly specialised manpower have changed to a variety of products produced according to demand by flexible machines and by flexible work teams. Particularly in the 1980s and continuing today, JST has become a popular management technique, debated among not only academics but also industrialists and national leaders. The chapter has shown that JST is a product of management techniques learned from the West, combined with Japanese culture and values to suit their own environment and interests.

Regardless of the names given to Japanese management and work organisation, it has been argued that a high degree of employees involvement in productivity and quality improvement programmes, strong links with suppliers, the establishment of cooperative in-house unions, company-based welfare, the JIT production system, flexible machines and flexible teamwork have enabled Japanese companies to produce varieties of products within a short period with higher quality and productivity at low cost. However, the universality of the management method used was restricted to the automobile industry and mostly for

big, especially, companies. On the other hand, JST has been said to be just like Fordism, an alternative way of controlling and managing employees, though giving more appreciation of their ideas and contributions. It has also been argued that JST has caused workers more stress, that workers spend more time at the factory compared to elsewhere, and that through fear of losing seniority many workers have died leaving hundreds of days of vocation untaken.

Company welfarism has been of less benefit to subcontractors' or suppliers' workers, and the practice has been kept mainly for home use and only selectively transferred to foreign countries. JST has been selectively transferred to foreign soil or within partners in the strategic alliances (which is commonly practiced by all MNCs), because, as has been discussed, MNCs are oligopolistic and or monopolistic in nature. To maintain their competitiveness has been their main concern.

The Japanese, American and European MNCs have been migrating with global capitalist aims and interests (of wealth accumulation). In other words, they always think of and improve their ways of working by using their competitive advantages to maintain and possibly to improve their status as the 'capitalist giants'. In many cases the practices of Japanese and other MNCs are alike. They retain their R&D or technology centres at home. The parent companies (at home) monitor their international affiliates or subsidiaries, which remain off-shore plants with simple production processes. They have high intergovernmental political-economic linkages, practice high management costs only in the home countries, but low management costs in host countries, but build their plants in countries which afford a high degree of protection.

However, working with MNCs has been unavoidable for developing countries, as they lack capital and technology. Strategic alliances and other measures have been established in order to absorb and develop those technologies. The question of how far the relevant parties have played their parts effectively to realise these objectives needs to be investigated and evaluated. This thesis sets out to do so.

Chapter 3: Research design & methodology.

3.1. Introduction.

This chapter explains the research strategies employed in this thesis. Since the research concerns an in-depth study of Japanese management transfer within organisations, the case study method has been preferred. The issues of to what extent, how and why the transfer of Japanese management has been practised by venture firms over time will be explored. The thesis relies on multiple sources of data, but mainly focus interviews with the help of semi-structured questionnaires, observations and document searches. The rationale of the selection of two sample cases, the unit of analysis, its measurements and variables used, will be explained in this chapter. The quality and the problems of the research are discussed at the end.

Data are analysed qualitatively. It is a way to examine in-depth and detailed areas of research (Smith, M.E. et al 1992; Bryman 1992; Yin 1994,1994). Data and information are collected by means of interviews backed up by semi-structured questionnaires, observations, records and documentation searches. The respondent is not forced to select from predetermined answers given by a researcher. In other words, this method enables researchers to understand the respondents. However, this approach is prone to subjectivity, collected data not being representative, and it is hard to use over a large number of cases (Smith, M.E et al 1992:71; Bryman 1992:135). Used thus, it offers a good means of understanding the real process taking place in the research field. According to Yin (1994), there are three factors to consider when choosing the right research strategy; the type of research question posed, the extent of control an investigator has over actual behavioural events, and the degree of focus on contemporary as opposed to historical events.

In general, to answer 'what' questions, any of the strategies such as exploratory interviews, surveys or the analysis of archival records would be favoured. 'How' and 'why' questions are likely to favour the use of case studies, experiments or histories. To study contemporary events, direct observation and systematic interviews are the factors that distinguish case studies and histories. Alternatively, experiments are conducted when investigations can manipulate behaviour directly, precisely and systematically, normally in a laboratory environment where some variables can be 'controlled' or affected by 'treatment'. The popularity of these strategies is very much related to the three factors mentioned above, though the case study approach has been used increasingly in current management researches (Smith M.E.et al.1992). I believe that both qualitative and quantitative methods have their own strengths and benefits, and can actually complement each other.

3.2 Research design.

Research design is the logic that links the data and information collected (and the conclusions to be drawn) to the initial questions of the study, either implicitly or explicitly. It acts as a blueprint of research, dealing with what questions are to be studied, what data are relevant, what data are to be collected, how the results will be analysed, and what conclusions will be drawn. In other words, it guides the investigator in the processes of collecting, analysing and interpreting the data and information collected (Yin 1994:18).

For case study design, there are five important components of research design; the research's questions, its propositions or assumptions, if any, the unit(s) of analysis, the logic linking the data to the propositions, and the criteria for interpreting the findings.

The objective of the research.

What is the purpose of the research? The answer to this question is closely related to the issues discussed in chapters 1 and 2. Both ventures studied are an outcome of the Malaysian privatisation plan. It is a government strategy in nurturing the industrialisation process and developing indigenous technology. In the first place, the joint ventures were established by the build-operate-transfer (BOT) technique (Hensley & White 1993), then the partner was matched. As joint ventures initiated by the government, they are expected to fulfil the desire of the initiator, that is, to absorb Japanese technology, i.e., work organisation and management style, from Japanese MNCs, besides normal business profit interests. Therefore, this thesis will try to answer questions such as the following.

Firstly, to what extent has JST been transferred to the Malaysian-Japanese strategic alliances or joint venture manufacturing companies? How has the transfer process taken place? What are the influences on the transfer process? Have these companies been involved in indigenous technological development, as expected by their sponsor? Do they have soft technology acquisition plans from the beginning, and implement them accordingly?

Secondly, since the political, economic and socio-cultural environment of the ventures is the same, and both ventures are dominated by Malaysian ownership, does this mean that there are similarities of transferability experience (levels) between the two industrial sectors (the auto and telecommunications industries)? In other words, is the sector difference crucial in practising JST, even though they are in the same setting?

Thirdly, many factors contribute to the transfer of JST within the ventures. Some of them are the commitment of Malaysian managers to acquire or learn, and the readiness of the Japanese experts to transfer soft technology to Malaysia. Are these factors closely linked in the practice of JST?

Fourthly, the research will evaluate the industrialisation strategies and investments policies formulated and implemented by the Malaysian government through its agencies. Are they really fostering technological transfer and the development of indigenous technology?

Finally, what are the strategies of the Japanese government, private agencies and MNCs in fulfilling the Malaysian government's aspirations/ requirements in technological transfer/ development. Have such strategies helped Malaysian technological development or strengthened their own regional economic production and marketing by using Malaysia as a base for their regional economic aspirations?

Model of technology transfer.

There are five aspects to this model.

Firstly, there are authors who claimed that the transferability of JST by Japanese transplants to foreign soils are high (Ackroyd et al. 1988; Womack et al. 1990; Florida and Kenny (1991); Oliver and Wilkinson 1992; Bratton 1992; Kenny and Florida (1993); Wilkinson, Moris & Munday 1993; Abo (1994a)). According to them, large, resource-rich and powerful organisation have sufficient resources to alter the new environment and to employ their best management techniques to fulfil their requirements. On the other hand, there are group (of researchers) who claimed that the Japanese corporation keep their best management practice at home and do not transfer it to host country (Smith, J.M. 1986; Milkman 1991; dedoussis & Littler 1994). There are also studies which shows that the transfer has taken place more in 'ready-made' or 'embodied' part of technology as compared to soft and disembodied technology (Abo 1994a; Graham 1994; Humphrey 1994) Thus, it is hypothesised that the JST is being transferred but not in full. Therefore, the thesis will provide a critical examination of the positive model of JST technology transfer, that is whether the transfer has taken place or not within Malaysia-Japan strategic alliances.

Secondly, (i) both alliances are located within the same political, macro-economic, legal and national industrial relations system, Malaysia. Major institutional and political-economic variables are thus held constant at the national level; (ii) they are staffed by predominantly Malay managers and employees; and (iii) they possess different hard

technologies, markets, and industrial set up. The variance of macro political-economy and institutional variables and cultural variables is thus minimised, while the variance of contingencies level is maximised (Child & Tayeb 1982-83). Theoretically the transfer of JST in auto is higher than telecommunication industry due to the high technicality of automotive sector (Henderson 1989; Kenny and Florida 1993; Abo 1994b). It is hypothesised that there will be significant differences of management transfer between alliances. The thesis will investigate whether the differences occur or not.

Thirdly, technology transfer is often conceived as a reciprocal process from which both participants have benefited (Al-Ghailani & Moor 1995). The recipient and supplier of the technology jointly own and managed the alliances, share the risk and enjoy the economic success (Wilczynski 1976). On the other hand, the impact of foreign technology is dependent on the domestic technological competence (Cantwell 1991) and the readiness of Japanese experts to transfer (Kenny & Florida 1995). In the case of Malaysia, there were claims that the technology transfer was slow because of the Japanese were reluctant to transfer (Wad & Jomo 1994) and give outdated technology (Jomo 1994b). There were also comments on the management incompetency and lack of interest in learning technology (Lim CP 1994a, Malaysian Industry, July 1995). It is hypothesised that Malaysian corporate leaders and managers and Japanese experts are not working together closely, and not eager enough to develop Malaysia's car and telecommunication technology. The thesis will explore whether both parties are working closely or not in the transfer process.

Fourthly, Malaysian ministries and agencies have devised industrial policies and incentives to establish Malaysia's own technological capabilities, so that in the future Malaysian companies will be equal with MNCs rather than remain as subcontractors only (Samuels 1994). However, since Malaysia's market is small and technologically far behind, Malaysia has been involving in importing technology through licensing, know-how agreements and turnkey projects, as well as copying products, getting training overseas, making visits to foreign plants, and studying foreign literature (Dahlman & Westphal 1983). As in many developing countries, there is little adapting or improving of the technology, diffusing it within the economy, exploiting it overseas, and almost no basic research, innovation and export of technologies (Dahlman & Westphal 1983; Lall 1992). There are also lack of R&D efforts by both public and private sectors in the country (Ali 1992, 1993; Lim, C.P. 1987). It is hypothesised that the national technological capability development is slow. The thesis will examine whether Malaysian ministries and agencies nurture its technological capability.

Finally, Japanese state and *keiretsus* have been working together to build their global and regional production and procurement, capital rationalisation and division of labour and altering regional trade patterns, in developing their economic hegemony (Pascal & Athos 1981; Abegglen & Stalk 1985; McMillan, C.J. 1989; Hiraoka 1995). With global mission, Japanese organisation determined what to be located where? (Imai 1992), keep their head quarters and innovative R&D center at home (Baba & Hatashima 1995), and divide the world into various regions (Sugiura 1992; Popham 1995; Baba Hatashima 1995). They have also been developing technological capability by transferring their low-end products technology centres to host firms (Baba & Hatashima 1995). There has been a lack of concern by the Japanese parties to develop managerial skills, business development strategies and the overall firm and host country's innovative technology capabilities (Nester 1990; Henderson 1989; Lall 1992; JACTIM 1994). It is hypothesised that there is a high degree of coordination between Japanese public agencies, private agencies and Japanese transplants (including MMC of PROTON and NEC of PERNEC) and other Japanese MNCs to develop Japan economic hegemony over Malaysia. The thesis will explore whether Japanese cooperation has been nurturing Malaysian or Japanese economy and technology.

The thesis is in general terms a critical examination of the positive model of technology transfer.

3.3 The case study method as a research strategy.

The case study method is widely used in organisational and management studies. Moreover in the study of technology transfer, this thesis is classified under 'process-intensive technology transfer', which the majority (80%) of the technology transfer researches are in, and it is grouped under organisational arrangements (see Autio & Laamanen 1995: 650-1).

The case study is the preferred strategy in this thesis for two main reasons. The first is closely related to the objective of the study, that is, to discover to what extent JST has been transferred through Malaysian-Japanese strategic manufacturing alliances. It involves the question of what type and what level of JST has been transferred, how the transfer has taken place, and why it was transferred in such a manner. There are elements of what, how and why in the research questions, as mentioned in paragraph 3.1.

The other reason is that there have been many in-depth studies on the same subject in America (Florida & Kenny 1991, Kenny & Florida 1993, Milkman 1992, Abo 1994), Britain (Oliver & Wilkinson 1992; Bratton 1993), Australia (Dedoussis & Littler 1994)

and other parts of the world (Schütte 1994; Elger & Smith 1994), but little has been done in Malaysia. The previous work, however, provides a theoretical basis for this study. It is also used to compare the differences with the Malaysian experiences. The case study method was chosen as the most appropriate way of looking into the transferability of JST.

The cases.

This thesis is based on two case studies using a 'comparative case study' approach (Yin 1994:44). The practices of JST are analysed and compared and differences or similarities between the two cases and with other experiences are considered. The first one is Perusahaan Otomobil Nasional Berhad (PROTON), established in 1982, the national car manufacturer, which is a joint venture with Mitsubishi Motor Corporation of Japan. The second is, PERNEC Corporation Sdn.Bhd. (PERNEC), established in 1973, one of the pioneer companies in the telecommunications industry, a joint venture with Nippon Electronic Corporation (NEC) of Japan. Both the Japanese partners are *keiretsus*, and both companies were initiated by the government under its privatisation plan. Three main questions arise. Firstly, why strategic alliances? Secondly, why these two sectors? Lastly, why these two companies?

To answer the first question, these companies were selected because strategic alliance or joint venture is one of the government's high profile strategies to acquire technologies from foreign MNCs through a 'hands-on' learning process (Ali 1992; Hensley & White 1993). It also has been one of the important methods by which firms technological capability development is achieved within developing countries (Dahlman & Westphal 1983; Dahlman et al. 1987; Lall 1992). Through these alliances the indigenous should be able to acquire their own technological development programmes (MITI 1994a; MIDA 1992).

It could be asked, 'why not take the wholly Japanese transplant, so that the issue of transfer can be maximised?' The answer is that, though wholly Japanese transplants could also have been used in the study, experience from other studies shows that Japanese management is not necessarily being transferred (Smith, J.M. 1986; Wong 1990; Milkman 1991, Littler & Dedoussis 1994; Graham 1994; Dedoussis 1995). For example, the Singapore experience shows that the transfer is not necessarily maximised in Japanese transplants, as revealed by Wong (1990:253-4):

Japanese subsidiaries generally do not apply their indigenous management practices in their organisations as much as they would in Japan. Besides, their use of these practices is not the highest among companies.

In fact, the author tried to conduct research in Nippon Electronic Corporation of Malaysia, a wholly Japanese company, but failed to gain access. Therefore, I suggest that the joint venture or strategic alliance is the best (available) case for studying JST transfer in the Malaysian context.

The second question was on sector. The auto industry is well researched, (Cusumano 1989; Kenny & Florida 1991; Williams et al. 1994; Graham 1994; Bonazzi 1994; Thompson & Sederblad 1994). In fact, the study of manufacturing systems has been closely linked and associated with the automobile manufacturing system (Womack et al. 1990). It has been found that JST is more completely transferred in auto manufacturing, compared to other sectors (Kenny & Florida (1995). In Malaysia, the auto industry was grouped as one of the heavy industry projects that created other SMIs and developed other related industries (Industrial Master Plan 1985; Dicken 1992; Malaysian Industry, July 1994). The Malaysian technological development through vendor development programmes (VDP) in fact was pioneered by the auto industry, where PROTON took a lead in 1988 (MITI 1994a; MITI 1994b). Although car exports are still small (7.8 per cent of export value in 1991), its export growth rate is next highest after electronic and electrical machinery and appliances.

The electronics sector, though Japanese management transfer is less prevalent in it, is the next most popular sector being studied in respect of Japanese management transfer after the auto industry (Milkman 1991; Kenny & Florida 1993; Schütt 1994; Taylor et al. 1994). In fact, most studies on Japanese management transfer in Malaysia have been concerned with electronics companies (Imaoka 1985; Thong & Jain 1988; Wad & Jomo 1994; Guyton 1994; Abdullah & Keenoy 1995). Those works can be a good theoretical base for the study. In Malaysia, the sector contributes greatly to export income. In 1992 it contributed as much as 58 per cent, increasing to 61 per cent in 1993, to total exports of manufactured goods (MR 71,452.9 million and MR 89,698.7 million respectively). The sector has expanded, its growth rate being 33 per cent in 1993 compared to 17 per cent in 1992, (though this was lower than the 38 per cent rise in 1991). The top three product groups were metalworking machinery (50 per cent in 1993 and 27 per cent in 1992), followed by telecommunication and sound recording apparatus and equipment (34 per cent in 1993 and 12 per cent in 1992), and electrical machinery apparatus, appliances and parts (29 per cent in 1993 and 10 per cent in 1992) (MITI 1994:46).

There are other reasons why two strategic alliances have been chosen. In the case of PROTON, it was the first established local car manufacturer and assembler in the country initiated by the government, where the possibility of JST being learned and practised is positive. There are other assemblers like United Motor Works (Toyota),

Tan Chong Motors (Nissan), Oriental Motors (Honda), Daihatsu, Mazda and Mitsubishi, but they are assemblers who rely heavily on imported components. They are also less responsible for national technological development (Machado 1994). There is a second car manufacturer initiated by the government, Perusahaan Otomobil Kedua Sdn.Bhd. (PERODUA), but it is still new (it began operating in 1994), and it will require time for JST to take place in the company before any evaluation exercises can be done. On the other hand, PERNEC is the company that pioneered the telecommunications industry, and has had 23 years to learn and practise systems from its Japanese counterparts. Today, the company still acts as a major supplier of switches and transmission equipment in the telecommunications market (PNB 1994).

The unit of analysis.

In this research, the unit of analysis used is the related departments where JST is practised. The breakdown of these units is shown in table 3.1.

Table 3.1: Unit of analysis.

The implementation process of JST	PROTON	Unit of analysis	PERNEC
Flexible manufacturing system	Production department		Production department
Company-wide quality control	Quality office		Production department*
High cost human resource management	Human resource department		Human resource department
Industrial relations	Industrial relations unit		Human resource department*
	Proton Workers' Union		**
Long-term close supplier-buyer relationships	Vendor and procurement office		Commercial department
	Business division of vendors		Business division of vendors

Note: * At the time this study was taking place, no specific quality department and industrial relation unit had been established.

** There is no workers' union at PERNEC.

There are also soft technology aspects of other departments, which have to be taken into account in order to understand the overall JST transferred process in these companies. They are research and development, management information systems, administration and financial, corporate planning, engineering, and business development departments.

Various group of workers from relevant departments, such as top managers, managers, foremen, assistant foremen, Japanese experts and production workers are taken as major informants from the organisations studied (Bryman 1992:171).

3.4 How was the field research accomplished?

The researcher gained access to the Corporate Planning Department at PROTON, and the Human Resource Department at PERNEC. It took over six months to study and understand the JST transfer process and the reasons behind the transferability. In each plant, the researcher communicated and interacted closely with top managers, managers, assistant managers, foremen/ assistant foremen, supervisors, union members, senior production workers and Japanese experts. All respondents interviewed in their respective divisions and departments. In addition, there was close contact between the researcher and respondents, for examples, eating in canteen together with managers, attending daily morning meetings at departmental and sectional levels, attending 'opening and ending prayer', performing the daily congregation worships or 'solah' with employees, and being present at the QCCs meetings and convention. In this way, the researcher was able to gain an insight into JST practices while mixing with the people concerned.

While doing the investigation I acted as an observer, and the employees were aware that I was also a researcher (student). A letter of intent was mailed to both companies to get access for the study (see appendix 1). After permission had been given (through letter of approval for PROTON, and verbal approval for PERNEC), I interviewed high-ranking officers from both companies (the managing director of PROTON, and assistant general manager and senior manager of PERNEC) for about an hour, to brief them on my research objectives. After that I was introduced to the officers who were responsible for arranging matters and introducing me to respondents in their respective plants.

Although this thesis is framed by a qualitative and in-depth case study method, a quantitative survey is not totally ignored. This also was used when necessary. Two structured surveys were undertaken, the first to learn the trend of joint researches and consultancy within research institutes and university (see Appendix 2a), and the second to know the trend of students sent abroad by year by country, before and after the Look East Policy begun (see Appendix 2b). Pooling the two methods (qualitative and quantitative) strengthened the data accumulation and subsequently helped the analysis. Combining the two strengthened the research validity (Bryman 1989:175).

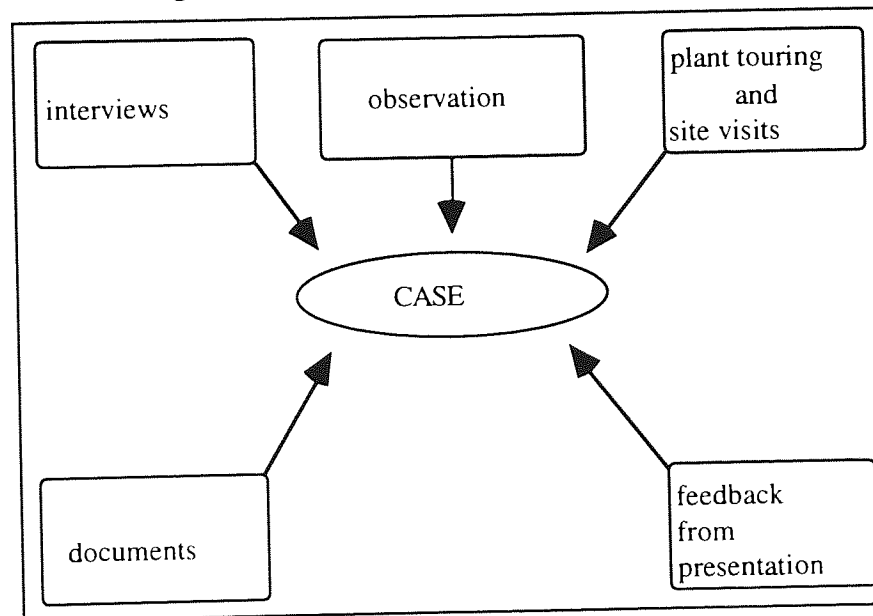
A one and half hour presentation with a team from the Corporate Planning Department of PROTON was held at the end of the field research period. The purpose was not only to brief them on the findings of the study, but also to confirm and clarify the facts. Generally, the team were interested in the soft technological issues, which had been given less priority in the technological development process in the company. They also

argued that there are aspects of Japanese management which are hard to practise in Malaysia due to the different industrial environment (for example, single job entry, promotion based on seniority). Unfortunately, because of time constraints and the availability of the management team, a presentation to a PERNEC management team was not possible.

3.5 Multiple sources of data.

To ensure the objectives of the research were met and the research was professionally executed, the thesis was investigated through multiple sources of data collections. The information collected and analysed was based more than 100 interviews, direct observation from more than 20 plant tours and site visits, structured survey, documentation searches, and one presentation on the findings of the study. A diagrammatic summary of these methods is given in figure 3.1 below.

Figure 3.1: Multi-windows of information sourcing.



Interviews were the main approach taken to investigate the research problems. The interviews were supported by 3 research tools, semi-structured questionnaires, cassette recording and notes-taking. 'Semi-structured' means that the questions are given in general terms, but informants are free to develop their answers and the interviewer takes a more subordinate role (Millar et al. 1992:10). The interviews covered personnel within the two cases and their vendors, Malaysian ministries and agencies, and Japanese agencies. The interviews were of one-to-one, one-to-two and also group interviews (Rae 1988; Sidney 1961).

The relationship between research questions, with research strategies, research instruments and units.

The relationship between research questions and research strategies, instruments and units of analysis is displayed in table 3.2 below.

Table 3.2: Relationship between research questions with research strategies, instruments and research units.

Research questions	Research strategies	Research Instruments	Research Units
1. To what extent JST has been transferred?	interview, observation/ factory visits, document searches.	unstructured questionnaires, dairy/ note taking, cassette tapes, document materials.	departments within PROTON & PERNEC., PVA*, PWU*
2. Do different sectors have same experiences?	Interview, observation/ factory visits, document searches.	unstructured questionnaires, dairy/ note taking, cassette tapes, document materials.	departments within PROTON & PERNEC.
3. Are Malaysians eager to learn & Japanese ready to transfer?	interview & document searches	unstructured questionnaires, document materials	PROTON & PERNEC and other reports.
4. Do Malaysians have enough resources to nurture indigenous technological development?	interview, document searches & survey	unstructured questionnaires, note taking, document searches & structured questionnaires.	Relevant Malaysian ministries/ agencies
5. Do strategies taken by Japanese agencies & MNCs nurture JST transfer?	interview & document searches.	unstructured questionnaires & document materials.	Japanese agencies & MTUC*

Notes:

- *PVA Proton Vendors Association
- *PWU Proton Workers Union
- * MTUC Malaysian Trade Union Congress.

Data and information gathered through interviews.

There are two clusters of focus interviews. One is respondents within PROTON and PERNEC and their related subsidiaries and vendors, where 102 respondents were interviewed. The other is respondents from six Malaysian and eight Japanese agencies. The schedule of the interviews was made and put into a diary after knowing the basic organisations' information of both companies. The interviews carried out were subject to the current availability of respondents' time. These appointments were made a week before the interviews were to take place, and confirmed one or two days before the interview date. Experience showed that 95 per cent of the interview schedules were successfully organised, based on this arrangement. There were interviews with 68 respondents from PROTON, and 34 from PERNEC and their related subsidiaries and vendors. The details are illustrated in table 3.3.

THE JAPANISATION PROCESS IN MALAYSIA

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July 1997

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THE UNIVERSITY OF ASTON IN BIRMINGHAM

THE JAPANISATION PROCESS IN MALAYSIA

Doctor of Philosophy

1997

This thesis examines the empirical evidence for the transferability of Japanese soft technology (JST) or Japanese work organisation within two government-initiated, Malaysian-Japanese strategic alliances: PROTON and PERNEC. The government, through its Look East Policy (LEP) began in 1982, taking Japan (and South Korea) as models and partners in Malaysian economic and industrial development process, and expected these alliances to learn the good aspects of Japanese work organisation and management styles in order for them to become independent companies, both technologically and economically. The thesis found that the alliances have been successfully taking and utilising Japanese parts, components, tools, robots and machines; i.e. the 'ready-made hard technology'. [Whereas the important element of soft technology has been ignored]. The soft technology has been slowly and marginally transferred because neither local parties nor their Japanese counterparts within the alliances consider the acquisition or transfer of soft technology to be the main concern or a part of business plan. Although many factors influence management transfer, the thesis has focused on the eagerness and the capability of Malaysian managerial teams to acquire and, to a lesser extent, the readiness of the Japanese to transfer the technology. It was found that there is a lack of demand on technology acquisition by Malaysian managers and lack of responsibility to transfer the technology among Japanese experts. However, the political and social pressures on these alliances, the industrial climate and labour market, leaderships and management system of alliances, and Japanese MNCs regional and global corporate strategies have contributed to the high level of transfer of JST at PROTON compared to PERNEC. The research also found that Malaysian industrial and investment policies have favoured foreign investment but there is a lack of strategies for nurturing indigenous technological development. On the other hand the Japanese MNCs and public agencies have been operating in Malaysia and guided by their regional and global corporate strategies and less concerned with Malaysian technological development. In conclusion, empirically, the JST transfer is minimal. The transfer has been influenced by internal contingency factors of organisation; external industrial, political and cultural environmental factors; and last but not least the Japanese MNCs' global and regional corporate strategies. The transfer of Japanese management in this research is inclined towards core-periphery transfer model, it is also related to organisational and national technological capability.

KEY WORDS: JAPANESE SOFT TECHNOLOGY (JST); TRANSFERABILITY;
STRATEGIC ALLIANCES; MANAGEMENT CAPABILITY AND
COMMITMENT; LOOK EAST POLICY; JAPANESE READINESS
TO TRANSFER.

ACKNOWLEDGEMENTS

I would like to express my deep appreciation to Dr Chris Smith, my supervisor, for persistent guidance, helpful discussions and constructive comments throughout the preparation of this thesis.

I also would like to express my thanks to the management and staff of my organisation, the National Productivity Corporation of Malaysia, for enabling me to pursue my studies, not only with time and money, but also moral support.

Without the full cooperation of the management and employees of Perusahaan Otomobil Nasional Berhad (PROTON), PERNEC Corporation Sdn. Bhd. (PERNEC), and their vendors, this research would not have been possible. Therefore I owe a major debt of gratitude to them for a series of interviews, document searches, plant visits and also for their hospitality.

In addition, the progress of my research was made easier by continual material and intellectual support from the friendly and helpful staff of the Doctoral Programme Office, Aston Business School. Special gratitude is extended to them.

Finally, I acknowledge the many and often neglected contributions made by my friends and the moral supports given me by family. Most of all, my deepest thanks go to my beloved wife and children for their patience and sacrifices.

Table 3.3: Interviews breakdown by organisation.

Organisation	Classification of Respondent	Number of Respondent
PROTON	Managing Director	1
	Deputy Managing Director	1
	Managers/Assistant Managers/Executives/Foremen	39
	Japanese Experts	3
	Total management interviews	44*
	Assistant foremen & workers	12
	President of PWU	1
	Total workforce interviews	57*
	Subsidiaries	3
	Vendor	7
	Edaran Otomobil Nasional Bhd (EON)	1
	Total PROTON	68
	PERNEC	Assistant General Manager
Senior Manager		1
Managers/Assistant Managers/Executives/Supervisor		19
Japanese Experts (Deputy CEO)		1
Total management interviews		22**
Production Workers		7
Total workforce interviews		29**
Subsidiary		1
Vendor		3
Telekom Malaysia (TM)		1
Total PERNEC	34	
Total		102

* 5.6 per cent from total PROTON's management team of 776; and 1.4 per cent from total workforce of 4188.

** 32 per cent from total PERNEC's management team of 50; and 4.0 per cent from total workforce of 717.

The interviews were systematically scheduled from department to department, and from PROTON to PERNEC, but the actual interviews depended on the availability of the respondents. For the other clusters, six local, eight Japanese agencies and one Malaysian Trade Union Congress (MTUC) representative were interviewed.

The measurement of JST.

The measurement or variables of JST have been developed and applied in related research questions. The same measurement or variables might have appeared in different questionnaires for different respondents, for the purpose of validation and confirmation, or to develop the chain of evidence and to see the causal relationships. Basically the same variables and measurements were examined in document searches and observations. The measurements or variables applied are based on those used by Imai (1986), Florida & Kenny (1991), Milkman (1991), Oliver & Wilkinson (1992), Sako 1992, Kenny & Florida (1993), which were discussed in chapter 2.

[A] Indicators or variables used in the questionnaires.

To what extent has JST been transferred?

The researcher investigated the evidence for the presence of JST inside and outside the factories studied. The indicators for lean or **flexible manufacturing system** investigated were: Frequency with which materials, parts and components are supplied; storage period for material purchased, the way parts and components are supplied, whether or not work-in-progress was stored; the usage of *kanban* cards and containers; variety of outputs; the use of flexible machines and parts; the availability of simple graphic work instructions; the use of check sheets for statistical process control (SPC); the use of cellular technology or flexible/ multi-skilled team work; job rotation; machine grouping; how the design of the products and of moulds and dies was carried out; the use of 5S, 3M, 5 why, and PDCA; the practice of morning meetings; the use of the standard operation manual (SOM); graphic SOM and works procedures displayed prominently in the work place.

The indicators for Japanese **company-wide quality control** are: quality organisation and policies; *kaizen* office; quality control slogans; the formation of QCCs on a volunteer basis; the availability of QCC activities; the availability of company wide quality conventions; quality check at parts arrival and final process points; repair work on line; the availability of a repair-bay; quality manual for workers; the availability of quality visits to suppliers; company-wide quality training and education programmes; quality awards given to workers; other motivational programmes for developing quality culture in the organisations; quality certificates and awards received (national and international).

The indicators for Japanese **high cost human resource management** are: human resource development policies; career development plans; training and education programmes for all employees; budgets for training and education; fresh intake and recruitment systems; promotion system and procedures; library facility; the use of seniority-based promotion; cross-training and transferable, multi-skilling employee policies and implementation; single entry; job classifications; decision making process; office arrangement; staff monetary and non-monetary awards for excellence; and average years of stay for production workers and managers;

The indicators for Japanese **harmonious labour and management relationships** are: the forms and the formation of union membership and the density, the system of decision making, the availability and the making of collective agreements, the availability of open suggestion systems, how grievance handling is carried out,

frequency of strikes, numbers of lay-offs, the communications system, evidence for a 'classless' workplace (one uniform for everyone, single canteen, one car park).

The indicators for Japanese **long-term supplier and buyer relationships** are: the availability of vendor development office and policies; the availability of share ownership in their suppliers' equity; close working right from product design to parts and components delivery; creating, helping and developing the vendor; single and dual sourcing rather than a multiple sourcing policy; commissioning the order rather than an open bidding policy; product design engineers work closely with mould and desing engineers right from the beginning; prompt payment; order can be placed verbally, so less paperwork and a high degree of trust; price is determined jointly at the time of commissioning; the mutual (periodical or random) visits of officers, and also permanent staff stationed in suppliers' factories; discussions on how to improve the quality-price-delivery performance and information sharing through periodic supplier-assembler meetings and visits; and the availability of continuous training and development programmes and a yearly award systems to the best supplier.

The variables for **Japanese organisational practices in corporate planning, management information system, business and marketing, R&D** are: the shape of the organisation, is it flat or tall?; open office system, high speed of information flow; centralised research and development activities, and planning activities at the parent company; creating different subsidiaries for different products and services offered, with the parent company having equity in them; a different centralised marketing arm in which the parent company has equity; penetrating the market with small-compact-lighter-economical products together with a full support service; introducing new products with new features every 2 or 3 years; opening new assembly or manufacturing plant in new country with team of vendors rather than coming as a lone ranger; keeping the advanced technology applications with the parent company and transferring and using only simple technology at the off-shore factory in the host country.

Do different sectors have the same experiences?

To test the differences of JST transferred between sector, the availability of the above variables is compared between PROTON and PERNEC

Managerial capability and eagerness to learn and Japanese readiness to transfer.

Managerial capability and eagerness to learn is explored by looking into: the availability of a technological acquisition/development plan from the beginning; the objective of the

joint venture; experiences, exposure and background of managers; knowledge of the best management techniques available in the market; comparative working hours spent in the office between local managers and Japanese experts; expectation and perception of technology transfer; frequency of communication between local managers and Japanese experts; training provided by the company for skill development of workers; the availability of R&D efforts; the availability of future plans to be an independent company.

The readiness of the Japanese to transfer the technology was tested by looking to the availability of variables such as: the objective of having a joint venture; the Japanese experts' contributions in the workplace; the function of Japanese experts in quality steering committees and R&D; historical improvement in implementation of JST elements (such as JIT, QCC, R&D, *kaizen*, equity ownership within suppliers, in-house union, profit sharing by employees etc.); the availability of a soft technological transfer plan from the beginning; the nature of training provided by the Japanese; the types of experts sent to work with the venture.

Supporting the interviews, eight separate questionnaires were utilised to answer three research questions. Separate questionnaires were utilised to interview top managers, managers, assistant managers, foremen/ assistant foremen, union leaders, Japanese experts, vendor association and vendor. In addition, there were semi-structured mail questionnaires for the PERNEC workers to validate the data and information given by their superiors. The contents of the questionnaires were listed as follows:

[a] Top managers.

- (i) General policies and objective of joint venture.
- (ii) Current management practices.
- (iii) Future corporate planning.

The details of the questionnaires are attached in Appendix 3a.

[b] Managers.

- (i) Current working system in the department.
- (ii) Process change from 1970s to 1980s, 1990s (for PERNEC) and 1980s to 1990s (for PROTON).
- (iv) Whether Japanese work organisation and management style have been adopted.
- (v) How Japanese work methods and management style have been adopted.
- (v) Factors that affected the process.
- (iii) Problems faced in working with Japanese.
- (vi) Future planning and suggestions.

The details of the questionnaires are attached in Appendix 3b.

[c] Assistant managers/ Foremen

- (i) Biodata, Educational background, Job history.
- (ii) Japanese management transfer and adaptations.

General.

Manufacturing/ production practices

Company-wide quality control.

Participative management.

Welfare and the development of human resources.

Industrial relations.

Maintenance and production engineering.

Other.

The details of the questionnaires are attached in Appendix 3c.

[d] Assistant foremen.

- (i) Biodata, Educational background, Job history.
- (ii) Job description and responsibilities.

The way they organised their work.

The opportunities for participative management.

The practice of company-wide quality control.

The practice of manufacturing systems applied.

The practice of human resource management.

The practice of industrial relations.

The readiness of local workers to learn from the Japanese.

The differences between Malaysian and Japanese managers.

The readiness of Japanese experts to impart their knowledge and technology.

Suggestions to improve the technological transfer/acquisition.

The details of the questionnaires are attached in Appendix 3d.

[e] Union officers and senior workers.

- (i) Respondent biodata.
- (ii) The presence of company-wide enterprise union.

The history of the union.

The contributions of union to workers

The relationships between union and management.

Facilities provided by the company.

The involvement of union in decision-making and planning process.

Opinion of union of flexible work team and multi-skills workers.

The communication systems in the company.

Opinion of the welfare and development of human resources.

The status of manufacturing and quality systems.

The role of the joint venture in economic development.

The way the company should be managed.

Suggestions to improve labour and management relationships.

The details of the questionnaires are attached in Appendix 3e.

[f] Employees (for PERNEC), a mail questionnaire.

(i) Respondent biodata.

(ii) Management practices

The positive effects of automation on employees

The negative effects of automation on employees

Suggestions to improve the organisation as a whole

Reasons for staying with the company

How QCC activities and meetings are conducted

How job rotation and transfer take place

Reasons why QCCs and *kaizen* are not active

The need for workers to be unionised.

The details of the questionnaires are attached in Appendix 3f.

[g] Suppliers.

(i) Supplier profile.

(ii) Supplier-buyer relationships.

General.

The status and comments on services offered by assembler.

The status and comments on services offered by supplier to their materials vendor.

The markets of the vendor-market dependency

Getting the orders

Price determination

Delivery systems

Supplier failures

Buyer failures

Other

The details of the questionnaires are attached in Appendix 3g.

[h] The president of vendor association.

(i) Supply system

(ii) Assistance and development given by assembler/buyer

(iii) The Japanese techniques practised by vendors

(iv) Barriers to JIT production system and other Japanese techniques

(v) Achievement of vendor association

(vi) The nature of the relationship between vendors and assembler

(vii) Negative practices of assembler

- (viii) Suggestions to improve assembler and vendor relationships
- (ix) Help given by Japanese experts to vendors
- (x) The nature of the relationship between local and Japanese vendors
- (xi) Suggestions to improve the relationships between assembler and vendors

The details of the questionnaires are attached in Appendix 3h.

[i] Japanese experts.

- (i) Previous work experience.
- (ii) Responsibilities to local venture and parent company in Japan.
- (iii) The ways knowledge and experience are transferred to Malaysian counterparts.
- (iv) The strength of Malaysian workers and managers in learning process.
- (v) The problems of Malaysian workers and managers in adapting to Japanese work ethics.
- (vi) Suggestions to improve the technological transfer or acquisition.
- (v) The similarities and differences between Malaysia and Japan in terms of:
 - Corporate culture, manufacturing systems, quality management,
 - human resources management, industrial relations, vendor systems, and
 - other practices.

The details of the questionnaires are attached in Appendix 3i.

[B] Indicators and variables used in the documents search.

The variables to measure to what extent JST has been transferred through document searches are:

- (i) Organisation structure.
- (ii) List of subsidiaries and suppliers of PROTON and PERNEC and their ownership in them.
- (iii) Products and services offered.
- (iv) Written marketing policy and business plans.
- (v) Written manufacturing policy and strategy.
- (vi) Written company-wide quality policy and strategy.
- (v) Written human resources management and development policy and strategy.
- (vi) Policy on suppliers' appointment, development and termination.
- (vii) Pamphlets and reports on unions.
- (viii) Financial and production reports trend.
- (ix) Date of employees joining the companies.
- (x) Collective agreement documents.
- (xi) List of suppliers or vendor's directories.
- (xii) Suppliers association.

For further details see appendix 4.

In the case of PROTON, the researcher was given access to 'goods received notes' (GRN), i.e., stock control records, instruction orders, factory layout, and worksheets used for statistical process control (SPC). The company also released established information such as annual financial reports, company profile reports, vendor directory, Proton Focus, and awards received. However, there was no access to written policies and joint venture agreement, except collective agreements.

In the case of PERNEC, documentation access was limited to production layout and training programmes. 'Nada PERNEC', a quarterly medium of communication within the groups, was the only established information released.

Has Malaysia enough industrial policies and instruments to encourage technological development?

The variables used to measure the availability of policy and instruments are:

- (i) Investment incentives for foreign capital, and the need for capital and technology.
- (ii) Functions of relevant ministries and agencies in relation to industrial development and the encouragement of technology transfer.
- (iii) Research and technological development environment.
- (iv) Human resources development programme trends after Look East Policy.
- (v) Labour supply.
- (vi) Joint efforts in training, research and consultancy with developed countries.
- (v) Contributions of foreign direct investment.

These variables were incorporated in 6 interviews of selected Malaysian ministries and agencies such as the Ministry of International Trade and Industry (MITI), Ministry of Human Resources (MHR), Ministry of Education (MOE), Malaysian Industrial development Authority (MIDA), Economic Planning Unit (EPU), and National Productivity Corporation (NPC). Document searches from these ministries and agencies were also utilised to support the research questions. In addition, an interview with the secretary-general of the Malaysian Trade Union Congress (MTUC) was conducted to understand Malaysian industrial relations and the behaviour of MNCs operating in Malaysia. For further details see appendix 5.

There were also two structured surveys to discover the joint research and development programmes between 13 Malaysian research institutes and universities (as detailed in Appendix 2a); and the changes in destinations to which Malaysia sends its student abroad (as detailed in Appendix 2b).

Have the strategies of Japanese agencies and MNCs nurtured JST transfer and Malaysian technological development?

This question was answered through the analysis of secondary data. The variables involved were:

- (i) Number of Japanese agencies and MNCs operating in Malaysia or in Japan with direct/ indirect impact on technological transfer.
- (ii) The sectors, functions, facilities and strength of these agencies.
- (iii) Communication between agencies and MNCs.
- (iv) The objectives of these agencies and MNCs operating in Malaysia.
- (v) Technology transferred to Malaysia.
- (vi) The effects and contribution of these agencies and MNCs.
- (vii) Problems and suggestions for technology transfer.

Secondary data, such as reported by JACTIM (The Japanese Chamber of Trade and Industry in Japan), Keizai Doyukain (Japanese Association of Corporate Executives), Centre of Japan Studies and Toyo Keizai, was the other major source and has been analysed to support the research. Eight interviews with Japanese agencies, their functions and activities, were also conducted in order to analyse their strategies and efforts in Malaysia. The unstructured questionnaires were used to support the focus interviews. The officers in charge were the main informants in the interviews. Details of the questionnaires are placed in appendix 6.

Information and data collected were analysed based on the five propositions mentioned at the beginning of this chapter. Although the thesis is based on the qualitative approach and most of the analysis is tailored to it, some distributions analysis (which applies to the quantitative approach) was also utilised such as surveys on joint research projects (Paragraph 4.6), students sent abroad (Table 5.13) and in the analysis of Japanese investment in Malaysia (Chapter 5). Analysis was done not only of the two ventures, but also by comparing the findings with previous research conducted elsewhere.

3.6 The use of interview materials.

As discussed earlier, all interviews were based on the semi-structured questionnaires. All interviews were tape-recorded and short notes/ handwritten were made of the responses to questions. Immediately after each interview I listened to tape(s) and transcribed the important and relevant materials for the thesis write up. In some cases I listened to the tape(s) repetitively for better transcription. The transcriptions then were classified under the five major area of researches i.e. manufacturing system, quality management, human resource management and development, industrial relation and supplier-buyer relationship.

Information from different interviewees (senior managers, managers, assistant managers, foremen, assistant foremen, senior workers, Japanese expatriates, suppliers, Union President, officers from ministries/ agencies, officers from Japanese agencies, and MTUC Secretary) were then cross-analysed and interpreted. These were then analysed together with the notes of the responses taken during interviews. This material was compared and related to observations made during visit and factory tour and to the document searched.

The quotes selected for reference in the thesis were those which seemed the most relevant to the issues and problems in the JST transfer process to be studied. The quotes used not only explain the nature of the transfer, but also support or question the transfer theory. Quotes were also used for the purpose of validation by referring to interviews from different participants. By presenting and organising the quotes relevant to the different questions of issues and from different participants, there is a broad sense in which they are representative. From the total of 117 interviews, more than 150 quotes have been employed directly in the thesis. The interviews as whole have been used indirectly in explaining the technology transfer debates .

3.7 The quality of research design.

Validity refers to the extent to which the data conforms to the 'facts' (Gorden 1980:40). For constructing the validity of the case study method, multiple sources of evidence are used, the chain of evidence is established and key informants review a draft of the case study report (Yin 1993:39; Yin 1994:33,34). For example, in this study, to understand the JIT production and zero inventory systems, the interviewer not only learned from production managers and foremen, but also from parts control and procurement staff. At the same time, the researcher viewed personally coil stored in the stamping shop, pens stored in the penal storage, parts piled up along the production line, painted cars hanged on the hanger, and finished cars stored at the car pool.

To verify further the information collected, the draft report was shown to the persons who were interviewed, or had supplied source materials, on the same day or a few days after the interview. Normally, there is agreement between researcher and informants on the facts and figures gathered (for example the informants agreed that they did not have a 'soft technology' acquisition plan from the beginning). However, there are also few disagreements (for example corporate quality policy is not clear).

The chain of evidence is also utilised. For example the supply of car seats on a 'sequential basis' was verified with the record of parts scheduling at Production, Planning and Control (PPC), the record of parts received at the parts reception bay, and

the timing of parts received at parts receiving bay was observed. It was found that the car seat arrival schedules were followed in up to 90% of cases.

In case study research approach, internal validity checks explain whether certain conditions shown lead to other conditions (Yin 1994:35). It examines the internal logical relationships in a set of propositions making up a definition and their relationship to other variables of theoretical or empirical interest (Gorden 1980). It can be achieved through the specification of the units of analysis, the development of new theories, and the collection and analysis of data to test the theories (Yin 1993:40).

By employing a case study approach, issues under investigation can be learned through a massive pattern-making exercise, explanation building and time series study (Yin 1994.35). For example, existing research works have found that there is a strong cause and effect relationship between leadership (Kanter 1983; Suzaki 1993), managerial capability (Dahlman et al. 1987; Lall 1992), Japanese readiness or commitment to transfer JST (Kenny & Florida 1995), the interaction between recipient and supplier of technology (Al-Ghailani & Moor 1995), job security (Wong 1990), education system (Ali 1992; 1994; JACTIM 1994), industrial structure (Lim, C.P. 1994), workers' commitment (Bratton 1992) and the 'soft technology' transferred.

For example, leadership is responsible for ensuring the result, by setting the goal and providing means to reach it. Leaders have been able to define task needs, and the needs of teams and individuals so that they can work with clear directions and facilities (Adair 1988, cited by Wilkinson 1993:325). Moreover, to develop a progressive organisation needs a clarity of vision and adequate leadership quality (Suzaki 1993:32). In the case of PERNEC, the post of managing director (MD) was filled on a short-term basis of 3 years. The MDs' short stay did not permit them to bring in or to execute long term corporate planning. They were transferred to another new subsidiary before they could ensure that changes took place.

In external validity, the domain is established to which the study's findings can be generalised. This is very relevant to the survey research approach, whereby the researcher can statistically generalise, whereas case studies and experiments rely on analytical generalisation, the generalisation of a particular set of results to some broader theory (Yin 1994:36). External validity can also be achieved through the specification of theoretical relationships, from which the generalisations can be made (Yin 1993: 40).

For this thesis, the low degree of transferability of JST is closely related to the theory that MNCs with the competitive advantage of oligopolistic power try to maintain their

economic power by putting barriers of entry and dividing labour according to developed and periphery economies (Hymer 1976). Here, the Japanese MNCs, due to the cost push forces, the attraction policies of the host government, and lately because of yen appreciation, shifted their simple assembly plants to lower wage economies. However, in order to maintain their competitiveness, they also transfer their design centres to Asian countries, but only for low-end consumer products (Baba & Hatashima 1995). Therefore, the lack of responsibility of Japanese experts to develop innovative technology within transplants is an explanation of MNCs maintaining their core-periphery strategy. This phenomenon exists not only in the cases studied, but also in other Japanese transplants in Malaysia (Abdullah & Keenoy 1995), Eastern Europe (Wilczynski 1976) and even in mature economies like the USA (Milkman 1991) and Australia (Dedoussis 1995).

The transferability of JST is also related to the technological capability of the firm and the country, as explained by Lall (1992). The higher the firm and country's technological capability (Lall 1992), the more entrepreneurial the organisation (Kanter 1983), the greater the chances that the transferability of JST will take place. Nevertheless, it was noted that those factors are less prevalent in the cases studied. The reliability of the research indicated that the instruments and data collection procedures used can be repeated at a different times and in a different place, with the same results. For qualitative research, will similar interviews using semi-structured questionnaires, observations and document searches be made by different researchers on different occasions (Gorden 1980:39; Smith, M.E. 1991:41)? The idea of reliability is to minimise errors and bias in a particular study. In using the case study method, as Yin puts it;

if a later investigator followed exactly the same procedures as described by an earlier investigator and conducted the same case study all over again, the later investigator should arrive at the same findings and conclusions.

Yin 1994:36

In this thesis, the same procedure and methodology was used for both cases. The only difference was that at PERNEC there was not much documentation available. Therefore information gathering had to rely heavily on interviews and observations.

3.8 The benefits and constraints of the research

The method used is worthwhile if it serves the purpose, just like applying the right formulae to a mathematical problem. The thesis aimed to gain insight into the work organisation and management style practised by the Malaysian-Japanese strategic alliances in Malaysia. The (case study) method used was able to show the process

clearly and comprehensively. JST transfer has been investigated through interviews within and outside organisations, where there was direct, face-to-face communication between researcher and informants. The respondents from the research units explained the JST issues: whether, how and why JST has been learned and transferred. They also explained what were the barriers to the transfer. The respondents accompanied the author on site visits to view the facts, processes and physical evidence of the issues being discussed. In the case study method, information is validated through many levels of interviews, right from top managers to union members/ workers and suppliers. It is also validated through site visits and plant tours. Furthermore, the data and information collected are enriched by documentation gathered from the companies studied. It helps in the analysis and enables the researcher to reach more concrete findings and conclusions. The author has a strong belief that the data and information gathered from interviews show and reflect the true JST issues within the chosen sample companies. If the study had been conducted through a mail survey, I believe the same finding of low implementation of JST within alliances studied would have been found, but the picture would not have been so clear.

There were a few constraints and problems encountered in the study. Firstly, there was a lack of documented materials available at PERNEC. Financial and employees' data from PERNEC was not fully revealed to the researcher, for reasons of commercial secrecy and confidentiality. It is a private limited company, and not publically listed. The only documents given to the researcher were Nada PERNEC, budgeted financial records, and production and quality plans. The financial data released were budgeted figures as well as a reply from the finance department requested by the researcher. The proper balance sheet and profit and loss accounts were not made available.

Second, the approach chosen (an in-depth study) meant the researcher was unable to gain access to NEC (M) Sdn. Bhd. (a 100 per cent Japanese owned company), after being interviewed by NEC authority, prior to the selection of PERNEC. The response might have been different, if the study had used the survey method, but then the researcher could not have understood the actual *process* which has taken place in the companies.

The third problem was the language barrier. Few of the Japanese dispatched experts interviewed understood either the English or the Malaysian languages, so interviews had to be limited to respondents who spoke English (only 3 at PROTON and 1 at PERNEC). Sometimes, in order to get answers from these experts, the researcher had to repeat the questions rather than stating them once. But the researcher appreciated all

the Japanese interviewed, because they tried their best (with the help of an electronic dictionary) to understand and to answer the questions posed to them.

Fourthly, in both ventures the researcher was able to get access only to the R&D offices, not to the labs, this most secret department which is supposed to be the 'soul' of the company. As long as this department is weak and slow, the company will favour technological dependency rather than independence. However, the researcher was fortunate in being able to interview the responsible R&D managers.

Lastly, there was the time constraint. The priority for managers was their own work schedule, not my interviews. Therefore, all appointments with these managers, although pre-arranged, were subject to 'current' working conditions. Normally, the interviews took between thirty minutes and two hours and were sometimes held in the afternoon or evening (after 2.30 p.m.) or on Sunday and public holiday. In a week, between two and four interviews were conducted.

3.9 Conclusion.

The research approach chosen has to be able to answer the issues and problems proposed. In this thesis, the in-depth case study method, qualitative analysis and some quantitative analysis are used to investigate and to draw conclusions from both cases. Interviews with managers and other respondents, using semi-structured questionnaires, were the main tool used to understand the JST practices. This was supported by plant tour and site visits observation and also by document searches within and outside the organisations. By having multiple sources of data and information, the problems of JST transfer was better understood. The method used was able to give insights into the JST practise in PERNEC and PROTON. It gave insight into process issues not just outcomes. As is shown in chapters 6 & 7, there are some differences and similarities in the JST applied in the two samples.

Before we go to the JST practices within the joint venture companies, we will explore the ground for the Japanisation process, prepared by the government of Malaysia. That is a study of one of the 'Japanisation shapers'.

Chapter 4: The Economic & Social Structure of Malaysia and the Role of the State in Aiding Transfer of Japanese Soft Technology.

4.1 Introduction.

In this chapter I shall briefly discuss how the emerging Malaysian economy has been affected by international trade and multinational companies' (MNCs) operations since Malaysia ambitiously opened up its industrial and economic development to foreign capital. I shall also explore how Malaysia has developed its human resources so as to upgrade its technological capability. The influences and effects of FDI/ MNCs and the needs of technological transfer (Malaysian dependency on foreign aid) and their contributions are also discussed. The chapter will explore the efforts and programmes by various Malaysian government agencies that welcoming capital, technology, and Japanese capitalism. Specifically I shall critically examine how the Malaysian Look East Policy (LEP) is linked to the Japanisation process.

4.2 The Malaysian economy and international trade.

Malaysia is a small country with a population of 18.2 million (as of 1991), that is, almost 7 times smaller than that of Japan (123.9 million). It is a democratic country, having government elections every five years. Since 1957, Malaysia has been governed by an alliance/ national front party; a combination of Malays, Chinese and Indians. Malaysia is more democratic as compared to the rest of ASEAN countries, such as Thailand, Singapore, the Philippines and Indonesia, which are more autocratic and to highly controlled and influenced by army forces (Crouch 1993). Along with other Asian countries Malaysia has been able to achieve considerable economic progress. Today its GDP per head in terms of purchasing power parity, is US \$ 6,140, which is 2.8 times smaller than Japan (at US \$ 17,620). The OECD estimated that the real growth rate of Malaysian GDP is 8.5 % the second highest after China (13.0%). The GNP scores of the top six Asian countries and the GDP real growth rate are shown in table 4.1.

Table 4.1: Comparative GDP per head in terms of purchasing power parity, in 1991, in US \$.

Country	Population in million	GDP in US \$	GDP real growth rate (%)*
Japan	123.9	17,620	- 0.5
Singapore	2.8	15,880	7.5
Hong Kong	5.8	15,600	5.5
Taiwan	20.6	12,670	6.0
South Korea	43.3	6,730	4.3
Malaysia	18.2	6,140	8.5
China	1,149.5	1,680	13.0

Note: * Financial Times, February 7 1994
Source: The Economist October 30 Th. 1991

The achievement is not only in terms of earnings but also in terms of wealth distribution. In Malaysia, the percentage of the population living in absolute poverty has dropped from 37 per cent in 1960 to less than 5 per cent in 1990. Brazil by contrast, has seen a fall from 50 per cent to 21 per cent (The Economist, 2 October 1993). Living standards have improved and per capita income has increased from US \$ 300 in 1970 to nearly US \$ 3000 in 1992 (Financial Times, August 1993). The reasons behind this achievement within Asian countries are: (i) the 'interventionist policies' practised by the government; (ii) positive competition between firms in export; (iii) subsidised credit; (iv) directed credit; (v) export promotion; and (vi) competence and relatively less corruptibility of civil servants (The Economist, 2 October 1993).

In countries like Malaysia, Thailand and Indonesia, there is more market-based competition. In brief, stable macroeconomic management, investment in people, and open markets were the reasons for success. The other important factors that these countries give priority to education. In the case of Malaysia, about 75 per cent of the total education budget goes to primary and secondary education. Malaysia's total education spending is 7.9 per cent of GDP, compared with the next highest, Singapore (5.0 per cent), Venezuela (4.3 per cent) and Thailand (3.2) per cent (The Economist, *ibid.*).

However, despite a higher GDP per head (\$8,050) than Brazil (\$5,250), Argentina (\$6,080), and Poland (\$4,880), Malaysia's rural population is still huge (55 per cent) compared to these countries. The number of telephones is limited (89 per 1000 population) and the distribution of employment is 26 per cent in agriculture, 28 per cent in industry and 46 per cent in services. A comparative picture of GDP per head, rural population, employment by industry and telephone facilities of these emerging economies can be seen in table 4.2.

Table 4.2: Indicators of economic development in emerging markets.

	GDP per head*	Rural population	% of total employment, 1990-92			Telephones per '000
	\$, 1992	%, 1992	Agric.	Industry	Services	population 1990
China	2,100	72	73	14	13	11
Indonesia	2,960	70	56	14	30	6
Poland	4,880	37	27	37	36	86
Brazil	5,250	23	25	25	47	63
Hungary	5,730	34	15	31	54	96
Thailand	5,900	77	67	11	22	24
Argentina	6,080	13	13	34	53	96
Russia	6,220	26	20	46	34	149
Mexico	7,420	26	23	29	48	66
Malaysia	8,050	55	26	28	46	89
OECD	17,700	23	5	29	66	640

Source: The Economist, 8 April 1995

From agriculture to simple manufacturing, as a leading sector.

In the 1960s, the economy of Malaysia saw an agricultural diversification, together with an industrial strategy which promoted import-substitution industries following the enactment of the 1958 Pioneer Industries Ordinance (Ali 1992:13). The diversification has moved from the agricultural to the manufacturing sector (Malaysia 1971:15), and we can see in table 4.3, the major GDP contributors have also moved from agriculture to the manufacturing sector.

Table 4.3: Gross domestic product (GDP) by sector of origin, 1960 to 2000* (percentage)

	Share of GDP					
	1960	1970	1980	1990	1995*	2000*
Agriculture, forestry and fishing	37.9ab	30.8b	22.2b	18.7	15.5	13.4
Mining and quarrying	5.9	6.3	4.6	9.7	7.3	5.7
Manufacturing	8.7	13.4	20.5	27.0	32.4	37.2
Construction	3.0	3.8	4.5	3.5	3.6	3.5
Electricity, gas and water	1.3	1.9	2.3	1.9	2.1	2.5
Transport and communications	3.3	4.7	6.5	6.9	7.9	9.1
Wholesale and retail trade	15.7	13.3	12.6	10.7	11.8	12.6
Finance, insurance etc.	6.1	8.4	8.2	9.7	10.6	10.6
Government services	6.4	11.1	13.0	10.7	9.1	8.4
Other services	11.4	2.5	2.5	2.1	2.1	2.1
Less: Imputed bank service charges	-	-	-	5.1	6.4	8.8
Add: Imported duties	-	-	-	3.8	3.7	3.5
GDP at market prices	-	-	-	100	100	100

Sources: Malaysia 1965, 1971, 1981a, 1989b, 1991b
Economic Report 1992/93 Ministry of Finance (MOF), Malaysia.

Notes: a Figures apply to Peninsula only

b The percentage shares of GDP do not add up to 100 per cent because imputed bank service charges and import duties aren't considered in the computation

* Estimated by MOF

The average annual growth rate of agriculture has been very low, that is from 4.0 per cent in 1960-65 to 3.9 in 1976-80 and 4.5 per cent for 1986-90. On the other hand, the manufacturing sector's annual growth rate has been higher at 11.1 per cent, to 11.6 and 12.4 per cent for those periods (Malaysia 1965, 1971, and 1989b).

The structure of employment has also reduced the dominance of agriculture. The share of employment in agriculture has been reduced from 52.1 per cent in 1965 to 27.8 per cent in 1990, compared with manufacturing which has increased from 8.4 per cent to 19.5 per cent in the same period (Malaysia 1991:116-7). Malaysia (from 1973-85) has been classified, together with Thailand, Brazil, Turkey and Tunisia, as a country with a moderately export-oriented, outward-looking industrialisation strategy. However, in general, higher rates of GNP growth were associated with outward-oriented trade strategies, and other factors mentioned above. The countries in this group were Singapore, South Korea, and Hong Kong (Dicken 1992:179).

Malaysian exports of merchandise contributed 40.2 per cent of GNP in 1970, 54.5 per cent in 1980 (Bank Negara Malaysia Annual Report 1989), and 72.7 per cent in 1993 (MITI 1994a). Generally, exports have increased more than imports for the last twenty years, resulting in a positive balance of trade. However, this trend changed in the early 1990s as indicated in Table 4.5. The principal direction of exports has also been consistently with a few countries, such as Singapore, the USA and Japan. Japan has been the major import country since the 1970s. The direction of international trade can be seen in table 4.4.

Table 4.4: Malaysia: Direction of Trade, 1970-1991 (in percentage).

	1970	1975	1980	1985	1990	1991
Total Exports (RM. millions)	5,162.4	9,231.1	28,171.6	38,016.7	79,646.4	94,496.6
Japan	939.0	1,337.4	6,429.3	9,272.0	12,588.9	15,008.9
Shares (%)						
Japan	18.2	14.5	22.8	24.4	15.8	15.9
USA	13.0	16.1	16.4	12.9	16.9	16.9
Singapore	21.5	20.3	19.1	19.4	22.7	23.3
EEC	20.0	23.2	16.9	14.1	14.9	14.8
ASEAN	23.0	24.2	22.4	25.8	28.9	29.3
Total imports (RM. millions)	4,340.1	8,638.4	23,451.0	30,437.8	79,118.6	100,831.1
Japan	767.8	1,794.2	5,365.3	7,006.0	18,973.8	26,354.7
Share (%)						
Japan	17.1	20.8	22.9	23.0	24.0	26.1
USA	8.5	11.1	15.0	15.2	16.7	15.3
Singapore	7.2	8.3	11.7	15.9	14.9	15.6
EEC	24.6	20.0	15.4	14.2	14.6	13.6
ASEAN	15.4	14.9	16.4	22.4	18.9	19.9
Trade balance (overall)	822.3	592.7	4,720.6	7,578.9	527.8	-6,334.5
Japan	171.2	-456.8	1,064.0	2,266.0	-6,384.9	-11,347.8

Source: Bank Negara Malaysia, Quarterly Bulletin, Various issues.

The above table suggests that there is an increasing trend towards trade within the ASEAN block and the US market, and decreasing trade with the EU. However, it also shows a worrying deficit in the trade balance, which has increased since the early 1990s, mostly due to the deficit account with Japan (since 1988). This can be seen in table 4.5.

Table 4.5: Malaysia: Trade and trade balance with Major Trade Partners (RM. million)

	Japan		USA		Singapore	
	Total trade	Trade balance	Total trade	Trade balance	Total trade	Trade balance
1971	1,798.4	26.4	931.0	342.4	1,459.8	788.4
1972	1,886.6	-220.8	1,082.1	250.9	1,490.2	770.6
1973	2,790.6	-118.6	1,315.5	283.3	2,164.2	1,250.0
1974	3,933.9	-496.7	2,470.5	390.3	3,028.2	1,387.8
1975	3,131.6	-456.8	2,447.4	530.8	2,595.7	1,152.1
1976	4,900.0	775.8	3,330.9	857.7	3,297.5	1,612.2
1977	5,661.1	436.3	4,092.5	1,342.7	3,319.8	1,451.4
1978	6,872.0	534.0	5,085.4	1,280.4	3,928.2	1,595.0
1979	9,508.5	1,827.9	6,747.8	1,617.2	5,806.3	2,645.5
1980	11,794.6	1,064.0	8,137.0	1,080.6	8,138.0	2,632.2
1981	12,243.6	-788.4	7,414.2	336.0	9,663.7	2,691.3
1982	12,979.4	-1,526.8	8,302.8	-1,854.8	11,185.8	2,856.4
1983	14,248.2	-1,315.6	9,276.1	-607.7	11,669.8	3,102.8
1984	17,279.0	-13.2	10,599.4	-122.8	12,181.6	3,618.0
1985	16,278.0	2,266.0	9,518.3	263.7	12,184.6	2,529.0
1986	16,775.1	2,331.1	11,191.8	685.8	10,289.0	1,892.6
1987	15,753.0	1,902.0	13,468.2	1,501.0	12,937.6	3,502.0
1988	19,500.9	-805.9	17,259.9	1,961.7	16,397.6	4,981.0
1989	25,620.9	-3,823.9	22,967.9	2,388.7	21,678.4	5,115.8
1990	31,562.7	-6,384.9	26,719.5	254.5	29,852.1	6,252.1
1991	41,365.6	-11,347.8	31,461.8	507.6	37,740.1	6,375.3

	EEC		ASEAN	
	Total trade	Trade balance	Total trade	Trade balance
1971	2,019.0	-188.2	1,965.3	705.3
1972	2,078.4	-1.4	2,002.5	562.1
1973	2,902.6	330.8	2,722.4	933.8
1974	4,260.2	66.6	3,886.6	992.0
1975	3,868.0	406.8	3,522.7	944.7
1976	4,491.2	1,135.2	4,280.2	1,497.2
1977	4,898.9	1,009.5	4,458.8	1,201.0
1978	5,613.5	652.9	5,127.9	1,216.3
1979	7,283.2	1,289.2	7,374.9	2,348.5
1980	8,394.6	1,153.4	10,155.2	2,440.2
1981	7,831.1	427.7	11,968.4	2,417.4
1982	7,750.1	683.1	14,015.5	2,695.3
1983	9,103.3	462.9	15,047.7	3,441.1
1984	9,290.8	461.4	16,685.2	3,932.2
1985	9,686.2	1,036.6	16,628.3	2,982.5
1986	9,316.6	1,142.2	13,884.0	1,872.6
1987	10,725.5	2,169.3	17,579.1	4,273.7
1988	13,776.6	2,191.4	21,607.9	5,353.9
1989	18,942.7	1,952.1	28,778.2	5,803.6
1990	23,418.2	307.6	38,010.4	8,086.0
1991	27,736.2	210.8	47,707.5	7,652.3

Source: Bank Negara Malaysia, Quarterly Economic Bulletin, various issues.

The table indicates that Malaysia sometimes has a high negative trade balance with the US, though not as bad as that with Japan. In fact the deficits got bigger in the early 1990s. In Malaysia efforts to diversify its export markets, Singapore, the US, Japan,

the EU and ASEAN have become the major trading partners. In 1975 the share of total trade of these markets was 73.9 per cent, but it increased to 74.5 per cent in 1980, and 75.9 per cent in 1991. The leading partners were ASEAN (led by Singapore) and Japan. Malaysia's exports moved away from being highly dependent on EEC, particularly the UK, but only to land in the lap of Japan and Singapore.

The major sector of the industry contributing to exports changed over time. Malaysia has moved from exporting agricultural products and low priced commodities, namely rubber and tin (1800s-1960s), to petroleum products in the 1970s, and since the 1980s to manufactured goods. Manufactured products replaced agriculture as the leading export commodities from 1985, and accounted for 54.1 per cent of total Malaysian exports in 1989 (Bank Negara Malaysia Annual Report 1989:201). Manufactured products which have a high export growth rate are; electrical machinery and appliances, transport equipment, textiles, food, wood, and petroleum products. Malaysia in the mid 1980s, for example, was the largest offshore supplier of semiconductors (Austin 1991:258, Dicken 1992). The changing trends in major exports since the 1970s can be seen in table 4.6.

Table 4.6: Export of manufactured goods, selective years (RM million)

Manufacturing sub-sector	1970		1980		1985		1991*	
	\$	%	\$	%	\$	%	\$	%
Food, beverages & tobacco	112	18	475	8	594	5	2,397.7	3.8
Textiles & footwear	40	7	806	13	1,289	10	4,702.6	7.5
Wood products	88	14	467	8	363	5	2,512.0	4.0
Rubber products	17	3	84	1	113	1	1,756.6	2.8
Chemical & petroleum products	197	32	361	6	1,412	12	2,815.9	4.5
Non-metallic mineral products	20	3	61	1	150	1	888.0	1.4
Iron, steel & metal products	26	4	161	3	300	2	2,882.7	4.5
Electrical & electronic products and machinery & equipment	17	3	2,832	46	6,028	50	35,586.9	56.8
Optical & scientific equipment & transport	68	11	407	7	1,031	9	4,902.8	7.8
Others/ miscellaneous	27	5	447	7	831	7	3,551.7	5.7

Source: Malaysia 1989b
* MIDA 1992

As we can see, the export structure has changed from primary to manufactured commodities. In the early 1980s, the export share for manufactured goods was only about 30 per cent share, but in 1990 it was 60 per cent, and it increased to 74 per cent

in 1993 (MITI 1994a:36). The share of electrical and electronic products has increased from only 27 per cent in 1988 (out of MR 55.3 billion exports) to 42 per cent in 1993 (out of MR 120.2 billion exports) (MOF 1993). Many of the products for export are produced by large-scale multinational corporations (most of them from Japan, the USA and the UK) in the free trade zones (Lim C.P.1987:42; Ali 1992).

Although Malaysia has abundant natural resources like agricultural and mineral products, it has to import materials and capital goods for industrial development. The imports of investment and intermediate goods amounted to 41 per cent and 43 per cent respectively of the total imports in 1993 (MR 117,427 million). The highest imports were materials, parts and components for manufacturing (34 per cent), followed by machinery (11 per cent), transport equipment (6 per cent) and metal products (6 per cent) (DOS 1994). Even though there was increased trade within ASEAN, the imports from outside ASEAN are still very large. Malaysia imports from Japan (27 per cent), the US (17 per cent) and the EU (12 per cent).

However, within ASEAN, imports from Singapore constitute the largest proportion (15 per cent) (DOS 1994). For Singapore, the import trends have been increasing from the third to the second source for intermediate and investment goods (DOS 1994). As a single country, Japan has also become an important source of imports for all ASEAN countries. For example, in 1986 Malaysia's imports from Japan were 21 per cent of total imports, while Indonesia's were 29 per cent, the Philippines' 17 per cent, Singapore's 29 per cent, and Thailand's 26 per cent (IMF 1987).

4.3 The Malaysian industrialisation process and foreign aid.

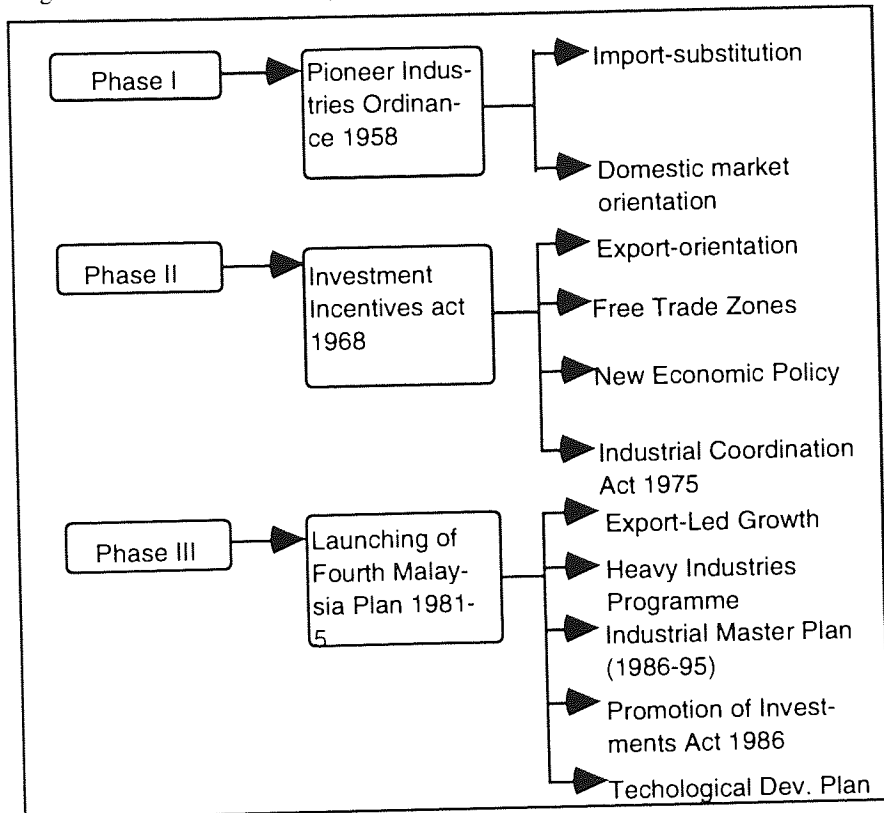
Malaysian economic and industrial development has been very much geared and guided by the government. However, the World Bank claimed that the Thai, Indonesian, and Malaysian economies have been prosperous due to market-based competition or the active participation of the private sector rather than the competence and honesty of bureaucracies (The Economist, 2 October 1993).

Three phases of industrial development have taken place in Malaysia. Phase I began in 1958 with the Pioneer Industries Ordinance, which emphasised import-substitution projects to fulfil domestic markets. Ten years later, in 1968, under Phase II, an adjustment of policy took the place in the form of export-oriented strategies. The Investment Incentive Act was introduced and emphasis was given to export-related industries. Within this period the New Economic Policy (NEP) and the Industrial Coordination Act of 1975 were also introduced to restructure society and eradicate poverty. Then in Phase III (after 1980), an Industrial Master Plan was introduced,

coinciding with the Fourth Malaysian Plan (1981-5), to bring Malaysia into heavy industrial activities (Lim C.P.1987; Ali 1992).

Within these phases, there were nine 'five-year' development plans, and 2 long-term economic development plans [that is Outline Perspective Plan 1 (OPP1):1971-90 & Outline Perspective Plan 2 (OPP2):1991-2000]. The phases are listed in figure 4.1:

Figure 4.1: Industrial development and major policy initiatives 1958-1990.



Source: Adapted from Ali 1991, figure 2.1, page 7.

As we can see, the Malaysian industrialisation process is programmed to favour foreign investments and was started a year after independence with the Pioneer Industries Ordinance Act of 1958, which provided tariff protection, tax deferrals of up to five years, easy remittance of profits, and import quotas for foreign investors (Nester 1990:96).

During the British occupation (from 1784 to 1957), the economy was designed to favour the British. The first 'blue-print' for Malaysia's industrial policy came from the IBRD mission report of 1957, which suggested that the initiative and responsibility for determining the pattern of industrial development should be left to the private sector (which was dominated by British and Chinese enterprises at that time), with the government confining itself to the creation of a favourable industrial climate and

infrastructure for private investment, especially towards private foreign capitalists (Lim C.P.1987).

The Malaysian government took for granted this proposal, without evaluating the long-term impact of this policy on indigenous technological and socio-economic development. It is very important to note that in this report there was no plan to have a 'self-help' technological development programme as in Korea and Taiwan (Lall 1992). Therefore, Malaysia has completed its initial phases of import substitution and export orientation, but remains continuously dependent on foreign capital and technology (Ali 1992, 1994).

In the 1980s the government's industrial plan was geared to the manufacturing sector and moved into the secondary phase of import substitution or, more specifically, to heavy industry (Lim C.P.1987:7). However, this second phase of industrialisation was claimed to be premature, because of weak foundations: most industries were small (75% industries contributed only 10% of value added in 1982), ancillary industries were unable to produce quality components at competitive price. There was a lack of R&D facilities, a serious shortage of skilled manpower, and not enough spent on training a high level of manpower (Lim C.P.1994a).

The needs of foreign capital.

To industrialise a country needs capital, technology, skilled employees and managers, and, most importantly, dedicated entrepreneurs and industrialists. For developing countries, all of these are scarce (Lall 1992; Dicken 1992; Tolentino 1993). Malaysia is no exception. In 1990, 25 per cent of Malaysian debt consisted of external debts and loans, compared with 35 per cent and 36 per cent in 1980 and 1985 respectively (International Monetary Fund 1991). In other words, more than a quarter of development was financed by external debt, which Malaysia must repay.

In the 1960s the major source of loan was the UK, followed by the US and West Germany. The picture changed when, in 1973, the US overtook the UK. Japan became one of the external loan sources in 1968, and surpassed the UK and West Germany in 1976 and 1974 respectively. Today, Japan is second after the US. The other sources of loans are the International Bank of Reconstruction and Development (IBRD, 1967), Asian Development Bank (ADB, 1970), and West Asia (1976). Therefore the industrialisation and economic development of Malaysia since the Second World War has been associated very much with foreign aid, especially from America, the UK, Japan and international financial institutions. See table 4.7 for further details.

Table 4.7: Malaysia: External debt, selective years, (RM. million)

Year	USA	UK	Japan	IBRD	ADB	FRG	West Asia	Others	Total
1964	45.1	340.0	-	-	-	1.4	-	-	386.5
1970	107.2	365.7	26.7	120.5	1.6	82.5	-	-	745.2
1975	1,108.0	355.0	341.0	330.0	91.0	104.0	-	96.0	2,425.0
1980	1,619.0	282.0	845.0	703.0	512.0	260.0	34.0	605.0	4,860.0
1985	11,283.0	123.0	4,724.0	1,375.0	982.0	1,418.0	214.0	1,863.0	21,982.0
1990	8,903.0	87.0	5,922.0	1,773.0	1,274.0	3,461.0	233.0	2,654.0	24,307.0
1992	8,082.0	61.0	5,721.0	1,917.0	1,316.0	3,290.0	100.0	2,106.0	22,593.0

Source: Ministry of Finance, Economic Reports, various issues.

The need for loans and aid has increased the Malaysian total external debt nearly 60 times, that is from only RM. 386.5 million in 1964 to RM. 22, 593.0 million in 1992 and 25 per cent of it was from Japan. Many countries, especially in Africa and Latin America, which have been trapped in indebtedness for many reasons such as: (i) the low return on investment compared to the cost of capital; (ii) wrong project choices; (iii) managerial inefficiency; and (iv) corruption and lack of political will (Tolentino 1993; The Economist, 16 September 1995; Financial Times, 14 September 1995).

The involvement of local private investment and foreign investment (including equity and loans) was at the root of the Malaysian industrialisation process. The significance of foreign equity and loans in financing the manufacturing sector, can be seen in table 4.8, where 60 per cent of the investment comes from foreign sources, and the rest (40 per cent) is local.

Table 4.8: Proposed capital investment [loan + equity] 1988 to 1992 (RM. million)

Origin	1988	1989	1990	1991*	1992*	Total	%
Malaysia	4,342.5	9,130.3	18,974.4	11,439.2	10,783.2	54,669.6	40
Foreign	8,416.0	11,010.9	29,823.1	20,141.7	11,847.5	81,239.2	60
Total Proposed Capital	12,785.5	20,141.2	48,797.5	31,580.9	22,630.7	135,908.8	100

Source: MIDA 1993

Note: * Figures revised to include expansions/ diversification projects granted automatic approval.

The thirst for technology.

Generally, Malaysia and some other developing economies have technological duality. There are modern, technologically sophisticated sectors, sub-sectors, or enterprises, coexisting with backward ones, in which low incomes, low productivity, and inefficiency are prevalent (Ali 1992:75; O'Brien 1993:147). Historically, Malaysia's strength in technology was resource-based, and some Malaysian MNCs have invested abroad to exploit their competitive advantage, which they could not further exploit in

their home country (Tolentino 1993: 256). However, this strength was not really capitalised toward local development of downstream industries (Ali 1992).

The areas in which Malaysian MNCs have competitive advantages are in the production, smelting, manufacturing and marketing of tin, diamonds and coal. They are also experts in the cultivation, manufacture and marketing of rubber and palm oil (Tolentino 1993: 262). Even though they have an advantage in these industries, there are weaknesses in terms of inter-industry linkages, arising from the narrow industrial base which is dependent on a few export-oriented and agro-resource-based industries, and characterised by relatively low levels of technology. Examples of these include textiles, food products, wood-based products, and rubber products (Ali 1992:39; Lim C.P. 1944a). The same thing has happened to electrical goods and electronics, which are produced by MNCs in free trade zones (FTZs) but with very minimal linkages between these MNCs and local small and medium industries (SMIs) (Ali 1992:39; Dicken 1992; Henderson 1989; Lim, C.P. 1987;1994a).

With this background, in 1986, Malaysia has changed from resource-based to high-technology and capital-intensive industries (MITI 1994a; Ali 1992; Lim C.P. 1987). In other words, Malaysian industries moved to the fields where they did not have ample strengths. Heavy and high-tech industries require a high degree of technical, managerial and marketing expertise (Ali 1992). At the same time, domestic technological capacity has to be enhanced in order to achieve greater self-reliance and international competitiveness, which should incorporate plans of ancillary firm development as an overall package for SMI development (Lim C.P.1994a:258).

Even though it was recognised that R&D was important in developing technology, until the early 1990s, it was still not 'fully substantiated by any sense of urgency' by both public and private sectors (Ali 1992:112). Total Malaysian R&D expenditure was very small (0.8 per cent) compared with that of other countries like the US (2.7 per cent) and Japan (2.6 per cent). See table 4.9 for further comparisons.

Table 4.9: R&D Expenditure in selected countries (as percentage of GDP).

Country	Public Sector	Private Sector	Total
United States (1985)	1.4	1.3	2.7
Japan (1985)	1.3	1.3	2.6
West Germany (1984)	0.8	1.6	2.4
Switzerland (1981)	0.5	1.9	2.4
Sweden (1981)	0.6	0.7	1.3
South Korea (1988)	0.8	1.2	2.0
Taiwan (1984)	0.6	0.3	0.9
Malaysia (1988)	0.7	0.1	0.8

Source: Adapted from Ali 1992, Table 7.1, page 113.

Even though there were some allocations for R&D for public sectors in Malaysia (0.7 per cent), it was three to seven years behind other countries, and it was mainly for agricultural development instead of industrialisation research (Ali 1992; Lim C.P.1994a) (see also my survey of this research trend in paragraph 4.9). If we look at the private sector's contributions to R&D budgets, the Malaysia's are the lowest, at only 0.1 per cent. However, Malaysia is only just behind Taiwan, and therefore it is still comparatively high in the R & D league table for developing countries.

To date, the characteristics of Malaysian industrial technology are as follows. Industries are (i) mainly simple and light (examples are food and palm oil); (ii) labour-intensive (such as textiles and furniture); (iii) mainly simple processing and assembly in nature (examples are semiconductors, and transport equipment); (iv) mainly resource-based, such as rubber and wood products; and finally (v) relatively narrow in range (Lim C.P.1994a). However, such a profile does not mean that Malaysia, in order to industrialise, has to rely on the supply of foreign technologies (Ali 1992:75). The efforts to develop and to link SMIs with commercially oriented R&D (technological) activities have not been emphasised (Lim C.P.1994a: 257). The situation became worse as there was a lack of technical capability in the institutions involved in the processing, evaluation, selection, and enforcement of technology development and acquisitions (Ali 1992:93; *The New Straits Times*, 5 August 1993).

There was nothing wrong with the narrowness of the industrial sectors. In fact Malaysia could benefit by focusing on them. What was a problem was that Malaysian industrialisation programmes did not have instruments which linked these resource-based SMIs with MNCs, and also Malaysia (with traditional British MNCs) did not do enough to develop SMIs technologically from the beginning i.e. since 1960. To date Malaysia has not been able to capitalise on those strengths by developing downstream industries from rubber, wood, food, palm oil; and more recently textiles, semiconductors, and transport equipment. Finally, perhaps Malaysia has lacked entrepreneurial leaders, quality entrepreneurs and quality managers (Kanter 1983).

The shortage of human skills.

The size of the population is not the problem, rather the skills and attitudes of the population are important. Basically, there has been limited emphasis on skills development planning, so that human resources produced by the institutions can be matched with the requirements of industry. There were complaints by entrepreneurs that "what we want is industrial stitchers not tailors" (Bank Pembangunan Malaysia

Berhad 1990) It shows that the curriculum developed in institutes and universities is different from what has developed and is required by the industries.

Human skill is one of the most important ingredients in promoting a technological and industrial society, and the most important group are engineers. As Galbraith put it, "the enemy of the market is not ideology but the engineer" (Galbraith cited by Tsuru 1993:220). If we look to the number of scientists and engineers available in Malaysia (2,697), it is 1.8 times smaller than in Singapore (3,760) and 260 times smaller than in Japan (677,153) (Statistical Yearbook, United Nations 1987:302-3). The reason for the shortage of scientists and engineers is lack of spending on high level manpower. In 1981 only 5 percent of students enrolled in higher education in Malaysia, which is categorised as an upper middle income country. It was not much different from some low income countries such as Burma (4 per cent) and Guinea (5 per cent) (Lim C.P.1994a:245). However, in 1990 there were more than 40,000 registered professionals, of which almost half were engineers, followed by doctors (17.3 per cent) and accountants (13.8 per cent). We could not find the exact numbers of scientists in this survey. Moreover, these engineers and scientists either were not properly managed and developed or were not innovative and creative enough. The distribution of these professionals is given in table 4.10.

Table 4.10: Membership of Registered Professionals 1990.

Profession	Total	Percentage
Architects	979	2.4
Accountants	5,574	13.8
Engineers	20,166	49.8
Dentists	1,670	4.1
Doctors	7,007	17.3
Veterinary surgeons	675	1.7
Lawyers	3,153	7.8
Surveyors	1,283	3.2
Total	40,507	100.0

Source: Malaysia 1991, table 4-4, page 120. Data from associations and institutions, covering both the public and private sectors.

Even though engineers outnumbered other professionals, there was still a shortage of them compared with the requirements of industry. In 1991, according to a study of the industrial manpower requirements by Hussain (1991), there was a 25 per cent shortage of engineers compared with demand, mostly in the electrical industries. Table 4.1 explains more.

Table 4.11: Manpower requirements for graduate engineers, 1991.

Types of Engineer	Total requirement (a)	Available (b)	Shortage (c) = (a) - (b)	Shortage Rate (%) (c) ÷ (a) x 100
Electrical	1206	856	350	29
Chemical	236	171	65	28
Materials	144	107	37	26
Electronic	1271	956	315	24
Production	1119	853	266	24
Systems	218	180	38	17
Civil	226	202	24	11
Total	4420	3325	1095	25

Source: Adapted from Hussain 1991, Table 8, page 8.

In fact, according to the projections of the government, local institutions are still not able to meet the demand for professional and technical occupations, expected for the years from 1991 to 2000. Only 70 per cent of engineers, 85 per cent of engineering assistants and 66 per cent of medical and health assistants can be supplied by local (public and private) institutions (Malaysia 1991). In other words, Malaysia has to import these professionals from overseas. The overall capacity of these local suppliers of (selected) professionals can be seen in table 4.12.

Table 4.12: Capacity of local institutions to meet the demand for selected professional and technical occupations (1991-2000)

Occupation	Stock 1990e	Employment 2000f	Net Increase 1991-2000	Output (1991-2000)*	
				Local public	Local private
Engineers	26,500	56,600	30,100	21,100	-
Civil	11,100	19,500	8,400	3,700	-
Electrical & electronic	6,200	14,600	8,400	4,200	-
Mechanical	5,200	10,800	5,600	4,000	-
Chemical	800	2,000	1,200	900	-
Others	3,200	9,700	6,500	8,200	-
Engineering Assistants	72,400	195,300	122,900	84,070	20,900
Civil	27,100	58,500	31,400	20,400	600
Electrical & electronic	32,300	75,900	43,600	21,200	8,800
Mechanical	6,400	32,400	26,000	11,600	9,600
Chemical	600	6,000	5,400	570	-
Others	6,000	22,500	16,500	30,300	1,900
School Teachers	177,600	252,500	74,900	74,900	-

Source: Adapted from Malaysia 1991, table 6-5, page 182.

Notes: e estimate

f forecast

* output does not include graduates from education and training institutions overseas

In order to operate automated and sophisticated machines and robots, Malaysia requires 153,000 engineers and assistant engineers for the years from 1991 to 2000. But the

local institutions can only supply 105,170 or 69 per cent of engineers and assistant engineers.

In Malaysia, at the end of 1980s, there were about 500,000 migran labourers (mostly from Indonesia). By the end of 1993, the number had shot up to 1 million. Most of them were in plantation, construction, domestic services and manufacturing. They came from Indonesia, the Philippines, Bangladesh and Cambodia (Utusan Malaysia, 30 September 1994). The total labour force is expected to increase from 7.0 million in 1990 to about 9.4 million in 2000, an increase of 2.9 per cent per annum (MIDA 1994:37). It is expected that these workers will have to be multi-skilled, innovative and creative, possess numeracy and communication skills and be highly motivated and disciplined. More demands will be made for engineering and technical personnel, multi-craftsmen managers and supervisors (who are technologically oriented and possess leadership qualities), specialists in information technology, biotechnology and agriculture research (Abdul Rashid 1991:5).

Moreover, the OPP2 explained that the fastest growing occupations would be in the areas of administration and management, sales, professional and technical, production and also in service. See table 4.13 for further details.

Table 4.13: Occupational Structure, 1990 and 2000

Occupational Groups	1990e		2000f		Net Increase 1991-2000		Average Annual Growth Rate (%) 1991-2000
	('000)	(%)	('000)	(%)	('000)	(%)	
Professional & Technical	580.8	8.8	900.8	10.0	320.0	13.5	4.5
Administration & Managerial	162.4	2.4	263.7	2.9	101.3	4.3	5.0
Clerical	645.9	9.8	891.3	10.0	245.4	10.4	3.3
Sales	761.3	11.5	1,243.2	13.8	481.9	20.4	5.0
Service	770.3	11.6	1,131.5	12.6	361.2	15.3	3.9
Agriculture *	1,872.5	28.3	1,818.2	20.2	-54.3	-2.3	-0.3
Production	1,827.8	27.6	2,737.6	30.5	909.8	38.4	4.1
TOTAL	6,621.0	100.0	8,986.3	100.0	2,365.3	100.0	3.1

Notes: e estimate

f forecast

* Negative growth of this occupational group is due to a net reduction in job creation in the agriculture sector.

Source: Malaysia 1991.

The shortage of skilled, semi-skilled and unskilled manpower is obvious since the requirements until the year 1997 are expected to be 60,270, 158,600 and 89,000 respectively (or 307,870 in total). And meanwhile both public and private industrial training institutes are only able to supply 3,800 and 1,426 per year respectively (5,226

i.e., 8 per cent in five years). According to the Economic Planning Unit, "most of these institutions are also slow in adjusting and developing their training programme in line with the knowledge and skill requirements of the private sector" (New Straits Times, 20 August 1993).

The existing level of output of local education and training institutions can only supply 58 per cent of the total requirement for engineers, 45 per cent for engineering assistants and 5 per cent for skilled workers (Malaysian Industry, October 1994). The other contributing factors to the shortage are the lack of qualified/ experienced instructors and trainers, and also the reluctance on the part of employers to conduct enterprise-level training.

There are four ministries responsible for supplying skilled, semi-skilled and unskilled workers. The details are given in table 4.14.

Table 4.14: Suppliers of skilled, semi-skilled and unskilled workers.

Ministries & other suppliers	Number of institutes	Remarks
Education	70 vocational schools* 9 technical schools 7 polytechnics**	33,751 students enrolled (2%) 5,339 students enrolled (0.4%) 2,000 students per poly per year (2 intakes)
Human Resources Public Enterprise	19 Industrial Training Institutes Institute Kemahiran MARA 14 Institute Teknologi MARA (ITM) Branches of ITM 6	15,000 intakes per year 8,000 students per year 2,000 students per year per branch
Youth and Sport	Institute Kemahiran Belia 2 (Youth Skill Institute)	Dusun Tua & Sepang (advanced skills)
State Skill Development Centres	9	Johor, Kedah, Malacca, Pahang, Penang, Perak, Sabah, Selangor & Serawak
University and firms linkages	3	University of Malaya, University Science Malaysia and University Technology Malaysia
Inter-governmental links	2	3,000 students per year & 120 courses (CIAST) & 150 students per year (German-Malaysia institute-GMI), Malaysia-France Institute (MFI).
Tunku A. Rahman College	1	

Source: Adapted from Malaysian Industry, October 1994.

Ministry of Education 1995

Ministry of Human Resource 1996

* All vocational has being converted into technical schools (1995-2000)

** Another 3 polytechnics and 1 Training for Trainers for polytechnic will be establish during Seventh Malaysian Plan (1995-2000)

The problems with these ministries and their implementing agencies are a lack of coordination, lack of systematic human resources planning and implementation,

shortage of funds and a serious lack of communication and slow response to the changes taking place in industry (Malaysian Industry, October 1994).

4.4 Foreign direct investment in Malaysia.

Since Malaysia is located on the main trade route of Far Eastern and Western countries, the influences of many civilisations from the East and West have been unavoidable. The Malacca Malay Sultanate was the centre of civilisation of South East Asia from 1400 to 1511, and it became the meeting point for the Arab and Indian traders from the west with Chinese traders from the east, and with the local Malay traders. After 1511, many more traders came to Malacca, including the Portuguese (1511), Dutch (1641) and British (1784). These traders came and went, except for the Indian, Chinese and British companies, which remain today (Ken 1964; Dobby 1960)

The involvement of foreign manufacturing companies in the Malaysian economy was largely through British organisations since their occupation, but there were simple manufacturing processes which produced resource-based products such as rubber, tin, and oil. To name a few, there were tin-mining companies such as the Malayan Peninsular (East India) Tin Mining Company (1874) and Pahang Corporation Ltd. (1887) (Ken 1964). In the early 1900s there were giant rubber corporations like Harrison & Crossfield, Dunlop, and the Selbourne Plantation, as well as tin smelting companies like Keramat Smelting Pte. Ltd. in Penang and Straits Smelting Pte. Ltd in Singapore. There were also ESSO, BP and Shell, which were the only oil companies operating in South East Asia at that time.

The nature of these MNCs were the same, that is, they dug out the resources from the earth, to manufacture it as semi-finished goods, which were sent back to the mother country, where they were used as raw materials in the making of finished products, which were then sold back to Malaysia (Dicken 1992; Abraham 1988).

By the mid-1970s, US semiconductor plants had been established in every capitalist East Asian developing country other than Brunei, and almost all US semiconductor companies had shifted their assembly operations to developing countries, making Malaysia the world's largest semiconductor exporter (Henderson 1989; Austin 1990; Dicken 1992). By the late 1980s and early 1990s more than half the workforce in Malaysia's electronics industry was employed by US multinationals (Austin 1990:11).

Malaysia became a base for MNCs not only from the USA, but also from the UK, Japan, Hong Kong, Taiwan, Korea and Singapore (Dicken 1992). The UK had 13 per cent of East Asia's investment in Malaysia. In 1966, United States MNCs employed a

mere 1,750 manufacturing workers in Malaysia. By 1987, Malaysia's employment in manufacturing firms had grown to 54,000, an increase of around 3,000 per cent. Taiwanese investment was initiated as long ago as 1959, when a cement plant was established in Malaysia. Moreover, two-thirds of total Singapore investment was located in Malaysia, most of it in food and beverage manufacturing (Dicken 1992). Even Hong Kong had about 10 % of its total overseas investment in Malaysia (Austin 1990: 131).

Although Malaysia is involved in the globalisation of MNCs' production (Henderson 1989; Nester 1990) and therefore in the new international division of labour (NIDL) (Dicken 1992), Malaysia is still located at the periphery (Henderson 1989). In this NIDL, Malaysia supplies cheap labour and produces semi-finished products, while technically and managerially remaining dependent on MNCs (Nester 1990; Dicken 1992). However, it has been noted that Malaysia has slowly moved to produce high value-added products with high technology processes (Henderson 1989).

In the early and mid-1980s, the FDI flows showed a remarkable growth, reaching US \$ 213 billion in 1989, an increase of 27 per cent over the preceding year's US \$ 168 billion. In 1988, foreign investment superceded local investment and it has dominated Malaysian investment since then. After reaching a peak in 1990 with a record of US \$ 234 billion, FDI flow began to decline. In fact the world-wide outflow of FDI declined in 1991 for the first time since 1982, largely because of the economic slowdown in the major developed economies (MITI 1994a:250). FDI acted as an 'engine of growth' (MITI 1994a:246) and domestic investment has lagged behind. FDI increased relatively to local investment improved from 1980 until 1993, as shown in table 4.15.

Table 4.15: Local and Foreign Investment, 1980 to 1993 (RM. million)

Year	Local	Foreign
1980	1,373	729
1981	3,139	1,309
1982	3,808	1,627
1983	1,729	629
1984	3,083	718
1985	4,782	959
1986	3,475	1,688
1987	1,874	206
1988	4,216	4,878
1989	3,563	8,653
1990	10,539	17,629
1991	13,763	17,055
1992	10,003	17,772
1993	7,465	6,287

Source: MITI 1994a, Chart 7.4, page 250

The top ten foreign countries invested in Malaysia from 1980 to 1993 can be seen in table 4.16.

Table 4.16: The top ten foreign countries invested in Malaysia for 1980, 1985, 1990 and 1993.
(RM. '000)

		Year							
		1980*		1985*		1990		1993 (Jan-March)	
Singapore	645,975	Japan	1,402,790	Taiwan	6,339,128.2	UK	458,820.0		
Japan	536,935	Singapore	1,126,847	Japan	4,212,582.4	Denmark	203,400.0		
UK	500,794	UK	874,876	Indonesia	1,083,266.9	Japan	171,017.7		
USA	292,100	USA	663,774	Iran	1,013,655.0	USA	151,842.0		
Hong Kong	244,694	Holland	528,712	Singapore	895,315.1	Singapore	94,950.1		
W. Germany	98,306	Hong Kong	415,242	UK	867,168.6	Taiwan	67,588.6		
Australia	88,604	Switzerland	202,409	S. Korea	650,436.4	Netherlands	55,250.0		
India	45,428	Australia	163,865	USA	567,306.0	Norway	24,400.0		
Belgium	40,297	W. Germany	127,814	Sweden	481,255.3	Germany	23,200.0		
Taiwan	29,143	Canada	59,410	Hong Kong	374,965.9	S.Korea	8,993.2		

Source MIDA 1980-1993.

Notes: * Fixed assets value

Although much investment comes from Singapore and Taiwan, the concentration of these investments is different from that of investments from the US and the UK. Most investments from the UK are in the form of engineering works, i.e. the infrastructure development process such as airport construction, dam construction, power projects, railway networks, developing ports, developing private hospitals, telecommunications, petrochemical projects and sewerage systems. All these projects are worth more than £14 billion (Financial Times, 22 September 1993).

Most of the US MNCs are engaged in the electrical and electronics industries (Henderson 1989; Nester 1990; Dicken 1992). As a result of a government mission to California in 1971, National Semiconductor was the first American electronics company to establish its plant in Malaysia. In 1988, there were 16 American firms operating in Malaysia (Henderson 1989:70). According to the Malaysian American Electronics Industries Association (MAEIA), there were 55,000 workers, of whom fewer than 200 were expatriates, employed by American companies. These companies invested between RM. 500 and RM. 600 million each year in upgrading and expanding the industry (Malaysian Industry, June 1995:16).

On the other hand, investments from Singapore were in the food industry, and from Taiwan in basic metals and metal products, and also in the electrical and electronics industries. In 1987, 36 per cent of Singapore's investments were in the food and beverage industries, and 44 per cent of Taiwanese investment in basic metals and metal products (Dicken 1992:85-6).

The expectation of technological transfer from FDI.

Malaysia has promoted the need for FDI, not only as a source of funds and foreign exchange, but for industrial technology development, managerial expertise, marketing know-how, and global linkages in order to improve economic growth, employment, productivity and export performance (MITIm, 1994:245; MIDA 1993a). As planned by the government through MITIm, foreign investors have been involved in the industrialisation process by investing their capital and skill in the industries proposed. In the 1960s they invested heavily in import-substitution projects and then moved to export-oriented industries in the 1970s, and they are expected to invest in high-tech industries in the 1990s, as shown in table 4.17.

Table 4.17: The nature of FDI since the 1960s

Year	Industry	Category
1960s	Food, beverage, tobacco, printing, publishing, building materials, chemicals, plastics	import-substitution industry
1970s	electrical, electronics and textiles	export-oriented & labour intensive
1980s	car, electrical, electronics and textiles	export-oriented & labour intensive
1990s	heavy industry	capital and technology intensive

Source: Adapted from MITI 1994a, page 245-6.

To encourage the transfer of technology, MITIm urged foreign MNCs to make an agreement with local companies in the form of joint ventures, technical assistance, licensing and patents. By 1994, there were 2,224 agreements on technology transfer. The three major forms of agreement are technical assistance (49 per cent or 1,082), followed by licensing & patents (13 per cent or 280) and joint ventures (10 per cent or 217). For further details see table 4.18.

Table 4.18: Transfer of Technology Agreements (1975-1994)

Type of agreements	1975-88	1989	1990	1991	1992	1993	Total	%
Joint venture	162	15	15	11	7	7	217	9.75
Technical Assistance	688	64	72	93	80	85	1,082	48.65
Licensing & Patents	142	35	17	28	14	44	280	12.58
Know-how	14	13	12	10	21	23	93	4.18
Trade marks	26	18	19	9	12	14	98	4.40
Management	130	12	5	6	2	2	157	7.05
Turnkey & Engineering Services	26	0	1	1	0	1	29	1.30
	67	12	6	4	4	9	102	4.58
Sales/ Marketing/ Distribution	31	6	5	0	0	0	42	1.89
Supply & Purchase	2	6	2	0	0	0	10	0.45
Others	93	17	1	3	0	0	114	5.12
Total	1,381	198	155	165	140	185	2,224	100.00

Source: MIDA 1994

There is an increasing trend towards technical assistance, licensing and patents rather than joint ventures (MIDA 1994). Of these agreements, the majority were in the electrical & electronics industries (22 per cent or 488), followed by chemical & chemicals products, including pharmaceuticals (13 per cent or 292), transport equipment (11 per cent or 234), fabricated metal products (9 per cent or 191) and food manufacturing (8 per cent or 169). These data show that agreements within agricultural industries and primary commodities were very low. For example, rubber and rubber products were only 7 per cent or 146, wood & wood products 2 per cent or 51, and agriculture 0.4 per cent or 9 (MIDA 1994). In terms of country of origin, Japan leads with 871 agreements, followed by the UK (249), the USA (247), Switzerland (186), and Germany (99). Even though Singapore and Taiwan were becoming major sources of investment (see chapter 4, table 4.26), their transfer of technology agreement was smaller than the others with 67 and 49 agreements respectively. The data also show that there is an increasing trend towards technology transfer agreements from Japan and US but not from the UK. The full picture of ten top countries of origin can be seen in table 4.19.

Table 4.19: Transfer of technology agreements: By country of origin (1975-93)

Country	1975-88	1989	1990	1991	1992	1993	Total
Japan	450	87	82	92	69	91	871
United Kingdom	186	21	8	14	12	8	249
United States of America	152	23	10	18	10	34	247
Switzerland	174	2	1	1	3	5	186
W. Germany	71	6	8	5	6	3	99
Australia	69	2	7	4	5	8	95
Hong Kong	55	9	3	6	3	4	80
India	56	2	1	1	3	6	69
Singapore	50	3	6	4	1	3	67
France	30	4	0	6	5	4	49

Source: MIDA 1994.

Although technology acquisition has tended to move away from the packaged type of FDI to, for example, an increase in trademark and patent agreements, regardless of the types of agreements, Malaysian firms are still at a disadvantage. Because there were restrictions on export markets, and the level of technology transferred and domestic R&D activities are often weak. Many practices benefited the technology licensors. For instance, they fix the prices of licensed products, and all material inputs and machinery are bought from them at a price fixed by them (Ali 1994:112).

Increasing FDI share of total investment and economic control.

The effect of the heavy inflow of FDI is that the share of foreigners in total investment is increasing. There is a danger that eventually the economic ownership and control will pass to foreign capitalists. From the data given, it seems that the ratio of FDI to total investments has increased in the 1980s and 1990s, while the ratio of domestic to total investment has decreased. The trend of FDI and domestic investments can be clearly seen in table 4.20.

Table 4.20: Trend of FDI and domestic investment in approved manufacturing project (1980-1993).

Year	Number of approved projects	Proposed foreign capital investment (MR million)	Growth rate	Proposed domestic capital investment (MR million)	Growth rate	FDI/ Total investment	DI/ Total investment (%)
1980	459	729.5	-	1,373.3	-	34.7	65.3
1981	596	1,309.3	79.5	3,139.1	123.6	29.4	70.6
1982	468	1,626.6	24.3	3,808.2	21.3	29.9	70.1
1983	490	629.1	-61.3	1,729.3	-54.6	26.7	73.3
1984	749	718.0	14.1	3,083.1	78.3	18.9	81.1
1985	625	959.3	33.6	4,727.6	53.3	16.9	83.1
1986	447	1,687.9	76.0	3,475.3	-26.5	32.7	67.3
1987	333	2,060.0	22.0	1,873.9	-46.1	52.4	47.6
1988	732	4,878.0	136.8	4,215.9	125.0	53.6	46.4
1989	792	8,652.7	77.4	3,562.7	-15.5	70.8	29.2
1990	906	17,629.1	103.7	10,539.0	195.8	62.6	37.4
1991	973	17,055.3	-3.3	13,763.1	30.6	55.3	44.7
1992	874	17,772.1	4.2	10,003.0	-27.3	64.0	36.0
1993	686	6,287.2	-64.6	7,465.5	-25.4	45.7	54.3
Total	9,130	81,994.1	-	72,758.7	-	-	-

Source: MITI 1994a, Table 7.6, page 247.

As regards, stock ownership, in Malaysia foreigners are allowed to own up to 41 per cent of the stock market, which is high compared with the Philippines (37 per cent), Indonesia (26 per cent), Pakistan (22 per cent) and Thailand (17 per cent) (The Economist, 11 December 1993). As a result, today the share of foreign ownership of capital in the Malaysian economy is very significant. In 1990, 25.1 per cent (MR 27,525.5 million) out of a total of MR. 109,798.4 million share capital (at par value) of Limited Companies belonged to foreigners (OPP2 1991:103).

Malaysian competitiveness and MNCs' technology.

As Malaysia is over-dependent on foreign investments and technology, the development of local indigenous technology has not occurred at the rate the host country expected. Malaysia cannot rely forever on MNCs for technological development. 'We have to innovate and develop our own technological capability as well. If we seek advanced nation status, and we do, technological self reliance should be the

watchword' (Malaysian Industries, July 1995:3). Any industrialisation programme, no matter how intensive, will not succeed if it is divorced from research and development activities (New Straits Times, 19 August 1993).

To enhance technological development, the Industrial Technical Assistance Fund (ITAF) was implemented in July 1990, with an initial capital allocation of RM. 50 million to improve the development of local SMIs into progressive, modern firms capable of supplying to MNCs and large enterprises. At the end of December 1993 (after three years of operation), only a total of 593 (out of 28,335 SMIs in 1988) applications had been received, and 301 applications were approved, amounting to RM. 10.95 million, and RM. 3.3 million had been disbursed. Most assistance went to the electrical and electronics industries (13 per cent or 40) and food (12.9 per cent or 39). Of these agreements, (31 per cent or 29) concerned product development and design schemes, 28 per cent (84) were for market development schemes, 22 per cent (66) for consultancy services and 20 per cent (59) for quality and productivity improvement programmes (MITI 1994a: 264-266).

Although many MNCs have operated for more than 25 years in Malaysia, hardly any of them have located their R&D centres there. Of five big American MNCs, only National Semiconductor (Henderson 1989:47) and Motorola (Malaysian Industry, October 1995) have their wafer fabrication technology centres in Malaysia.

As for the UK-based MNCs, the oldest technology suppliers, none of them has a strong R&D centre or has expanded its downstream industries in Malaysia (even though they have been in Malaysia for more than 100 years). Dunlop, Guthrie, Sime Darby and Harrison & Crossfield are the UK's giant rubber plantations, rubber-based manufacturing and agricultural-based companies. But, because of a lack of emphasis and co-operation on R&D efforts, and a lack of working together to enhance rubber technology with the local Rubber Research Institute of Malaysia (RRIM), today the industry is no longer the major earner it used to be (Ali 1992; MITI 1994a). There are now not enough rubber-based downstream (SMI) industries created and developed through them to compete competitively with synthetic rubber and synthetic rubber based products.

If those MNCs which have been in Malaysia for more than a century are not interested in building up Malaysian technology, what can Malaysia hope for from the new Japanese *keiretsus*, Korean *chaebols* and Taiwanese and Singaporean Chinese family corporations? Out of a thousand Japanese MNCs, only Matsushita (Baba & Hatashima 1995: 738), JVC Electronic Malaysia (Business Times, 18 July 1993) had, and

Hitachi-Lucky (Utusan Malaysia, 1 October 1996) intends to have a R&D centre in Malaysia. The rest of these MNCs are so far not interested in establishing their R&D centres in Malaysia, because their interest in Malaysia is in cheap assembly production, and they have no responsibility for developing indigenous technology. But were the Malaysian public and private sectors keen on establishing an R&D and information culture?

4.5 Research and development culture.

There is relatively little basic research being conducted in developing countries. There is also a lack of research relationships between scientific and technical institutions and industry and production (Ali 1992:77). Since Malaysia was originally an agricultural-based country, most of its public R&D centres have been geared to agricultural development, which has little or no relevance to the industries which Malaysia is trying to develop (Lim C.P.1987; Ali 1993).

If the Japanese are concentrating on basic research with commercial applications, and the Americans are concentrating on military research (Samuels, R. 1994; Westney 1993), neither one of them has been part of the main concern of Malaysia's public and private research organisations. Policy-makers and bureaucrats have been concentrating on the primary industries and have been less concerned with the improvement of indigenous technological development. At the same time, the private sector is not keen on Malaysian technological development. All these factors lead to a very poor 'learning-by-design' process (technology innovation), although there is a little bit of 'learning-by-doing' (hands on technological learning), and 'learning-by-adapting' (technological modification) (Ali 1992:75).

There have been suggestions that the research agencies should be placed under an independent body and be run by experienced scientists (professionals) and administrators (The New Straits Times, 5 August 1993) like business entities, where the elements of cost and benefits are strongly emphasised (The New Straits Times, 12 August 1993). Only recently, the Standard Industrial Research Institute of Malaysia (SIRIM), an public agency directly involved with Malaysian technological development, announced that all research institutes will be privatised. Under the Industrial Technological Development Plan, by the year 2,000, 60 per cent of these institutes will be self-financing (Malaysian Industry, December 1995).

Another difficulty, is that the poor communications between the two sectors (public research institutes and private sectors) has damaged the technological development of the country. Malaysia's research institutes need to operate more closely with the agency

for SMIs which is to be formed (New Straits Times, 11 August 1993). The local big and SMIs, for their part, must participate in the vendor-anchor development programmes to upgrade their product quality and expand their market outlets. In the final analysis, the commitment and cooperation between local SMIs and big corporation with research institutes is the most important factor responsible for indigenous technological development.

A survey of joint training, research and consultancy development programmes was carried out from 13 research institutes and universities with international organisations for the period between 1980 and 1994. Only 5 replied, of which 3 were research institutes (Palm Oil Research Institute of Malaysia (PORIM), Rubber Research Institutes of Malaysia (RRIM) and Malaysian Agricultural Research and Development Institutes (MARDI); and 2 universities, University of Technology Malaysia (UTM) and University of Malaya (UM)). Most of the research was in the field of agriculture extension, specifically in rubber, palm oil and other agricultural commodities. Whereas the joint research and development carried out by the two universities was more in the area of technical expansion. In other words, none of the research and development taken place was leading towards industrialisation and commercialisation.

Between 1980 and 1994, the findings showed that out of 360 joint research activities, most (242 or 67 per cent) were conducted with the collaboration of international organisations. The top three countries of collaboration were Australia, with 27 or 8 per cent projects, followed by Japan, with 17 or 5 per cent, and the UK, with 12 or 3 per cent. This indicates that the joint research work trend has not been in line with the spirit of LEP or of industrialisation and commercialisation plans. The reason was that, technically and historically, these institutes and universities have been engaged with countries with the same agro-based development and extension works.

4.6 Is there a Malaysian management style?

It is not fair to conclude that there is no distinctive style of Malaysian management (see Thong & Jain 1988). Malaysian managers and workers have their own local values, culture and education which influence managerial behaviour and work habits. At the same time, Malaysia has had 400 years of communication with Eastern and Western culture, so 'foreign' influences are also significant. Actual Malaysian management practice would be more accurately assessed if different types of organisations operating in Malaysia were looked at empirically. It is also important to note that there are significant reasons why we have to categorise these organisations, because the origins of the management teams to some extent influence the way organisations are managed, although the bulk of the workers are Malaysian.

Ethnically, the Malaysian population consists of Indigenous, i.e. Malays (58 per cent), Chinese (31 per cent), Indians (10 per cent) and others (1 per cent) (Salih & Yusof 1989), whose beliefs are Muslim, Buddhist, and Hindu respectively. These people are assuming the roles of managers and workers in the organisations. Typically, most of the workers are Malays, although not necessarily the managers. This ethnic and religious workforce mix has a significant effect on the way management organises the company. For example, a Japanese company operating in USA or an American company operating in Japan would have no need to give workers a long break (12.00 to 14.30 pm) on Friday afternoon, whereas in Malaysia both these companies would have to allow Malaysian workers to go to their Friday congregation prayers. In Malaysia they have to provide 'prayer rooms', rather than 'social' facilities as sometimes occurs in the US and Europe.

In Malaysia, Japanese, American and European management cannot say that leave to attend funeral services is not important when their workers ask for it. Malaysia has no such Bank Holidays (as in UK), but has seven days of public holidays every year (3 days for Muslim 'Aidhul Fitr' and 'Aidul Adhha', 2 days for the Chinese New Year, and 2 days for Indian Deepavali and Vesak). All companies and public agencies are expected to close on these days. And three states, Perlis, Kelantan and Trengganu, have their weekend on Thursday and Friday rather than Saturday and Sunday.

A fishing boat captain would have to change all cooking utensils on board and refrain from serving pork if he wanted a Malay to work on the same boat (Abraham 1988). Most contractors, either in the construction sites or in plantations, also give a long break to their workers for Friday afternoon prayer. It is an offence for companies not to comply with this requirement.

Most factories, in Free Trade Zones or industrial estates and even in cottage industries, are subject to two important requirements of their majority workforce, that is (i) 'halal' or permissible food and beverages and (ii) prayer facilities. The same phenomenon occurs in car factories in France, as their production workers consist of people from Tunisia, Morocco and Algeria. I have seen how these car companies even provide housing estates (flats) equipped with a big hall for their employees cultural activities and their daily and weekly Friday congregation prayer purposes (author's visit to Peugeot workers' housing estate near Paris, December 1993).

4.7 Management problems and the need to learn from others.

Even though there are modern sectors and subsectors in the industries, at the same time there are backward ones, where low incomes, unskilled workers, low productivity, and inefficiency are prevalent (Ali 1992:75). Most (74 per cent) local companies are small and medium industries with 50 employees or below, which contribute only 10 per cent to value added (DOS 1982). These establishments are normally associated with simple production technology, employ unskilled and low-paid labour and are financed by co-operatives or family members. They are in the form of sole proprietorship or partnership and private limited companies. They use simple management techniques, are managed by one man and are family owned and their products are locally marketed (National Productivity Corporation 1990). There is also a lack of adaptability of existing resources, including capital, technical skills and managerial ability, to new manufacturing activities (Lim C.P. 1987: 432). The National Productivity Corporation (NPC) of Malaysia is supposed to improve the supervisory and managerial capability of the private sector so that the general quality and productivity level of industry improve (see further discussion on NPC at the end of this chapter)

There are also big Chinese family companies which apply their own management style (Thong & Jain 1988) and MNCs which apply modern management techniques (Abraham 1988). In Malaysia there are two organisation forms. First, the public organisations which are generally dominated by Malay managers and directors. Second, there are private organisations which belong to and are managed by local Chinese and big MNCs. From my observations, both managers and directors in public organisations and private industries are educated in the West and are exposed to Western rather than to Japanese and Korean management practices, so many of the systems and procedures, and management practices are Western-oriented. For example, work performance or meritocracy, rather than seniority, is the main criterion in promotional exercise; external recruitment is more prevalent rather than internal. Class and status are clearly defined in the organisation, with offices well partitioned, and a large numbers of job classifications. Communication is normally one-way, as meetings are held to give orders rather than to consult subordinates. Decision-making is done individually by the managers as compartmentalism is high. Training of employees is seen as not useful and unproductive rather than as a long-term investment.

Furthermore, craft unions are more prevalent than in-house unions. Unionisation is more common in the private industries than in the public sector. But these unions are not as hostile to management as in the West. This is because their Eastern culture and values of co-operation (*'gotong-royong'*) and blessing in consensus and in team-works

(*'muafakat membawa berkat'*), respect for elders and being thankful to others still remain.

4.8 The role of the state in promoting the Japanisation process

Why look to Japan? Is it because the sun rises in the East? The answer is no. In 1980, Japan overtook the United States as the leading producer of automobiles (Chang 1981; McMillan 1989; Cusomano 1988). More importantly, Japan now threatens to leapfrog the US as the core power of the world economy (Nester 1990: ix). In 1992, of the world's top 10 and 50 industrial companies, 6 and 17 respectively were Japanese (The Times 1000, 1992-93:11). It was believed that the reasons behind Japanese organisational achievement were company welfare systems, workers' loyalty, interfirm communication, work ethics and management techniques (Bartu 1992; Jomo 1994a; Machado 1994; Smith, W. A. 1994; Wad & Jomo 1994). The state believed these factors should be learned by Malaysians, replacing low esteem for work, high unionism and outdated management and marketing methods (Jomo 1994a:6). Therefore, behind the LEP was a view that Japanese systems should be naturally transferred to Malaysia.

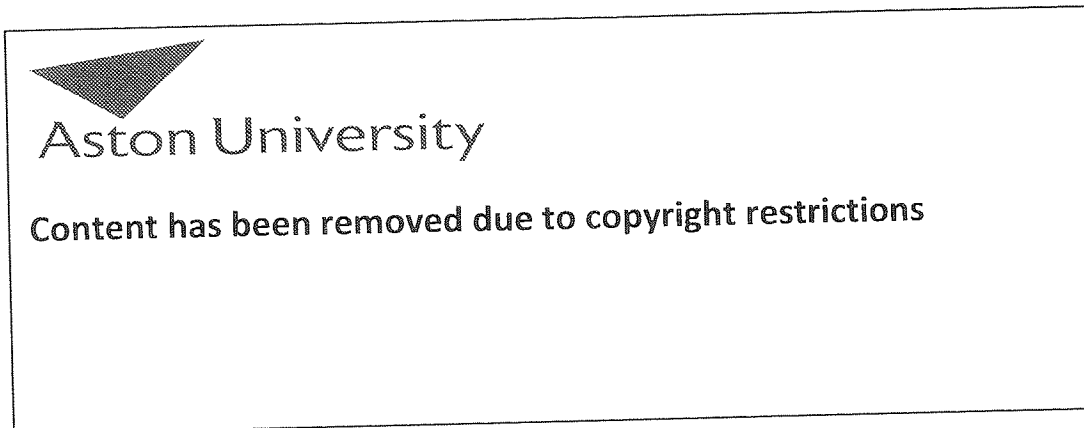
As Japan greatly changed the international economy, the Malaysian government quickly adjusted her economic stance by strengthening the links between Kuala Lumpur and Tokyo, even though at that time Japan was 'near in the eyes but far in the heart': some Malaysians still remembered Japanese conduct during the Second World War. As pointed out by a former Malaysian Minister of Trade and Industry:

We in ASEAN will be watching the political will of the Japanese to change with the times. We remember the past and often wonder whether the ugly past has returned in a different guise which can be more damaging.

Asiaweek, Hong Kong, 12 July 1985, cited by Bartu 1992:68.

In 1982, the Malaysian government introduced its 'Look East Policy' into the development process after 25 years (since 1957) of 'Look To The West'. Malaysians were encouraged to learn and absorb the good things from Japan's economy, industrialisation and development achievements. This policy has crowned Japan and Korea as role models (and also partners) in the industrialisation process. Through LEP, Malaysians in 'both public and private sectors were urged to emulate Japanese work, saving, inter-personal and organisational norms' (Nester 1990: 121). Since then, the heavy flow of goods, money, technology, information and manpower between Malaysia, Japan and Korea has intensified. At the same time, the Prime Minister of Malaysia, Mahadhir Mohamad encouraged Tokyo to aid Malaysia's development. In a

speech in 1982 setting forth Malaysia's industrial policy, the Deputy Prime Minister, Dato' Musa Hitam, stated:



Abegglen & Stalk 1985:266

LEP is an attempt to take the best from Japan (and Korea). Whether it is workable or acceptable in Malaysia needs to be evaluated. The costs, benefits and net effects also need to be examined. What were the forms of the strategies and techniques which were copied from Japan and Korea through LEP? Were they successfully implemented? What were the problems in exercising them?

Some of the steps taken by the state was to emphasise social engineering in the public sector, different overseas destinations of student studying abroad, and the efforts of Malaysian government and its agencies emulating Japanese ways of managing the industry.

Social engineering in the public sector.

Under social engineering, three main programmes have been implemented to improve the effectiveness, efficiency and productivity and quality of the public sectors: (a) structural changes; (b) attitudinal change; and (c) training and education. Under the structural changes, the use of punch cards, name tags, total quality and quality control circles, open offices, centralised payment of bills, desk fail and work procedure manuals were introduced.

Under attitudinal changes, campaigns and movements such as excellent service, clean-efficient-trustworthy (work with full sincerity and no corruption), leadership by example (leaders must set good examples to subordinates), and human resource

improvement programmes were implemented, in order to build a positive attitude within the public sector workforce.

A survey on the understanding and perceptions of government officers towards LEP policy was carried out by the Institute of Public Administration (INTAN) in the middle of 1984. A total of 2,713 respondents from public sectors were interviewed. It was found that the implementation of punch cards, open offices, centralised payment of bills, and leadership by example was effective. The implementation of QCC was not done effectively, and there was some doubt about whether introducing punch cards and open offices system would improve work performance and communications. The opinions of respondents on the effectiveness of the implementation of the programmes can be seen in table 4.21.

Table 4.21: Effectiveness of the implementation: Respondent opinion.

Physical/Structure change	Effective %	Slightly Effective %	Not Effective %
(a) punch card;			
(i) punctuality	56	26	18
(ii) improved work performance	29	33	38
(b) open office	41	26	33
(c) centralisation of bill payment	56	39	5
(d) QCC	20	22	58
(e) leadership by example	43	31	26

Source: INTAN 1986:104.

Lastly under training and education, government officers, entrepreneurs and students were sent to Japan and Korea for learn technical and managerial training. The types of training were industrial and technical training, academic programmes (advanced vocational and technical), executive development programmes, institutional interrelationships and entrepreneur development training schemes (INTAN 1986). Further discussions of them are found in chapter 5.

The Malaysian government's and its agencies' emulation of Japanese ways of managing industry.

After the introduction of LEP in 1982, various steps were taken by the government to bring Malaysia closer to the way Japanese government manages its country and industrial development.

First, in 1985, the Ministry of Trade and Industry was divided into the Ministry of International Trade and Industry (MITIm) and the Ministry of Domestic Trade and Consumer Affairs. MITIm was expected to assume the role of MITIj of Japan.

Second, the Heavy Industries Corporation of Malaysia (HICOM) was launched in 1982 with an authorised capital of RM. 500 million. The HICOM's main task is to nurture the second import-substitution industrialisation programme (Lim C.P.1994a). In 1988, the HICOM group of companies had more than 4,500 workers and about 9 affiliate companies (Lim C.P. 1994a:250), but as at 31 March 1995, it comprised a stable of 65 subsidiaries and associate companies (Malaysian Industry, August 1995:16). It was started with PROTON, which by now had expanded to include transport, property development, engineering, building materials and services business units (Malaysian Industry, August 1995:15). It is one of the 'build-operate-own' companies under the privatisation strategy, and in 1994 it was publicly listed. The majority of the shares belongs to Khazanah Holdings Bhd., the investment arm of the Ministry of Finance (Malaysian Industry, August 1995:15). However, on 20 October 1995, the 32 per cent of government ownership in HICOM was sold to an entrepreneur and it was privatised (Malaysian Industry, November 1995).

Even though HICOM could make profits out of its current investments, it would arguably be more appropriate HICOM to focus its attention on high-tech projects, invest in R&D efforts and work closely with Malaysian Technology Development Corporation Sdn Bhd (MTDC) and foreigners to build new high-tech businesses, which local SMIs can not afford to do, rather than competing with local companies in areas where they are competent. For example, although Malaysia is the world' leading producer of semiconductors and room air-conditioners, but it does not have its own flagship company like Samsung, Matsushita and Grundig, of Korea, Japan and Germany, respectively.

There is a view that HICOM should act as a platform where Malaysian (Malays) corporations could be established, facilitating the creation of Malay industrial and commercial society. This would be one of the means of reducing the economic imbalance between races (Jomo, K.S. 1993, 1994a; Lim.C.P 1994). This 'bureaucratic capitalism' was practised after Second World War in South Korea, where to rationalise industry around 80 per cent of Japanese assets were transferred to Korean civilian control (under the guidance of the American military) (Hur 1991:94-100). The Malaysian government has been rationalising its economy in order to create a united society.

Third, 'sogashoshas' (trading corporation) are Japanese trading companies, selling many products, dealing with imports and exports, with offices in many parts of the world, and with money power and marketing strength. In Japan, they link SMIs with MNCs and export markets, and also control export markets (Lim C.P. & Gomez 1994:232). For Malaysia, *sogashoshas* act as middlemen for SMIs with big orders and demand from overseas. At the moment, there are six Malaysian *sogashoshas* such as Malaysian International Trading Corporation, Pemas Sime Darby Trading Sdn. Bhd., Malaysian Transnational Trading Corporation Bhd., Perdagangan Antarabangsa Malaysia Bhd., MULPHA International, and Malaysian Overseas Investment Corporation (Lim, C.P. & Gomez 1994). All these are a joint ventures between state-owned enterprises and private companies and most of them have experience in the commodity markets. Almost all of them are ventures involving too many companies, which has led to conflicts of interest between partners in a venture.

Both Pemas Sime Darby and Mulpha International are active in operating their businesses; the rest are inactive. The reasons are: firstly, the conflicts of interests mentioned above. Secondly, there was a lack of access to finance and premature expansion, and limited knowledge of new business areas. Thirdly, there was inadequate supervision of their operations. Fourthly, a failure to expand rapidly meant they were unable to compete effectively in bidding for projects against other exporters and importers. Finally, there was a lack of support in the matter of exchange control, and in getting soft loans (Lim, C.P. & Gomez 1994: 241-2). In Japan, *sogoshoshas* are created by its *keiretsus*, and these trading companies export and import products and materials for their affiliates. No conflict of interests emerge because *sogashoshas* belong to a specific *keiretsu*.

Fourth, the Malaysian Incorporation concept was established in order to emulate the Japanese Incorporation. It is a joint government and private sector effort to foster industrialisation and the economy (MITI 1994a:300), a macro-level partnership between public and private sectors, for which the government provides the policy parameters and support. The private sector provides commercial expertise and the risks, responsibilities and rewards are shared (Hensley & White 1993: 73). A few examples are given below.

Airod Sdn. Bhd. was set up in 1985 as a joint venture between the Ministry of Defence (Mindef) and foreign partners in the aerospace industry. Initially, it was established to undertake mainly maintenance, modification, refurbishment, repair and overhaul of Royal Malaysian Air Force aircraft. The other state-owned companies in the aircraft industry are Dornier Seaster Malaysia (German-linked), Malaysian Eagle (Australian-

linked), SME Aerospace (Swiss linked). To nurture the industries, the government is setting up an 'aerospace manufacturing zone' at Malacca (Malaysian Industry, May 1995).

In June 1992, Malaysian Technology Development Corporation Sdn, Bhd. (MTDC) was established as a joint venture between the government and the private sector. The MOF had the biggest share, of 29.13 per cent, and the authorised capital was MR 200 million. The objective of MTDC was to commercialise the local research results for industrial application and to be the catalyst for venture capitalism in technology-based areas. To date 31 proposals have been put forward by 11 research institutes and universities. 25 of them are still at the stage of commercialisation and 7 have been successfully commercialised (MITI 1994a).

The Malaysia Business Council (MBC) was created to act as a national platform for consultation and dialogue between the private and public sectors. The MBC plenary committee meets twice or three times a year and is chaired by the Prime Minister of Malaysia. There are three working committees, international trade, industry, and investments, which are chaired by the Minister of International Trade and Industry.

In 1993, three major industrial policies were agreed. There were (i) Domestic Investment Initiatives: Strategies and Action Plan, a base for domestic investment policy; (ii) A proposal on the establishment of a central agency for the development of small and medium enterprises (SMEs); and (iii) National Competitive Forum organised by MITI and MBC. In 1994, the working committee focused on research and development, technology transfer, and non-financial service sectors (MITI 1994a:314).

The role of Malaysian agencies in promoting the LEP, export-oriented manufacturing industrialisation and the Japanisation process.

The United States was said by Galbraith to be 'the new industrial state' (high degree of state intervention in the industrialisation process), but in many ways this applies more to Japan (McMillan 1989: 55). In the Japanese system, there is a close relationship between government, bureaucracy and businessmen in national economic and industrial planning and development. According to Galbraith (cited by McMillan 1989), Japan seems to apply this approach more than the US. For example, since the 1950s, Ministry of International Trade and Industry of Japan (MITIj) has brought together the universities and electronics industries through joint R&D activities (in 1951 Tokyo University and Toshiba developed the vacuum tube computer) and established Computer Research Committee in 1955. In the 1960s, MITIj secured technology/resources through cross-licensing with foreigners: in 1960, IBM of America and MITIj

signed cross-licences with 13 Japanese manufacturers; in 1961, 64 major licences of US computer technologies were given to Japanese manufacturers; and in 1968, TI of America licensed the Kilby IC to Hitachi, Mitsubishi, NEC, Sony and Toshiba. MITIj also created a domestic market for computers by setting up the Japan Electronics Computer Corporation in 1961, promoting internal development, expanding the technology base, creating a law to promote R&D within electronic and machinery industries, and encouraging the pairing of computer development groups (Morgan & Morgan 1991: 35).

Through LEP, the Malaysian government, since 1982, has tried to emulate the way Japan manages its state and industries. Although Malaysia has been the biggest exporter of semiconductors since 1980s, they were exported by foreign MNCs and there is still no university that works with companies to develop Malaysian electronic or computer-related technology. Only in 1995 did the Malaysian Institute of Microelectronics System (MIMOS), an organisation established under the Ministry of Science, Technology and the Environment, start its first phase of wafer fabrication projects (Malaysia Industry, 1995).

Following in the footsteps of Japan, the Malaysian government has developed 175 industrial estates in 14 states throughout the country, and as much as 56 per cent (98) of industrial estates has been fully allocated. There are also 12 Free Zones (FZ) for export-oriented manufacturing, where companies can enjoy minimum customs formalities and duty-free import of raw materials, component parts, and machinery required (MITIm 1994:241). There are 3 free ports and 11 other ports and 6 international airports to facilitate international trade through sea and air freight (MIDA Business Time 1993). A discussion of the most relevant ministry in emulating MITIj, the Ministry of International Trade and Industry of Malaysia (MITIm) and its agencies, MIDA and NPC, is relevant to this study.

Ministry of International Trade and Industry of Malaysia.

MITI of Malaysia (MITIm) was created in 1985, after the Ministry of Trade and Industry was divided into the Ministry of Domestic Trade and Consumer Affairs and MITIm, 35 years after the birth of MITI of Japan (MITIj) in 1950. MITIj acted as the 'invisible hand' of Japanese industrial development, and MITIm was expected to do the same.

MITIm is responsible for planning and implementing international trade and national industrial policies to enhance economic growth (Ministry of Information 1993:138), and for upgrading the level of competitiveness of Malaysian products and services

globally. MITIm is divided into two major sections, International Trade, and Industry. The International Trade section is responsible for promoting and increasing exports of Malaysian manufactured and semi-manufactured products, and for finding necessary steps such as finding conditions and agreements which favour Malaysian exports. In 1993, it had 30 offices throughout the world. There were also three trade offices established in New York, Geneva and Brussels for the purpose of conducting negotiations with the United Nations headquarters, GATT and the European Community. The section was established to strengthen ASEAN co-operation, to give trade support services, to plan trade development and expansion, to carry out trade negotiations and trade practices. The Industry Section is responsible for the planning and industrial development of the country, industrial sector development, small and medium industry and computer services. Besides these two sections there are other departments responsible for administration & finance, and also policy & research (MITIm 1994a: 314-315).

The activities of MITIm also strengthen collaboration with the private sector. International trade is promoted by bringing together businessmen in yearly scheduled trade missions. For example, in 1994 there were trade missions to ASEAN, Japan, Hong Kong and Taipei, Europe, San José, Seoul, Namibia, Germany and Italy and the Middle East (MITIm 1994a:126). MITIm initiates and develops the vendor development programmes started in 1988, whereby anchor companies-banks-SMIs were linked up (MITIm 1994b). A yearly trade and industry dialogue and forum is held with the private sector (MITIm 1994a:312). It also arranges a consultation body between public and private sectors through the Malaysian Business Council (MITIm 1994a:314). For example, in 1994, the trade and industry dialogue was held from 22 February to 1 March, with 77 private sector associates and chambers of commerce together with 66 ministries, departments and agencies. There were 380 new and 99 old issues discussed, ranging from the inadequacy of local infrastructures to international development (MITIm 1994a: 312).

From the above information, it seems MITIm has been successful in promoting export business and bringing private enterprises together. However, rationalisation of industry between big corporations and the creation of Malaysian indigenous technology, as achieved by Japan (McMillan 1989) and South Korea (Financial Times, 19 January 1994), is still at the infant stage. There are three agencies under MITIm, which are responsible for executing the policies and programmes initiated for industrial development; they are the Malaysian Industrial Development Authority (MIDA), the Malaysia External Trade Development Corporation (MATRADE) and the National Productivity Corporation (NPC).

Malaysian Industrial Development Authority (MIDA).

MIDA is the agency mainly responsible for industrial development promotion and co-ordination within Malaysia, policy-making of industrialisation, tax incentives, labour forces, technology and infrastructure. It has 14 state offices and 16 overseas offices (MIDA 1992). Among its activities are to act as an investment centre, approve manufacturing licences, to carry out investment promotion missions locally and overseas, and to provide an investor list for joint venture prospects. MIDA also undertakes economic feasibility studies of industrial projects, and facilitates the exchange of information and co-ordination among institutions engaged in or connected with industrial development. It recommends policies on industrial sites development and on the development of such sites, reports to MITIm on the progress and problems of industrialisation in Malaysia, makes recommendations, advises the government on measures for the protection and promotion of industries, including the imposition and alteration of and exemption from customs and other duties, and import and export licensing (MIDA-Business Times 1993).

Policies which Encourage Foreign Investment.

Malaysia has been encouraging foreign MNCs in many ways, for instance by allowing an existing licensed export-oriented company to undertake expansion for its approved products if it wants to export 80 per cent or more of its products, in which case no approval from MITIm is needed. However the company must inform MIDA of the details of the expansion, though no equity condition will be imposed on projects that export 80 per cent or more. For projects which involve the extraction or mining and processing of mineral ores, majority foreign equity participation of up to 100 per cent is permitted. Any company that has been approved with a given equity ratio will not be required to restructure its equity, provided the company continues to comply with its original conditions. To increase the confidence of foreign investors, Malaysia has concluded an investment guarantee agreement (IGA) with 24 countries and 2 economic blocs (Organisation of Islamic Countries (OIC) and ASEAN). Under the IGA, foreign investment is: (i) protected from nationalisation and expropriation; (ii) given prompt and adequate compensation in the event of nationalisation or expropriation; (iii) allowed free transfer of profits, capital and other fees; (iv) able to settle disputes through the International Centre for Settlement of Investment Disputes with its office at IBRD in Washington (MIDA-Business Times 1993:17-18).

Incentives are designed to grant relief from income tax. Some of the incentives are; pioneer status (5 years' tax exemption), investment tax allowance (ITA), reinvestment allowances (RA), export incentives such as the export credit refinancing scheme

(ECR), an abatement incentive for export, export allowance, double deduction of export credit insurance premia, double deduction for export promotion, and industrial building allowance (IBA). There are also incentives for R&D, training, industrial adjustment, SMI, the storage, treatment and disposal of toxic and hazardous wastes, and operational headquarters. Other incentives are given for agriculture, tourism, exemption from import duties on direct raw materials or components, ingredients or packaging materials, and also machinery and equipment (MIDA 1992).

Furthermore, there is no national minimum wage law applicable to the manufacturing sector in Malaysia. Basic wages and benefits vary across locations and sectors (MIDA-Business Times 1993:24). The employment of foreign workers is permitted for five years (1992-1996) and allowed in the construction sector, plantations, services (domestic servant, hotel, trainers and instructors), and in the manufacturing sector (MIDA-Business Times 1993:25). The growth of responsible trade unions is encouraged. The Industrial Relations Act, 1967 protects the rights of employers, employees as well as of trade unions. Under this act, managerial groups, executives, confidential and security workers are forbidden to form trade unions. Matters relating to promotion, transfer, recruitment, retrenchment, dismissal, reinstatement, allocation of duties and prohibition of strikes are excluded from a union's proposal for collective bargaining. Direct negotiations between employers, employees and trade unions are emphasised. When that fails, the Minister of Human Resource can intervene, and to refer at any stage to the Industrial Court. During the first five years of operation of pioneer industries, the establishment of trade unions was prohibited under the Employment Act, 1955 (MIDA-Business Times 1993:25).

Transfer of Technology.

MIDA also provides guidelines on how technology transfer should take place. Under the Industrial Co-ordination Act 1975, any agreement involving foreign partners must get written approval from MITI. This is necessary to avoid unfairness to or handicapping of the local party and also to protect the national interest. Technology transfer agreements cover joint venture agreements, technical assistance and know-how, licence agreements, patent and trademark agreements, turnkey contracts and management agreements. In order to be approved, the agreement must have technological content and principal features of the technology or processes involved; anticipated production; quality and specification of products; particulars of technical assistance, plus services and the way they are to be provided (MIDA-Business Times 1993:28).

The transfer of technology must be effected by access to improvements, payment for technology, duration and renewal, training, including patents and trademarks, confidentiality/secretcy, guarantee/warranty, taxes, sales territory, and is governed by Malaysian laws. Malaysia also provides adequate protection in the field of industrial property for local and foreign investors. The Patents Act 1983, Trademarks Act 1976 and Copyright Act 1987 were passed for this purpose (MIDA-Business Times 1993:29).

National Productivity Corporation (NPC).

Established in 1962 as the principal institution to improve national productivity and quality levels. NPC's main function is to upgrade managerial and supervisory skills and the competence of personnel in the private sector through training and development programmes. In 1990, the main focus of the corporation was diverted from training to research and consultancy. Today (1995), the corporation operates with 6 offices and nearly 200 consultants throughout the nation (Information Centre, NPC 1995).

The NPC has three main objectives. The first is to develop human resources and enterprise towards excellence through consultancy, research, training and accreditation services in the fields of productivity, quality, entrepreneurship and management. Secondly, it advises the government and the private sector on matters pertaining to productivity and quality. Lastly, it promotes wider understanding and awareness on matters pertaining to productivity and quality (National Productivity Centre 1992b: i).

In 1982, the National Productivity Seminar was launched, taking productivity and quality improvement programmes and movements as one of the means to upgrade the level of national productivity. In July 1982 a deputy director of NPC was sent to Japan and Korea to learn how quality culture was practised in those countries and to plan its introduction in Malaysia. In 1983, the corporation initiated the National Quality Movement to instil the quality concept and values into industries and the public. All Japanese-based quality lessons such as QCCs, 5S [*seiri* (organisation), *seiton* (neatness), *seiso* (cleaning), *seiketsu* (standardisation) and *shitsuke* (discipline)], Total quality management, and lately ISO 9000 (International Standards Organisation quality system) have been propagated throughout Malaysia (Khatib 1990:39)

The same year, a secretariat for quality control circles was established at NPC, to monitor and develop the movement from time to time. According to a spokesman from the secretariat, in 1990 there were 1,268 QCCs registered, whereas the estimate of active and unregistered QCCs was 1500. The secretariat was reinforced in 1987 by the formation of the Total Quality Control (TQC) Secretariat whose function was: (i) to

plan, encourage, sponsor and implement quality management, quality control, reliability, assurance, and QCCs' activities within public and private sectors at all levels; (ii) to disseminate information and knowledge related to quality management, quality control, reliability, assurance and QCCs' activities; (iii) to create and develop a positive attitude towards quality; (iv) to train and develop managers and workers to form qualified management quality teams (MQTs); (v) to give consultancy services on quality management, QCCs, and related fields; (vi) to be the national sponsor and to register management quality teams and QCCs; (vii) to develop a national TQC audit system; and (viii) to provide other services helping the development of MQTs and QCCs at national and international levels (Khatib 1990:40-1)

Since then, 7 awards have been initiated by three ministries. These can be classified as 'quality' and 'non-quality' related awards (National Productivity Corporation 1992a:4). The quality related awards developed in late 1980s were: (i) Industrial Excellence Awards initiated by MITIm; (ii) Awards for Excellence in Manufacturing Practices initiated by Standardisation and Industrialisation Research Institute of Malaysia (SIRIM); and (iii) Prime Minister Quality Awards initiated by Ministry of Youth & Sports. In 1992, MITIm (through the NPC) was given the task of co-ordinating these awards. The criteria of the Deming Award from Japan and Malcolm Baldrige Award of America were taken as the basis for giving awards. Other elements were also included such as: (i) contribution to the country's exports; (ii) technology transfer; (iii) environmental issues; and (iv) contribution to the community (National Productivity Centre 1992a:7).

Beside the TQC and QCCs movement, NPC promotes JST through training programmes, namely quality and productivity management modules, covering topics such as 5S, QCC, inventory management, total quality management (TQM), human and industrial relations (see appendix 9 for details). Some of the training is done 'in-plant' or as 'tailor made training'. In 1993, 633 programmes were conducted on various aspects of productivity and quality for 14,522 participants (of whom 32 per cent were from management groups, 51 per cent supervisors and 17 per cent employees; 56 per cent from large companies, 34 per cent from medium and small companies and 10 per cent from MNCs; 63 per cent from manufacturing, 29 per cent services, 5 per cent public sector and 3 per cent agriculture) (MITI 1994a:308)

As in Japan, the Malaysian government is backing all these programmes by giving double deduction incentives for approved training institutes, whereby firms can claim from the Inland Revenue Department (National Productivity Centre 1992b; MITI 1994a:298; Malaysian Industry 1995). To implement proper company-wide quality

control within an organisation, NPC provides other important consultancy and research services at nominal fees (National Productivity Centre 1992b).

Recently, in promoting JST, the NPC has introduced the 'Productivity Enhancement Through P&Q Networking Project', in which NPC works together with Ikeda Shinichi & Associates Sdn. Bhd. (IS & A). They provide resource materials and personnel from Japan. Books, magazines, videos etc. on Japanese QC Seven Tools, Problem-Solving for QCC, TQC, total productive maintenance (TPM) etc. are produced and circulated (Promotion Unit NPC, 1994).

To carry out these tasks, since 1983, NPC has sent almost all its consultants to Japan to upgrade their knowledge and experience (Human Resource Department, NPC 1994). Most of the programmes are organised by the Asian Productivity Organisation (APO), based in Tokyo. As mentioned earlier, NPC consultants were assisted by foreign experts from Germany and the UK (1960s and 1970s), America and Japan (1980s and 1990s) in assuming their roles.

The problem with TQC, QCC and TPM programmes is that they have been propagated separately and not integrated with other Japanese management tenets (JIT manufacturing system, welfare-based company system, harmonious labour-management relationships, in-house union, open suggestion system, consensus decision-making, and interfirm long-term relationships). QCCs alone are not the Japanese style of management and cannot bring competitiveness to the company.

The Centre for Japan Studies (CJS) at the Institute of Strategic and International Studies (ISIS) Malaysia.

Another effort by the government of Malaysia and Japan was the creation of the Centre for Japan Studies (CJS) which was established in 1991 at ISIS. The Centre was established with the support of the Federation Of Economic Organisations, the Japanese Chamber of Trade and Industry Malaysia and 14 Japanese donor companies. The objectives of the centre are: (i) to undertake research on and involving Japan; (ii) to provide opportunities for greater information exchange and discussion about Japan; and (iii) to disseminate knowledge of Japan to a wider audience (Centre for Japan Studies 1993).

The Centre's activities include research, lectures and talks, annual conferences, network programmes, and an information data bank. The Centre is managed independently by 12 members of Japan-Malaysia Advisory Group, six from Japan and

six from Malaysia. The activities of the Centre are financed by the Japanese MNCs, as we can see in table 4.22 below:

Table 4.22: CJS Sponsorships, 1993.

Programmes	Sponsors
Annual conference on Japan Lecture/ talk series	Sato Kogyo Co. Ltd. The Sanwa Bank Ltd. and Toyota Motor Corporation
Library	Toshiba Corporation
Research and network	The Bank of Tokyo Ltd. The Dai-ichi Mutual Life Insurance Co. The Fuji Bank Ltd. Fujitsu Ltd. Kajima Corporation Keizai Koho Centre Matsushita Electric Industrial Co. Ltd. Mitsui & Co. Ltd. Shimizu Corporation Takenaka Corporation

Source: Centre for Japan Studies 1993.

This is the only international centre at ISIS Malaysia. It does not exist for American, German and French studies. This shows how serious the Japanese and Malaysians are about enhancing their communication and learning process. ISIS is a non-profit-making and autonomous company, established in 1983 with multi-activities. It carries out studies on strategic and policy issues locally and internationally for the benefit of the national interest. Its areas of interest range from international political affairs to natural resources and environmental issues.

The author had a chance to attend two forums (on 'Japan and Asian' and on 'How Japan developed after Second World War') organised by the CJS. The Centre is headed by an Executive Director under the supervision of Director-General of ISIS. Its aims now are to promote inter-cultural understanding programmes and to formulate and undertake specific research themes each year, with all programmes co-ordinated around the theme (Centre of Japan Studies 1992:7).

Association of South East Asian Nations (ASEAN) and Asean Free Trade Area (AFTA).

ASEAN was established in 1967. It is an association of Brunei, Indonesia, Philippines, Singapore, Thailand and Malaysia. The association is supposed to be a flat form in which all countries can develop together instead of competing, and act as a response to regional trading blocs (Dicken 1992:160, 462). In order to widen the scope of co-operation within the West Pacific Rim and to strengthen Economic bloc inter-trade practices, after the failure of GATT's Uruguay meeting, the prime minister of Malaysia,

Mahadhir Mohamad, suggested setting up a new East Asian Economic Group (EAEG) in 1990, [changed to Caucasus (EAEC) in 1991] (Atan 1994; Jomo 1994a; Dicken 1992). Even though there were many members suggested, such as South Korea, Japan, P.R. of China, Hong Kong, Taiwan and Vietnam (Atan 1994:327), the most important membership was that of Japan, which is still undecided. The reason is obvious: Japan was reluctant to offend American interests (Jomo 1994a:10).

Japan is the main target for ASEAN and EAEC to work with. Japan is the largest source of official development aid to ASEAN countries and most them are indebted to Japan (Lincoln 1993:182). In terms of regional strategy, Japan and ASEAN have special arrangements on investments, procurement, production site and technology transfer (Okita 1980:268-9). These countries expected Japan to play a leading role in Asia and support its neighbours rather than 'Look West' (New Straits Times, 11 November 1994; The Economist 11 November 1994). Unfortunately the Asians forget that Japan has its own global capitalism missions, because although the Japanese were defeated militarily their capitalism spirit was not (Tsuru 1992).

4.9 Future relations between Malaysia and Japan

Although the source of the technology might be shifted to the West (Malaysian Industry, November 1995), there are many agreements and engagements with the Japanese which are still not settled. Moreover, today, if we look at the presence of expatriates, both in the public sector (MITIm and Economic planning Unit (EPU)) and in factories, the number of Japanese expatriates are still outnumbered by the American or British.

Malaysia might be able to learn car technology from Citroen and Rover (Financial Times, 13 September 1995; PROTON Focus, October-December 1995), but a new soft yen loan is still required to upgrade the Malaysian infrastructure and facilities (see chapter 3, paragraph 3.3.3). In fact most of the anchor companies (5 out of 9) that took part in the vendor development programmes of MITIm were Japanese corporations such as Sharp-Roxi, Sony Electronic, JVC Electronic, Philips-JVC Electronics, and Hitachi Electronics Products (MITIm 1994a: 260; MITIm 1994b; New Straits Times 1994).

At present, MITIm has a yearly Japan-Malaysia Policy dialogue, and a joint-venture promotion project of Malaysian-Japan SMIs has been created. A Japanese expert was assigned in April 1993 to MITIm to initiate the project (MITIm 1994a: 263). In 1988, the Japan International Co-ordination Agency (JICA) was tasked to do an in-depth study on the mould and die industry in Malaysia (Malaysian Industry, July 1995:29),

and another study of parts and components of the supporting industry (from March 1994 to Dec. 1995) which will be considered a major input for the formulation of the post- Industrial Master Plan policies and strategies (MITIm 1994a:264).

4.10 The drawbacks of Look East Policy (LEP).

LEP was claimed as a 'personal project' of the Prime Minister of Malaysia, Mahadhir Mohamad (Smith W.A. 1994: 335), through which he wanted his people to move away from the 'bad work ethics of the West' to the 'good work ethics of the East' (Mahathir's Economic Policies, Insan, Kuala Lumpur, cited by Bartu 1992:54). It was mainly directed at indigenous Malays (Bartu 1992), so that they would become more responsive, active and energetic when participating in development. LEP has also been regarded as a policy of giving benefits to Japanese and Korean contractors and businessmen (Jomo 1994a).

As I understand it, LEP was formulated not only for Malays but for all Malaysians. Of course, all along the line the implementation of the policy has to be based on long term national priorities, interests and effects, to develop a united and just Malaysian society, because the main objectives of the newly created corporations are to develop Malaysian technology rather than merely to earn profits. Previous experience has shown that existing MNCs and business enterprises have failed to use their profits to develop Malaysian technology (Ali 1992). This has given the Malaysian government little choice, except to hand over the management of those newly created companies to Malays.

Although most of the new companies created by the government were given to Malays, some have been created and given to Chinese to manage (for example Perodua, the second national car assembler, and EON, PROTON's sole domestic marketing arm). Many contracts and sub-contracts have been given to non-Malays. I would argue strongly that all development project works (contracts) in Malaysia are directly or indirectly given to Chinese suppliers and contractors. In fact, in some cases in which a company did not perform well, instead of retaining it in the hand of Malay managers, the government appointed Chinese as chief executive officers (as in the case of Perwaja Steel Sdn Bhd.). Therefore, whatever the policies formulated by the Malaysian government, in the end, all economic benefits went to Chinese (and a number of Malay and Indian) businessman and industrialists due to the existing industrial structures and networks. The practice of 'ali baba' business, whereby permits and licences were given to Malays but the businesses were run by Chinese or Indians make their position stronger. All Malaysians have to learn how to live more cooperatively so that economic benefits will be shared fairly, in order to create a more united, just and peaceful

Malaysian society, because economic imbalance affects social stability of which none would gain any benefit. Policy-making in Malaysia is not as easy as in Japan, the UK or the US, where they have a relatively homogenous society. However, I would argue that it would be better if these newly created enterprises were handed over to a capable team of managers and CEOs who have experience in business and industry. But these managers and CEOs must have a strong interest in developing Malaysian technology and national development.

Furthermore, as the LEP was initiated, control of the industrialisation process was given to Japanese *keiretsus* such as Mitsubishi (car industry), Nippon Steel (steel industry), or Nichirin (cement plant) (Bartu 1994:55-60). Most of the construction of buildings, roads, bridges (Jomo 1994a) was given to Japanese and Korean companies, and recently the international airport project was given to an Anglo-Japanese consortium (New Straits Times 1995). This led many intellectuals and observers to warn of a new type of imperialism or colonisation resulting from this policy (Jomo 1994a).

In meetings, the Japanese listened to the complaints and agreed to take remedy actions, but in many cases their response amounted to 'lip service' only (MAJECA 1993:265). It has also been argued that the introduction of heavy industry under the LEP has favoured Japan. Wrong timing, mistakes in selecting industries, and incompetent management were making the LEP a failure (Lim C.P. 1994a). The emulation of *sogashoshas* was also a failure (Lim C.P. & Gomez 1994). Much of Malaysia's forests have been felled, and the timber was exported to Japan (Jomo 1994b). Emulation of Japanese industrial relations was not total, there sometimes being a bias in favour of management rather than the welfare of the workers (Wad & Jomo 1994). The LEP has also led to Malaysia's current severe account deficit with Japan, compared with the US, the UK and any other country (Aslam & Piei 1994).

Despite all the incentives given to Japanese MNCs, the actual transfer of technology was slow (Ali 1992, 1994; Malaysian Business, 1 September 1994; Malaysian Industry, July 1995). It has been argued that the coming of Japanese MNCs to Malaysia should be seen as part of their global and regional strategies rather than to help Malaysian economic development (Anazawa 1994). Therefore the task of transferring the technology is drowned in the objective of profit maximisation of these Japanese MNCs (Ali 1994).

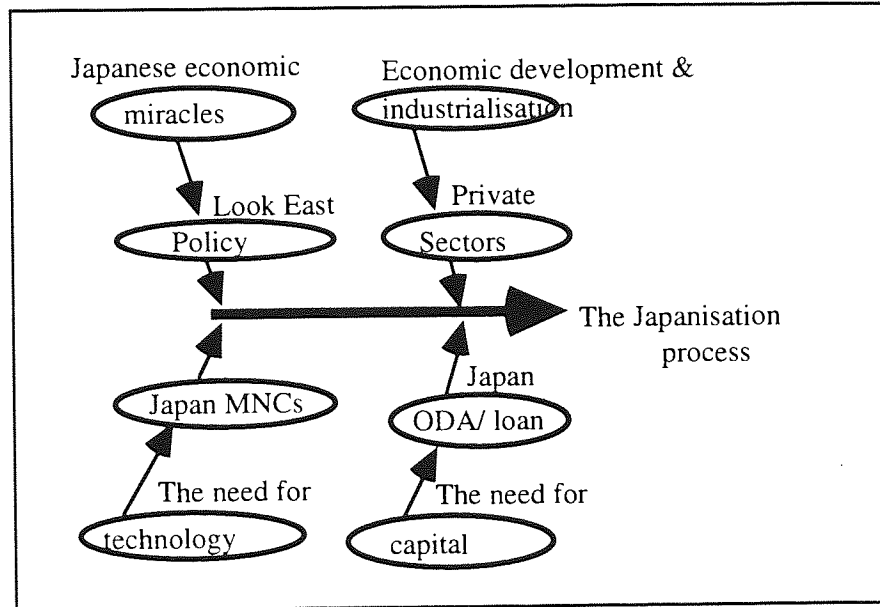
4.11 Conclusion.

This chapter has shown that the state and its agencies had to provide a very strong platform for the Japanisation process to take place. Malaysia has been close to the West, particularly the British, for many years and tried to move away from 'British dependency'. It searched for a new model of development, and found the Japanese. The Japanese economic miracle has convinced the government of Malaysia to emulate Japanese ways of managing its state and industries. The encouragement of foreign investment and private participation in the economy of Malaysia is clearly stated in the various industrial plans, incentives, policies and programmes implemented by public agencies. But incentives to Japanese investments were particularly nurtured with the introduction and implementation of LEP in 1982. Since then, a friendly business environment has been developed for Japan, and the need for infrastructure, technology and capital development has favoured Japanese MNCs and investors. As Japan is second after the US in giving aid to developing countries, it also contributes to the process. As the result, the Malaysian trade balance with Japan has deteriorated and its current account is effected.

The situation has worsened because company and national technology development capabilities have been neglected since 1957. Lack of commercial R&D culture within industries and public research institutes, minimal relationships between industries and public research bodies, the failure of universities and colleges to supply enough technological and skilled workers, the failure of the education system and manpower planners to match and guide the labour suppliers; all these factors make the Malaysian economy continue to rely on the MNCs and foreign capital and technology.

Although Malaysia has tried to move from a 'colonial periphery economy' to independence via 'state-led' and 'export-driven industrialisation strategies', over-reliance on foreign capital and technology, and lack of its own indigenous technology and capital development, mean Malaysia still remains one of the 'peripheral economies'. Dependency has merely shifted from Britain to Japan. This is the result of believing in and over-reliance on foreign technology and capital, instead of the creation and intensification of a self-help technological development programme. Therefore, LEP makes a fortune for Japan. The offers and processes that prepared the ground for the Japanisation process in Malaysia, are illustrated in figure 4.2.

Figure 4.2: Groundwork for the Japanisation Process.



Now, we move to a discussion of the second force that shapes the Japanisation process: the Japanese politicians, bureaucrats, entrepreneurs, employees, volunteers, who with their 'co-operation culture' have been working in the 'friendly environment of Malaysia'.

Chapter 5 : Japanese Investment in Malaysia.

5.1 Introduction.

In chapter 4, it was shown that the Malaysian government, in its need for technology and capital, has been opening up the country to foreign aid and MNCs. The Look East Policy welcomed Japanese (and South Korean) MNCs not only as models but as partners in the industrialisation and development processes, and Japanese public organisations and private enterprises responded by coming to Malaysia. This chapter will detail some of the united efforts between more than ten Japanese public agencies in Malaysia, with more than twenty private agencies and nearly 1,000 (in 1994) Japanese MNCs in Malaysia. The functions of these public and private agencies will be explained first, and then the industrial operation of Japanese MNCs. The contribution of these agencies and MNCs toward Malaysian industrialisation will be explained. Here we can see how the cooperation between Japanese MNCs and agencies bound Malaysia in trade deficits and indebtedness. Malaysia and other developing countries have been affected worst, because financially and technologically they are dependent on foreigners. The chapter is based mainly on interviews and secondary documentation.

The Japanese presence in Malaysia can be classified in two eras, (i) the military occupation and political domination during the Second World War, 1941 to 1944; and (ii) the emergence of Japanese industries which began in the 1950s. If the purpose of the first period was to establish the 'Pan Asian' empire of the East, that of the second one is much the same, though in an economic instead of a military and political form.

5.2 Old Japanese-Malaysian links (up to 1945).

One of the most important events in the history of the political development of Malaysia was the invasion of the Japanese in 1941. However, Malaysian-Japanese economic relations were established following the Meiji Restoration in 1868. As Japan has always been poor in terms of natural resources, Malaya supplied it with tin and rubber. The invasion of Malaya was part of a bigger plan to establish a "Greater East Asia New Order", a region that was to be economically self-sufficient under the political hegemony of Japan (Jomo 1994a:1). Japan regarded Malaya as a colony, and as a source of raw materials. The overall aim of the occupation was to strengthen Japan's military position. Little attention was given to the economic development of Malaya, whose two major industries, rubber and tin, came to a standstill. In fact, they regressed, for rubber trees were cut down to make way for tapioca plants and tin dredges were either destroyed or allowed to rust away.

During the Japanese occupation, for the first time, Malaya faced inflation, because the economy was flooded by too many yen but too few goods. Trade between Malaya and Britain, India and China slowed down, and trade between Malaya and Japan was slack anyway. As Ross-Larson put it, 'The Second World War brought the distraction and deterioration of much of the physical plant built up in the previous decades' (Ross-Larson 1980:14).

In other words, it ruined the economic structure set up by the British. There is no evidence to show that Japanese investment took place during the occupation. However, evidence showed that both the British and Japan administered the country by a policy of 'divide and rule' (FitzGerald 1965:43; Abraham 1978). Eventually, when they left, the country became multi-ethnic. Today, the multi-ethnic elements of society manage and develop the state and the economy together (Young 1980). The prevailing ethnic polarisation means that the Malays are civil servants and bureaucrats, managers of corporations, small-holders in the agricultural sector and dominate the labour force. The Chinese are mainly in business and industry. The Indians are in plantations and professional business (Crouch 1993). If Japan developed on a platform of 'single dominant homogenous race' (Kitigawa 1966:9), post-colonial Malaysia did so on a platform of 'racial-sharing'.

However, the Japanese military occupation of Malaya did not add significantly to the economic Japanisation process. The links with Japan became significant only after the 1970s and were reinforced after LEP was implemented (Bello and Rosenfeld 1992:4; Aslam & Piei 1994; Denker 1994)

5.3 New Japanese-Malaysian industrial and business links (1960s to 1990s).

In 1994, there were 12 Japanese Government agencies and 32 private organisations working closely with each other to facilitate the business relationship between foreign countries and Japan (Chew 1993). The agencies concerned are listed in appendix 8. Of these 44 agencies, 8 have their offices in Malaysia and the rest operates from Japan. They consist of 2 technical training agencies (JICA and AOTS), 2 cultural agencies (The Japan Foundation and Japan Cultural Centre), 2 trade and industry related agencies (JCCI and JETRO) and 2 finance related agencies (OECF and EXIM). For productivity and quality movement in Malaysia, National Productivity Corporation (NPC) of Malaysia has been working on behalf of the Japan Productivity Centre (JPC) and Asian Productivity Corporation (APO).

What are these agencies doing, how do they contribute to Japanese MNCs and what are the effects on local industries and economic development? For the purposes of this discussion, only 9 important agencies have been selected. Five are government agencies (JICA, OECF, JETRO, JCC and APO) and the other four are private organisations (JACTIM, AOTS, NIC and MAJECA-JAMECA)

The Japanese International Co-operation Agency (JICA).

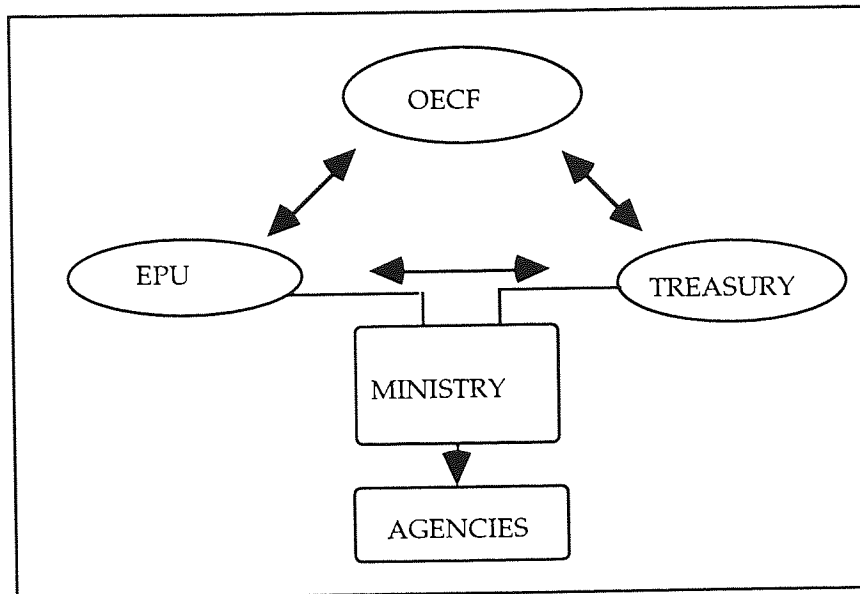
The main function of JICA is to develop human resources to lead the nation building of the host government (Chew 1993:31). In Malaysia, the agency works closely with the Economic Planning Unit (EPU) and the Public Service Department (PSD). For private sector matters, it goes through JACTIM (Japanese Chamber of Trade & Industry Malaysia) and JETRO (Japan External Trade Organisation). According to the officer interviewed, at the time of field research, JICA has 25 officers, 15 Japanese and 10 locals. The agency organises a large number of training programmes, covering fields from public utilities works to social welfare. During the period 1980 to 1990, approximately 3,148 Malaysians from the public sector were trained through JICA programmes, at a cost of close to ¥ 10 million (Chew et al. 1993:34). Besides this training, there are also Counterpart Training, Youth Invitation Programme and follow-up activities for ex-trainees.

Overseas Economic Co-operation Fund (OECF).

This agency was established in 1982. It has 5 officers, 2 Japanese and 3 Malaysian. Its main function is to arrange Yen loans under the Official Development Assistance (ODA) at a rate of interest below 5 per cent, all these loans being made through the Economic Planning Unit. Japan's ODA activities began in 1954 when it joined the Colombo Plan with the aim of assisting the socio-economic development of Asian countries. Japan's ODA comprises three major components: (i) bilateral grants, which consist of aid and technical co-operation; (ii) bilateral loans, which are generally called yen-loans; and (iii) contributions and subscriptions to multilateral organisations (Chew et al. 1993:31). The money is kept within the Treasury and channelled to the respective ministries and agencies. In the beginning the loans were allocated for the development of infrastructure projects, but currently most of the money is given for environmental preservation, human resources development and poverty eradication projects. According to the OECF officer interviewed, different projects have different rates of interest (ranging from 3 to 6 per cent) and total loans from 1969 to 1994 was RM. 594,109 million (OECF 1994).

The flow of the loan applications can be seen in figure 5.1.

Figure 5.1: The disbursement of loans from OECF.



According to an officer for foreign assistance at the EPU, the amount of technical assistance and loans given is diminishing, except bilateral loans. At the moment 18 countries give these grants, including Japan, Korea, Sweden, India, Denmark, Germany, Italy, France, UK, US and Canada. After 1957, the Commonwealth was a big donor, but since the 1970s, the US and Japan have become the largest donors. Except for Japan, the other countries are progressively reducing their grants. Belgium, Holland, Norway and Finland have even stopped their grants (Interview with EPU officer, 1994).

From 1966 until 1994, Japan's ODA financed 62 projects which involved RM. 15.4 billion. Some of the projects are Penang Telecommunication facilities and Perlis Sugar Plant (1966); Port Klang Power house (second phase), and SMI Development Programmes (1983); Bintulu Fertiliser Plant (1986); RM. 1.12 billion Port Klang Power house (third phase), SMI Promotion, Tenom Hydro, Higher Learning and Rural Development projects (1993); and RM. 1.538 billion Sepang International Airport (1994) (Berita Harian, July 1994). As with many other aid donors, the main consideration behind ODA is to 'provide business for and to otherwise support and favour the business interest of its private companies' (Jomo 1994a:192)

Japan External Trade Organisation (JETRO).

JETRO was established in 1958, and has 79 branches throughout the world (as of April 1994). According to a JETRO spokesman, the main functions of JETRO are to promote Japan's imports so as to maintain and strengthen harmonious trade relationships. Some of the activities and facilities provided are: the establishment of Local Internationalisation Centres, the provision of import databases, sending specialists

overseas, dispatching missions and hosting business people, business support centres, foreign access zones, exhibitions and seminars.

JETRO is responsible for industrial co-operation, investment, and technical exchanges through the Centre for Industrial and Technological Co-operation (CITEC). The latter has 16 branches in major cities in Europe, the US, and Australia. Their activities aim to promote technical exchanges between Japanese and local industries and organisations, provide information on investment and technology and specific projects. Other activities are collecting and sharing information, assisting exchanges, promoting investing in Japan and business global partnership. However, there is no CITEC office in Malaysia.

JETRO encourages international exchanges that involve person-to-person contacts, trade fairs and providing data on Japan. It supports economic exchanges between Japan's regional economies and other countries, so that both sides can benefit from economic development and internationalisation. It also promotes regional capital exchanges and help smaller companies to expand overseas and to answering inquiries globally. The other roles played by JETRO including promoting trade and industry in developing countries by exchanges of people and human resource development, support for industrialisation and technical cooperation, involvement with exhibitions and supplying information.

At the time of study, there are 18 staff at the Kuala Lumpur office. Six are Japanese and twelve are locals. The office is equipped with an information centre and a small seminar room. According to an informant from JETRO, the response from locals industrialists and businessmen is encouraging, but still very few Malaysians have opened offices in Japan as compared to China and Vietnam.

Japan Cultural Centre (JCC).

The JCC was established in 1989 to promote Japanese culture and enhance the relationship between the two countries. It is a non-profit organisation sponsored by the Japanese Government. Some of its activities are to organise speech contests in the Japanese language, Japanese film shows, giving yearly donations to language centres in schools and sending professors/lecturers/teachers for 2-week or 2-month study visits. It organises yearly Japanese festivals, handling group exhibitions and offering 3-month Japanese language classes for those who are going to Japan at a cost of RM. 450.00 (for members) and RM. 2,000.00 (for non-members). The Centre has a library and a multipurpose hall. At the time of study, there were 15 officers, 9 Malaysian and 6 Japanese. Three of them were Japanese language lecturers.

Asian Productivity Organisation (APO).

APO is an inter-governmental regional organisation (the outcome of a convention in 1961 by several governments in Asia). Its objectives are to increase productivity, and consequently accelerate economic development in Asia and the Pacific region through mutual co-operation among members countries. Malaysia, through the NPC joined APO in 1983. Member countries contribute 4 per cent of their GNP to the organisation, and in return they benefit through training opportunities, joint survey/research projects, feasibility studies, technical aid, all organised by APO. These activities are carried out both in Japan and in member countries.

Most of the programmes are centred on multi-country training (44 per cent), conferences and symposia (24 per cent), technical experts services (10 per cent), study missions (8 per cent), research and surveys (7 per cent), publications and publicity (5 per cent), training manuals and audio-visual aids (2 per cent). There are yearly meetings to decide on policy matters, strategies, budget, finance, and membership. The venue moves from country to country. The last five years' activities are summarised in table 5.1.

Table 5.1 : APO: Programmes implemented (1989 to 1993).

Projects	No. of Occasions	No of Participants
Research and Surveys	28	-
Conferences and Symposia	71	2,292
Training Courses and Seminars	146	2,638
Multi-Country Study Missions	18	253
Individual Country Study Missions	87	1,234
Fellowships	9	16
Technical Expert Services	289	-
Training Slides, Filmstrips & Videos	22	-
Publications*		
General	97	-
Technical	12	-

Note: * Many APO publications are sold through a global network of distributors. Details are available from the APO Secretariat.

Source: APO, 1993.

Japanese Chamber of Trade & Industry Malaysia (JACTIM).

The chamber was established in 1983, that is after the Malaysian government announced its LEP. It is a private-sector organisation, which only Japanese companies or companies with Japanese workers may joint. To date, there are 400 members, and the chamber is run by a team of two Japanese. It meets weekly or monthly meetings, depending on need, normally to solve and improve business related problems ranging from licensing to production and the transfer of technology. Through this chamber, MDs have a platform to meet and discuss their common interests. JACTIM also work closely with MAJECA and JAMECA.

Association For Overseas Technical Scholarship (AOTS).

This agency acts as a training and information centre (on technical and management matters). Its services are offered to the public and members. All programmes are fixed by Japanese companies in Japan. Participants can get sponsorship from either the host companies or AOTS or both. The main office is in Japan, and an office was established in Malaysia in 1983. Today the office has 5 staff members, one Japanese and the rest locals. Four Japanese instructors work at the Kuala Lumpur office. In terms of training, JICA and AOTS complement each other. According to an AOTS informant, between 1980 and 1990 2,900 Malaysians were trained in technical/vocational, business management and entrepreneurial courses. One-third of them came from private sector organisation, and 1,800 of them have received some training in the Japanese language. The total number of Malaysians trained by AOTS from its establishment in 1959 to 1990, was 4,200.

Nagoya Information Centre (NIC).

The Centre has been sponsored by Nagoya City Hall since 1959. This is the only Japanese information centre in Malaysia, but in Singapore there are Kobe, Osaka and Hiroshima offices also. According to an informant from NIC, the Centre provides trade information to export to or purchase from Nagoya and has become a reference point where Malaysian and Japanese businessmen may find their counterparts. At the moment, through the efforts of this centre, there are over 50 joint ventures from Nagoya operating in Malaysia. The Centre is staffed by 4 officers, one Japanese and three Malaysians.

Malaysia-Japan Economic Co-operation Association (MAJECA) and Japan-Malaysia Economic Co-operation Association (JAMECA).

The need to promote a close economic relationship between the private sectors of Malaysia and Japan led to the formation of Malaysia-Japan Economic Association (MAJECA) and Japan-Malaysia Economic Association (JAMECA) on November 14, 1977 in Kuala Lumpur. According to a spokesman from MAJECA, the common objectives of MAJECA and JAMECA are: (i) to foster friendship and promote close and harmonious economic relations between Malaysia and Japan; (ii) to promote a greater understanding between the private sectors of Malaysia and Japan regarding the economic policies and situations of the respective countries; (iii) to present to the governments, as and when necessary, advice, proposals and recommendations in order to achieve the objectives outlined in (i) and (ii).

Both MAJECA and JAMECA believe that a harmonious relationship can only be built between two parties if it is based on understanding, goodwill, and appreciating each

other's aspirations, positive thinking and perceptions, and on sensitivity. Both have two executives, one in Kuala Lumpur and the other one in Tokyo.

The interviews revealed that the associations have various activities to realise these intentions, such as the joint annual conference which alternates between Kuala Lumpur and Tokyo. They established JACTIM in 1983 which represents JAMECA in Malaysia. They set up permanent joint committees and sub-committees on various functions and sectors to liberalise Japan-Malaysia trade, investments and technology transfer. To promote understanding between members of MAJECA and JAMECA, they have social activities such as golf, lunch meetings and cocktails, where members of MAJECA-JAMECA can exchange views and information. On a bigger scale, the Japanese have a yearly meeting with ASEAN businessmen in Japan, to enhance cooperation and continuous communication.

The first conclusion which I can draw from those interviews is that these agencies smooth the business operation of Japanese companies in Malaysia. Second, though there are many Malaysians employed by these agencies, they are merely clerical workers, and more often than not are Chinese, since most of Malaysian businessmen and potential businessmen are Chinese. Third, these agencies operate as part and parcel of Japan's bigger ASEAN regional business expansion.

5.4 Japanese direct investment in Malaysia.

Japanese Investment Development.

In 1972, the UK was the largest foreign investor in Malaysia (Lall 1983: 240). The story was different after that, because in the same decade the Japanese replaced the British as the predominant investor in Malaysia (in 1979 Japanese investments were at 20.8 per cent of total foreign investment (Nester 1989:67)), and they remained so during the 1980s. In the 1990s, the picture changed, as global Japanese investment started to decline, and in 1994, the UK was back to the top.

Between 1951 and 1973, there were only 7 finished product assemblers and only 3 firms manufacturing parts and components of Japanese manufacturing subsidiaries in the electronics industry operating in Malaysia (Yoshino 1976:94). As an initial step, several Japanese manufacturers built plants in Korea, Taiwan and Malaysia to manufacture parts and components for other subsidiaries and even for the parent companies in Japan (Yoshino *ibid*:74). In the mid-1970s leading Japanese automobile companies including Nissan, began to integrate production in several countries in Southeast Asia. Nissan has established a plant in Malaysia to manufacture several

standard components both for the local market and for the company's affiliates in Thailand, Singapore and Indonesia.

The strategy of seeking stability through cooperative arrangements (joint venture) began to include multinational enterprises of other national origins as well as those of Japanese origins. Isuzu and General Motors, partners in operation in Japan, have jointly developed new models for the Japanese market as well as for export markets. General Motors has agreed to assemble Isuzu's trucks in Malaysia, the Philippines, New Zealand and Australia. Honda and Ford have also entered cooperative arrangements (Yoshino 1976:76). Two (Matsushita, 1973, and Toshiba, 1973) out of 18 major manufacturing investments since 1970 are either majority or 100 per cent Japanese controlled, and both produce electronic parts in Malaysia for export (Ibid:159). In 1990, there were 487 (10 per cent) Japanese companies operating in Malaysia out of 4,706 Japanese companies operating in Asia, from a total of 12,522 of Japanese companies overseas. In ASEAN, (Thailand, Singapore, Indonesia, the Philippines and Malaysia), there were approximately 2,700 Japanese affiliated companies, employing 640,000 workers (Fukuchi 1993).

From the mid-1980s Japanese consumer electronics firms went global in their operations in response to three factors: (i) the increasing level of international competition, particularly from the newly industrialised Asian economies; (ii) the increase in protectionist trade policies against Japanese exports of electronics products (principally by the EC and the USA); and (iii) the rapid appreciation of the yen and the increase in the cost of production in Japan which spurred companies to seek off-shore production sites. The Japanese firms came to Southeast Asian countries not only because of industrial relocation and parts sourcing but also motivated by the export-oriented economic policies of ASEAN countries (Guyton 1994:59)

In the next section we will explore the profile and the distribution of these Japanese companies by subsectors.

The Profile of Japanese Companies in Malaysia.

Distribution by Sector and Subsector.

The population of Japanese companies in Malaysia is quite significant, that is 10.3 per cent out of total Asian and 3.89 per cent out of total Japanese companies operating abroad. What are the industrial sectors and sub sectors in which most of the Japanese companies operate in? Table 5.2 shows that in 1990, 64.27 per cent (313 out of 487 companies) were from manufacturing sector, and 43.12 per cent of it is to electrical (93) and chemical (42) companies. The next biggest categories of manufacturing

operations by rank order are petroleum, steel, and non-ferrous metal products. In the non-manufacturing sector, the presence of Japanese construction and engineering companies is highly noticeable, followed by foreign trade and commerce (MAJECA-JAMECA, 1994).

Table 5.2: Malaysia: Japan's new establishment trend by sector

	Total	Before 1976-80 1975	1981-85	1986-89	1990 & After	
Total	487	97	55	96	233	69
1. Agriculture	3	2	-	-	1	-
2. Mining	2	-	-	-	2	-
3. Construction	48	8	2	27	11	5
4. Manufacturing	313	64	31	40	175	55
Food	9	4	1	1	3	-
Textile	13	10	-	1	2	-
Furniture/Wood	11	1	2	1	6	3
Pulp/Paper	3	1	-	-	2	2
Publishing	1	-	1	-	-	-
Chemical	42	11	5	6	19	5
Oil/Coal	9	1	1	-	7	4
Rubber/Leather	11	1	2	-	8	-
Ceramic	15	6	1	1	7	2
Steel	12	6	2	1	3	2
Non Steel Metal	24	1	1	4	18	7
Metal Products	19	2	-	4	12	2
Machinery	9	-	1	4	4	1
Electrical	93	15	8	6	64	22
Vehicles	8	-	2	2	4	1
Automobiles	15	2	1	7	5	1
Precision Mach.	10	2	1	-	7	2
Other	9	1	2	2	4	1
5. Commerce	71	12	15	14	28	6
6. Wholesale	65	12	15	13	23	5
7. Retail	6	-	-	1	5	1
8. Restaurants	-	-	-	-	-	-
9. Bank/Finance	16	6	3	4	3	2
10. Security	1	1	-	-	-	-
11. Estate	2	-	-	1	1	-
12. Transport	14	1	2	3	8	1
13. Services	15	2	2	7	4	-
14. Other	2	1	-	-	-	-

Source: Japanese Industries Abroad, Toyo Keizai 1991, page 18.

Concentration by sector has been consistent throughout Japan's investment, whereby 66 per cent (350) of investment went to manufacturing and 13 per cent (67) into the wholesale business. Within manufacturing, the concentration was still on the electrical and electronics industry (35 per cent) and chemical industry (11 per cent). Japanese investments have been increasing in Malaysia, which is among the top twenty countries where Japanese interest is high. Before 1990, Malaysia was seventh in the list with 487 (as at 1991) establishments. But in terms of newly opened companies,

Malaysia was at number 4 with 69 new establishments (in 1992). The changes can be seen in table 5.3.

Table 5.3: Japanese Investments in top 20 countries

Countries	Accumulated Before 1990		Newly Open in 1990 & After		
	Number	Per Cent	Countries	Number	Per Cent
Total	12,522	100.0	Total	1245	100.0
1. U.S.A	3,282	26.2	1. U.S.A	345	27.7
2. Hong Kong	770	6.1	2. Thailand	100	8.0
3. Thailand	744	5.9	3. U.Kingdom	94	7.6
4. U.Kingdom	732	5.8	4. Malaysia	69	5.5
5. Singapore	730	5.8	5. Singapore	68	5.5
6. Taiwan	706	5.6	6. Germany	52	4.2
7. Malaysia	487	3.9	7. Hong Kong	48	3.9
8. W. Germany	482	3.8	8. Taiwan	45	3.6
9. Australia	438	3.5	9. China	44	3.5
10. S. Korea	383	3.1	10. Indonesia	44	3.5
11. Brazil	325	2.6	11. France	43	3.5
12. China	312	2.5	12. Netherland	37	3.0
13. Canada	311	2.5	13. Italy	27	2.2
14. Netherland	300	2.4	14. Australia	25	2.0
15. Indonesia	289	2.3	15. Canada	21	1.7
16. France	277	2.2	16. Philippines	19	1.5
17. Philippines	163	1.3	17. Spain	17	1.4
18. Italy	132	1.1	18. Korea	15	1.2
19. Spain	107	0.9	19. Belgium	15	1.2
20. Mexico	107	0.9	20. Mexico	9	0.7

Source: Toyo Keizai 1991:9.

In 1992 the total number of affiliates was 538, an increase of 10 per cent from 1991 (478) (Toyo Keizai 11992), and in 1994 the figures shot up to approximately 1000 companies (MAJECA-JAMECA, 1994).

Geographical Distribution.

The location selected by most (65 per cent or 328 establishments) investors was 'Klang Valley', which covers the state of Selangor and Federal Territory, where the industrial infrastructure is well established. The geographical distribution of these Japanese companies is shown in table 5.4.

Table 5.4: Geographical distribution of Japanese companies in Malaysia.

State	No. of Companies	Per Cent (%)
Johor Darul Ta'Azim	58	11.31
Kedah Darul Aman	18	6.10
Kelantan Darul Na'im	1	0.23
Melaka	11	2.04
Negeri Sembilan Darul Khusus	11	1.36
Perak Darul Ridhwan	14	2.26
Pulau Pinang	62	6.10
Sabah	8	1.36
Selangor Darul Ehsan *	168	33.71
Serawak	7	1.36
Trengganu Darul Iman	1	0.23
Federal Territory*	160	32.13
Not Stated	18	4.52
Total	528	100

Note: * Klang valley

Source: Toyo Keizai, 1992

In terms of site, 53 per cent (269) of them were located in non-industrial estates, and 47 per cent (242) were in Free Trade Zones, Export Processing Zone or Malaysian industrial estate.

Japanese equity ownership.

What does the ownership look like within these establishments? As we can see in Table 5.5, Japanese greenfield establishments (where Japanese interest is 100 per cent) made up 39 per cent and the rest (61 per cent) were Japanese-Malaysian joint ventures.

Table 5.5: Ownership Control in Japanese Transplants.

Ownership (%)	Number of Establishments	Per Cent (%)
Below 24	42	8.1
25 to 49	173	33.5
50 to 74	64	12.4
75 to 99	36	7.0
100	202	39.0
Total	517	100.0

Source : Toyo Keizai 1992.

The Establishment Year.

Most Japanese firms came to Malaysia in the 1980s. This was in line with the global expansion of Japanese foreign investment during this period as the result of internationalisation of Japanese companies (Fukuchi 1993:83; Bartu 1992; Emmotte 1993). The trend of Japanese investment can be seen in table 5.6.

Table 5.6: The establishment by years of Japanese investment.

Year	Number of Establishments	Per Cent (%)
Before 1970	21	4.0
1971 - 1975	67	12.7
1976 - 1980	59	11.2
1981 - 1985	100	19.0
1986 - 1990	240	45.6
1991 Onward	39	7.4

Note: Based on 526 replies.
Source : Toyo Keizai 1992.

Capital Structure.

In terms of capital investment structure, 28 per cent are below MR. 1 million. This means they are small size industries (by Malaysian standards). On the other hand, there were 30.5 per cent of the companies which considered as big, with investment of more than MR. 10 million. The rest were medium. This proves that Japanese MNCs came to Malaysia with their small and medium vendors to strengthen their presence. The distribution of these companies by capital is as in table 5.7.

Table 5.7: Capital structure of Japanese companies.

Investment (RM. million)	Number of Companies	Per Cent (%)
0.5 and below	127	24.5
0.6 to 0.9	18	3.5
1.0 to 9.0	195	37.6
10.0 to 49.0	141	27.2
50.0 and above	17	3.3

Note: Based on 498 replies.
Source: Toyo Keizai 1992.

Employee Distribution.

In terms of employee distribution, 37.7 per cent (173) of the companies had fewer than 50 workers, 47.0 per cent (216 of them) had between 50 to 499 workers, 7.8 per cent (36 companies) had 500 to 999 workers and 7.4 per cent (34 companies) had more than 1,000 workers. Off those companies who had more than 1000 workers, all of them were from the electrical and electronics industry, except one, PROTON, from the automotive industry. The overall distribution can be seen in table 5.8.

Table 5.8: Employee distribution within Japanese companies.

Number of Employees	Distribution	Per Cent (%)
9 and below	66	14.4
10 to 29	64	13.9
30 to 49	43	9.4
50 to 99	55	12.0
100 to 199	69	15.0
200 to 499	92	20.0
500 to 999	36	7.8
1,000 and above	34	7.4

Note : Based on 495 replies.

Source: Toyo Keizai 1992.

In the early 1980s, 57 per cent of companies had an average of fewer than 30 employees. The companies (34) which had more than 1,000 employees were those which had established their operation in the early 1970s (32 per cent) and late 1980s (32 per cent). This indicates that in the 1970s and the 1980s the companies were basically labour intensive. Although there was a trend in the 1990s towards greater capital intensity, this was marginal. Out of 21 companies established in the 1970s, 86 per cent (18) had more than 50 employees and only 24 per cent (3) had between 10 and 49 workers. However, of the 26 companies established in 1990s, only 46 per cent (12) have more than 50 employees and 54 per cent (14) have less than 50 workers (Toyo Keizai, 1992).

Expatriate Employees.

About 267 (54.5 per cent) companies have 1 to 4 Japanese expatriate workers. There are also about 124 (25.3 per cent) have no expatriate workers at all. Only 11 companies (2.2 per cent) have 15 or more expatriate workers. The distribution of these expatriate workers is as in table 5.9.

Table 5.9: The Distribution of Japanese Expatriates.

Classification	Number of Companies	Per Cent (%)
0	124	25.3
1 to 4	267	54.5
5 to 9	70	14.3
10 to 14	18	3.7
15 and above	11	2.2

Note : Based on 490 replies.

Source : Toyo Keizai 1992.

These expatriate workers are acknowledged as technical assistants sent by the parent company to assist its affiliates in various areas (from production to marketing) within their affiliates and their vendors. With Japanese peaking between 1986 to 1990, the numbers of expatriate workers also peaked that year (Toyo Keizai 1992). The low

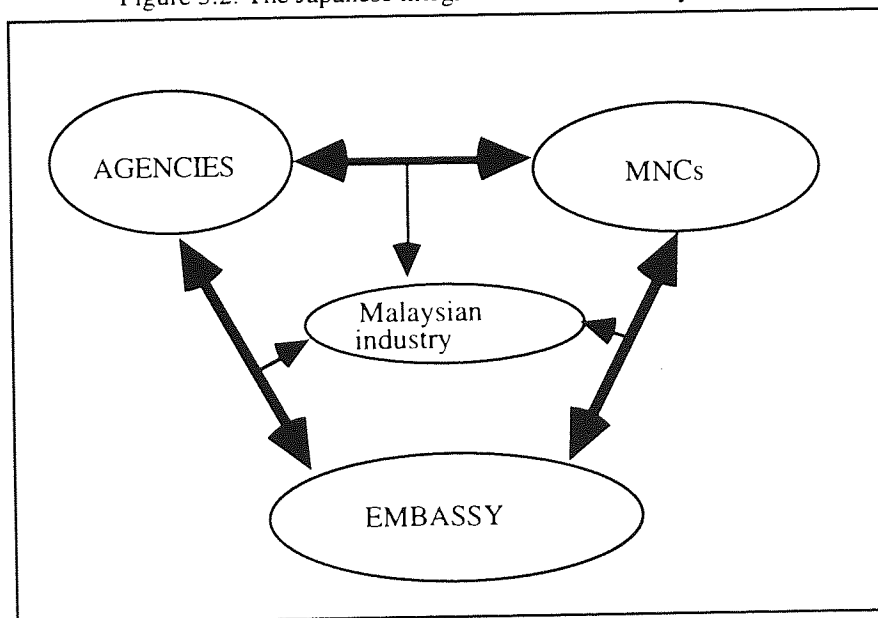
number of Japanese expatriates can be taken to indicate the relatively simple nature of the manufacturing operations in Malaysia. Abo (1994) takes this as an indicator of transfer, noting the higher numbers of Japanese personnel in autos compared with electrical in the US Japanese transplants.

After looking at the profiles of Japanese MNCs in Malaysia, and the Japanese public and private agencies, we shall now observe how the Japanese worked together to realise their capitalist spirit in Malaysia.

Japanese Integrated Efforts in Malaysia.

All these public and private agencies and industries have worked closely to enhance their economic involvement in Malaysia. For example, there were joint researches in market and procurement between the Japan Embassy and JETRO, in 1987, and between JETRO and JACTIM, in 1990, for Japanese manufacturing (Anazawa 1994:85). The links between the Japanese Embassy, its 12 Government agencies, and 32 private organisations, and more than 1,000 companies and Malaysian industries are shown in figure 5.2.

Figure 5.2: The Japanese integrated efforts in Malaysia.



These integrated efforts must have affected Malaysian employment, human resources development and trade balance. However, like other MNCs, Japanese companies have been little concerned with the critical issues of transfer of technology and the technology innovation process (see also Dahlman & Westphal 1987; Lall 1992; Tolentino 1993).

These agencies and industries have yearly programmes whereby they can communicate. To secure their investment, the Japanese Embassy, the Japan Cultural Centre (JCC), JACTIM and Japan Club of Kuala Lumpur organise and sponsor a yearly 'Japan Festival in Malaysia'. For example, in 1994, they organised a two month programme (from July to September) covering an ASEAN cartoonists' exhibition, a Japan film week, a series of talks, *Ohanashi* and *Rokkasen* theatre shows (Japan Embassy, 1994). For the same purpose a Japanese company sponsored the 'Perayaan Bunga Api' or 'fireworks festival' for the restoration of the Seventh High Majesty of Malaysia in 1994. These programmes were closely supported by local ministries and agencies. The purpose of these festivals was to give Malaysians a closer look at contemporary and traditional Japanese culture, and to win the hearts of Malaysians generally, and leaders especially, so that the Japanese can prolong their stay and enhance their investments.

5.5. The contributions of the Japanese.

Employment and human resources development.

The Japanese companies have given a lot of employment opportunities to locals and Japanese alike, since their operations in Malaysia began. In 1990, Japanese affiliate companies employed a total of 101,559 employees and as many as 1,162 Japanese experts were dispatched from Japan (Toyo Keizai, 1991). In 1991 total employees were increased to 125,458 and dispatched Japanese workers were increased to 1,358 (Toyo Keizai 1992), increases of 23 per cent and 17 per cent respectively. The average number of Japanese dispatched experts was also increased from 2.3 in 1991 to 2.5 in 1992. As the result of Japanese MNCs' presence in Malaysia, it is estimated that in 1994 there were as many as 8,000 Japanese residents in Malaysia (Murayama 1994:3). If in 1995, the estimated total manufacturing population was 1.7 million (MITI 1994a), then the employees of Japanese related firms would be at least 9 per cent, roughly 153,000.

In terms of human resources development, there are several channels for Malaysians to be trained and developed by Japanese: (i) higher education in Japan, both government and self-sponsored; (ii) LEP Government-sponsored programmes; (iii) private companies-sponsored programmes and (iv) other organisation-sponsored programmes.

Higher Education in Japan.

In 1980 there were only 6,572 foreign students in Japan. The figure jumped to 41,347 (as of May, 1990), of whom 92 per cent were Asian. On the other hand, in 1990, of 4,961 (100%) Japanese Government scholarship students, 71 per cent went to Asia. Malaysian students represented on average 3.5 per cent of the total foreign students

from 1980 to 1991. Table 5.10 below shows the number of Malaysian students in Japan compared to the total of foreign students.

Table 5.10: Number of Malaysian students in Japan compared to total foreign students population (1980 to 1991).

Year	Malaysian students (%)	Total foreign students
1980	144 (2.2)	6,572
1981	157 (2.2)	7,179
1982	156 (1.9)	8,116
1983	228 (2.2)	10,428
1984	402 (3.2)	12,410
1985	635 (4.2)	15,009
1986	896 (4.8)	18,631
1987	1,120 (4.8)	22,154
1988	1,201 (4.7)	25,643
1989	1,310 (4.2)	31,251
1990	1,544 (3.7)	41,347
1991	1,742 (3.9)	45,066

Source : Chew et al. 1993, Table.6.1, p.53.

Students from Malaysia formed the fourth largest group after China, S. Korea and Taiwan in terms of recipients of Japanese government scholarships, but as a whole they formed the sixth largest group. Table 5.11 provides details of the types of Japanese higher education institutions attended by Malaysian students over the period 1986 to 1991. Students pursuing undergraduate courses in Japan formed the largest group throughout the years, more than 60 per cent, followed by students in professional schools and post graduates.

Table 5.11: Distribution of Malaysian students in Japan (as of May 1986 to 1991)

	'86	'87	'88	'89	'90	'91	'92*	'93*
University (undergraduate)	595	796	852	890	994	1,115	1,308	1,463
University (postgraduate)	73	93	121	143	165	182	169	176
Technical College	93	100	100	102	103	124	159	208
Junior College	15	15	16	18	15	22	-	38
Professional School	120	116	112	157	267	299	298	220
Total	896	1,120	1,201	1,310	1,544	1,742	1,934	2,105

Note: * Leong 1994.p.14.

Source: Chew et al. 1993. Table 6.3 p.54.

In terms of self and government sponsored students, private students always constituted more than 50 percent of the total. The Malaysian government sponsorships only peaked after the introduction of LEP. See table 5.12 for further details.

Table 5.12: Malaysian students in Japan by sponsorships (as of May, 1980, 1985 to 1993)

Sponsorships	'80	'85	'86	'87	'88	'89	'90	'91	'92*	'93*
Japanese govt.	61	109	135	165	197	232	254	262	252	254
Malaysian govt.	0	116	227	315	355	395	446	492	572	600
Private students	83	410	534	640	649	683	844	988	1,110	1,251
	(58%)	(65%)	(60%)	(57%)	(54%)	(52%)	(54%)	(56%)	(57%)	(59%)**
Total	144	635	896	1,120	1,201	1,310	1,544	1,742	1,934	2,105

Note : * Leong 1994:14

** percentage of total

Source : Chew et al. 1993. Table 6.2 p. 54.

The Japanese government provides Monbusho scholarships to foreign students, including those from Malaysia. There are seven programmes for the different types of higher educational institutions: (i) undergraduate; (ii) undergraduate (LEP); (iii) research and postgraduate; (iv) in-service training for teachers; (v) colleges of technology; (vi) professional training schools; and (vii) research. Of these, post graduate students made up the largest group, comprising 37.8 per cent of the total, followed by undergraduates who make up 25.3 per cent of the total. Table 5.13 provides further details.

Table 5.13: Number of Malaysian students awarded Japanese government (Monbusho) scholarships (1970 to 1991).

	'70	'75	'80	'85	'88	'89	'90	'91	'70-'91 Total (%)
Undergraduate	2	6	8	5	4	5	7	7	168 (25.3)
Undergraduate (LEP)	-	-	-	10	10	10	10	10	80 (12.0)
Postgraduate	2	5	7	15	20	25	27	27	251 (37.8)
In-service training for teachers	-	-	5	8	11	11	10	2	89(13.4)
College of technology	-	-	-	3	5	5	5	5	40(6.0)
Professional training school	-	-	-	-	7	8	7	8	36(5.4)
Total	4	11	20	41	57	64	66	59	664 (100.0)

Source : Chew et al. 1993, Table 6.4, page 57.

There are four programmes under the Look East Policy (LEP) education and training programme: (1) Academic Education Programme; (2) Technical Education Programme; (3) Technical and Industrial Training Programme; and (4) Executive Development Programme. Programmes 1, 2 and 4 are sponsored by the Malaysian government, while programme 3 is run on a cost-sharing basis between the Malaysian and Japanese governments (ISIS Malaysia, 1993). More than half of the students were sent for technical and industrial training, followed by others and academic studies. Since the

introduction of these programmes a total of 7,828 Malaysians have participated, as shown in table 5.14.

Table 5.14: Number of participants under LEP Programmes (as of June, 1994).

Year	Postgraduate & Undergraduate	Diploma/ Tech. Edu.	Executive development	Short courses/ Tech/Ind.training	Others	Total
1982	-	-	12	135	15	162
1983	-	24	-	429	30	483
1984	39	28	14	273	181	535
1985	45	30	6	253	181	515
1986	64	29	20	264	184	561
1987	79	30	16	430	186	741
1988	81	30	9	436	184	740
1989	84	29	8	396	192	709
1990	81	65	-	400	178	724
1991	88	70	5	333	202	710
1992	114	-	10	353	199	676
1993	135	93	30	190	150	598
Total	914 (11.7%)	506 (6.5%)	135 (1.7%)	4,213 (53.8%)	2,060 (26.3%)	7,828 (100.0%)

Source: Public Service Department (PSD), 1994.

Under LEP, many students are sent to Japan and Korea for technical and industrial training. All courses are 3-9 months in length. Trainees must pass an intensive six-month Japanese/ Korean language course, under the administration of the MARA Institute Technology. Since the introduction of this programme in 1992, a total of 2,282 Malaysians have participated (Chew et al. 1993:59). The average number of students in the 1980s was 241 per year and in the 1990s 139 per year, a decrease of 42 per cent .

The average number of students sent to Japan for further education between 1982 and 1994 was 600 students per year, and to Korea, 70. They were mainly sent for business administration and engineering science courses. In 1985, 26 students were sent to Korea for engineering degree courses (INTAN 1986:102). They learnt Japanese or Korean prior to their study at local institutions. Table 5.15 shows the number and destination of students sent by the Public Service Department (PSD) of Malaysia, for degree and post graduate courses from 1982 to 1994.

Table 5.15: LEP: Undergraduate and postgraduate students sent by year by country.

	Country of studies									Total
	Japan	USA	UK	Aust.	Korea	C'da*	N.Z*	Egypt	Jordan	
1982	162	-	-	-	-	-	-	-	-	162
1983	483	-	-	-	112	-	-	-	-	595
1984	535	-	-	-	60	-	-	-	-	595
1985	515	-	-	-	87	-	-	-	-	602
1986	561	-	-	-	74	-	-	-	-	635
1987	741	682	847	119	87	125	19	2	2	2,624
1988	740	1,304	242	110	81	269	49	8	-	2,803
1989	709	1,105	951	81	78	45	-	8	2	2,979
1990	724	806	845	57	71	9	2	20	-	2,534
1991	674	646	547	161	92	13	2	18	-	2,153
1992	710	468	1,024	217	67	43	31	12	-	2,572
1993	676	594	702	149	76	45	24	34	46	2,346
1994	598	120	-	126	71	-	32	-	-	947
Total	7,828	5,725	5,158	1,020	956	549	159	102	50	21,547

Source: Look East Policy Training Unit, PSD, as at July 1994.

Notes: C'da* Canada

N.Z* New Zealand

Korea and Japan were targeted (from 1982 to 1986) as the places for study immediately after the introduction of LEP in 1982. No students were sent to other countries under the LEP programme. Before this policy came into the picture, especially in the 1970s, the UK was the preferred place. However, after 1988, UK, US and Australia were back in line beside Japan and Korea. In other words, LEP did not allow PSD to concentrate only on Japan and Korea as the place of study, because the difficulty of the Japanese and Korean languages, and the convenience of the English language has made PSD send students to English-speaking countries again. There are signs of lack of consistency and integrated planning on human resource development programmes (why are a certain number of students sent to which countries and for what purpose?). Malaysia does not send its students to acquire the best technology from the best supplier, for example, Germany or France is less preferred because of the language barrier.

The actual number of students abroad is actually unknown, because nobody monitors this issue. In 1992, there were an estimated 54,790 students abroad, most of them in the US, UK and Australia, all English-speaking countries, as shown in the table 5.16.

Table 5.16: Malaysian students abroad in 1992.

Country	Number of Students	Per cent (%)
America	14,000	25.55
United Kingdom	11,955	21.81
Australia	10,900	19.89
India	4,500	8.21
Singapore	3,564	6.50
Taiwan	3,244	5.92
Egypt	2,403	4.83
Japan	2,205	4.02
Indonesia	2,000	3.65
Germany	19	0.03
Total	54,790	100.00

Source: Utusan Malaysia, 31 August 1993.

Of students studying abroad, 15.6 per cent were in the arts, 26.9 per cent were in the professions (for example, architecture, law and accounting), 5 per cent were in pure sciences, 23.8 per cent were in applied science, and 28.8 in technology courses (Utusan Malaysia, 31 August 1993). However, only 16 per cent (8,766 students) were sponsored by the Ministry of Education, Public Service Department, and state government. This indicates that most students (84 per cent) studying abroad are self or privately funded. Although self sponsored students did not have centralised organisation to arrange their study overseas, they outnumbered the number of students sent by government agencies.

Table 5.16 also indicates that only 4 per cent of students studied in Japan after ten years of 'Look East'. So the LEP, as far as student education is concerned, seems a failure. The main reason was that students did not want to study in Japan and Korea because of the language difficulties (Chew et al. 1993). Even in Japan in 1992, only 28 percent of the students were sponsored by the government of Malaysia, and 72 per cent were self sponsored (Chew et al. 1993:54). The majority of these self sponsored student have attended primary and secondary Chinese medium schools, and the close similarity between Chinese and Japanese Kanji characters helps them to understand Japanese knowledge and technology (Chew et al. 1993:81).

For technical and executive programmes, there were very small numbers of participants sent to Japan and Korea, with a total of 393 and 111 students respectively in 1992 (INTAN 1986:102; Chew et al. 1993:59). There were an average of 36 students and 10 executives sent every year (Chew et al. 1993). These students and executives were supposed to learn the best Japanese engineering and management practices and apply them when they were back in Malaysia. For the entrepreneurship development scheme

in 1983, 15 and 20 entrepreneurs were sent to Korea and Japan respectively, and in 1984, 24 were sent to Korea and 50 to Japan (INTAN 1986:102).

Formerly there were only four language units at the Malaysian Ministry of Education (MED), English, Tamil, Chinese and Malay. These languages are taught in primary and secondary schools, colleges and universities. In 1993, two more units, French and Japanese were established, and in late 1994 the German language unit was established. Since then, English, French, German and Japanese has been taught in all universities as an optional subject. Japanese, however, is taught at several secondary boarding schools, also as an optional subject. These schools get their Japanese teachers from Japan on a contract basis (Ministry of Education 1994). From an interview with an officer from the Language Unit, MED, it seems that the teaching of other foreign languages is not considered as serious as English.

The MED is moving to introduce Japanese as a subject in all secondary schools, once it has enough teachers for the subject. According to the MED, 10 teachers a year (compared to more than 100 teachers sent on English courses in the UK) will be sent to Japan to pursue a degree in Japanese under the Public Service Department's scholarship. So far 50 teachers have been trained in Japan, and the first 10 have already returned to Malaysia (in 1994) and 8 boarding schools offer Japanese as a subject (New Sunday Times July, 1994).

Gateway to Japan.

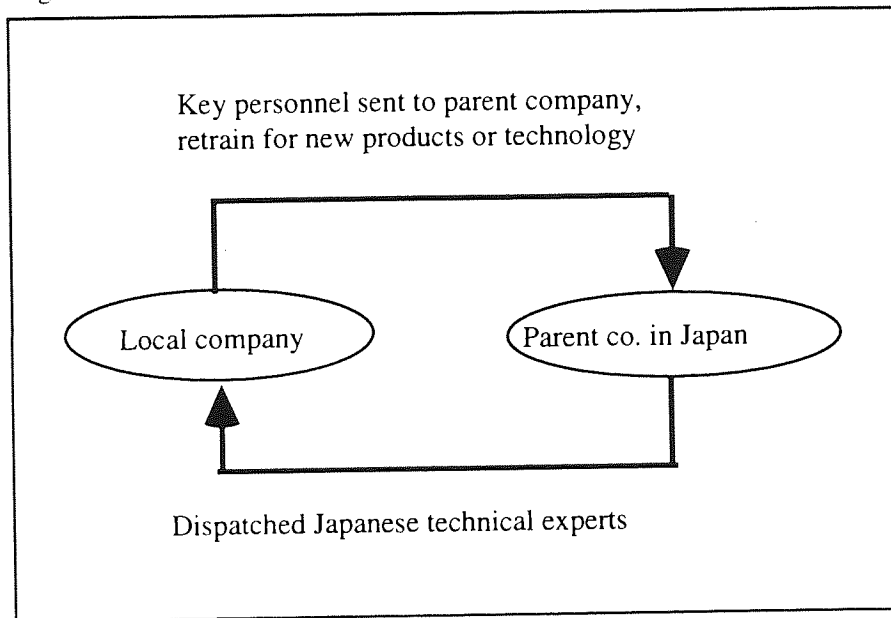
In 1982 also, there was a two-year preparatory programme conducted by Japanese language and academic instructors in Malaysia. The building and facilities were funded by the Japanese government at a cost of MR 13 million and located at the University of Malaya, Kuala Lumpur. The first 15 Japanese lecturers were brought in 1982 to serve this purpose. The first batch of 39 students left for Japan in 1984, and up to March 1992, the total was 665 students (Chew et al. 1993).

The fields that these students should study are engineering and social science with a ratio of 75:25. According to the PSD, at present the targets are nearly being met: of 665 student sent, 28 per cent were in social sciences and 72 per cent in engineering. The top five disciplines by rank are electronic engineering, mechanical engineering, business administration, electrical engineering, business management and information engineering.

Private Company-sponsored programmes.

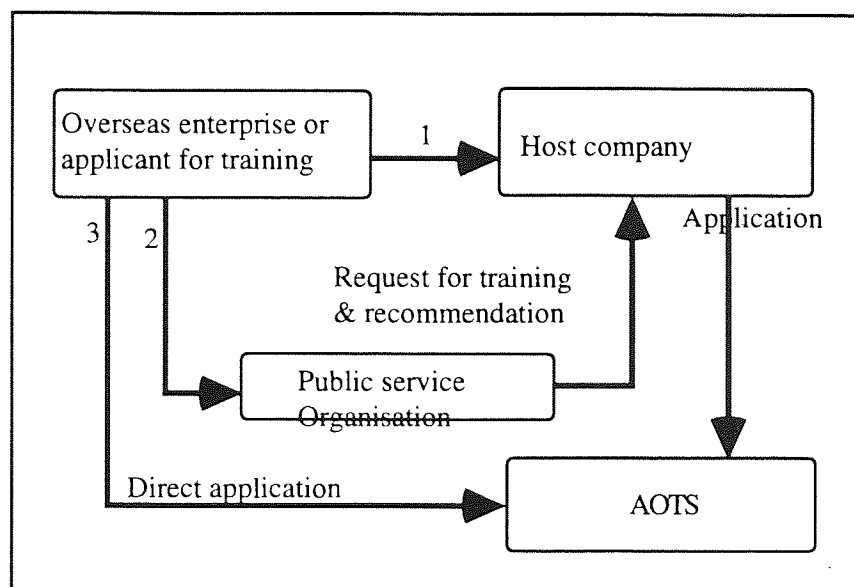
Many Japanese companies practise internal job-related or on-the-job training (Dore & Sako 1989; Pillai 1994). 'Internal' here means arrangements made between affiliates and parent companies only. It is done both in plant and at the parent company in Japan. In the first year of operation, in most Japanese transplants, efforts were put into laying the foundation for operations (examples are fixing of machinery, plant layout arrangement and production trial run) by intensive dispatching of technical experts from Japan. At the same time, a number of key personnel were given training for a certain number of months or years at a plant in Japan. After their return to Malaysia, these people played a central role in the operation of the Japanese companies. This system continued to be used later in the introduction of new products and new technologies (Fukuchi 1993). See figure 5.3.

Figure 5.3: Continuous training between local company and parent in Japan.



There are also industrial workers who get their training and development through the Association for Overseas Technical Scholarship (AOTS). Application for AOTS regular training programmes is usually made through the host organisation in Japan receiving the trainees, which then submits to AOTS. Applications can also be made via the introduction or request of a public service organisation, including AOTS Alumni Societies. Direct application to AOTS can only be made in the case of management training courses where no host organisations are involved (Chew et al. 1993:42). Figure 5.4 shows the flow of application procedures.

Figure 5.4: Three application methods for AOTS regular training programmes.



Source: AOTS 1994

Although some companies send their employees in conjunction with AOTS, most are sent on a private basis. As a result, it is very difficult to gauge the actual number of Malaysians who have received training in Japan under their companies' sponsorship. However, table 5.17 give some idea of the scale of such activity. These were established MNCs and sent their workers to their parent companies or associated companies to Japan like Matsushita, Mitsubishi Motor Corporation and PROTON.

Table 5.17: Malaysian employees sent by their companies to be trained in Japan.

Company	Duration	No. of employees sent to Japan/ Dispatched Japanese Technical Experts
PROTON *	1983 to 1994	700
Mitsubishi Motor Corporation*	1991 to 1992	200
Matsushita Electric Co. (M) Bhd.**	1980 to 1992	1,200

Sources: * Leong, S., 1994.p.8

** Chew et al. 1993.p.45

Most PROTON and Matsushita employees were sent for production and management related courses. The training lasts from one week to two years. The problem in these training programmes was language and communication and also the difficulty of retaining trained staff.

Other organisation-sponsored programmes.

There are other organisations which have played a role in the development and exposure of Malaysians to the influence of Japanese methods of production and cultural influence. The organisations, participants, period and their programmes are listed in table 5.18.

Table 5.18: Other organisation-sponsored programmes.

Organisation	Participants	Duration	Programmes
JICA*	3,148(M) 2,822(J)	1980 to 1990 1980 to 1990	Agriculture, manufacturing and services Survey team.
JOCV*	4,210 (M) 441(J)	1980 to 1990 1980 to 1990	Agriculture, manufacturing and services
CIAST*	6,536 (M)	May 1984 to Dec. 1993	2,013 technical courses
AOTS	4,200 (M)	1959 to 1990	Technical, vocational, business management and entrepreneurial
The Japan Foundation	400 + (M) 300 + (J)	1972 to 1991	Diverse cultural activities; Exchange of Persons Programmes and Japanese Studies Programmes.

Notes: (M) Malaysian employees.

(J) Dispatched Japanese employees.

JICA* Japan International Cooperation Agency

JOCV* Japanese Overseas Cooperation Volunteers

CIAST* Centre for Instructor and Advanced Skill Training

Source: Chew et al. 1993, p 35 - 48

Comparative training programmes instituted by MNCs.

It is reasonable to say that such forms of training represent a very important method for the transfer of technology by MNCs to the host country and for the long-term survival of the company. In a survey of 28 electronics MNCs in Malaysia by Ismail (1993), all these MNCs, whether from Japan, the US or Europe, were implementing on-the-job training. However the Japanese companies were giving more local off-the-job training to their employees compared with the rest. In terms of overseas training, all MNCs seem to pay little attention to it. For further details see table 5.19.

Table 5.19: Training programmes instituted by the MNCs for the various categories of employees (as percentage of total employees in the categories) by country/region of origin of MNCs.

Employee category	Types of training								
	On-the-job(%)			Local off-the-job(%)			Overseas(%)		
	US*	Jap*	Eur*	US	Jap	Eur	US	Jap	Eur
Production	100	100	100	35	40	30	0	2	0
Maintenance	100	100	100	20	25	20	10	15	10
Prof. & Tech.	100	100	100	25	35	30	30	30	40
Managerial	100	100	100	15	10	10	25	30	30

Source: Ismail 1993, Table 5.1, page 232.

Notes: US* United States MNCs

Jap* Japan MNCs

Eur* Europe MNCs

Japanese aid and capital development.

The government of Japan is involved in financing Malaysian development by various means, external market loans, external project loans, Overseas Economic Corporation Fund and Official Development Assistance. The amount of assistance has increased

from year to year, showing the significant role of Japan in financing Malaysian industrialisation and development. The amount of financial assistance channelled to Malaysia by types of funds and grants is shown in table 5.20.

Table 5.20: Japanese financial assistance, various channels (RM. million)

Year	Market loan*	Project loan*	OECE**	ODA***	Total
1973	-	121.0	-	-	121.00
1974	-	202.0	-	-	202.00
1975	-	341.0	-	-	341.00
1976	-	428.0	-	-	428.00
1977	-	492.0	-	-	492.00
1978	-	571.0	-	-	571.00
1979	-	703.0	-	-	703.00
1980	-	845.0	-	-	845.00
1981	-	953.0	-	-	953.00
1982	473.0	1,044.0	-	-	1,517.00
1983	1,065.0	1,237.0	-	-	2,302.00
1984	1,627.0	1,738.0	-	254.14	3,619.14
1985	2,276.0	2,448.0	-	125.59	4,849.59
1986	3,545.0	3,318.0	-	37.77	6,900.77
1987	3,747.0	4,047.0	-	276.39	8,070.39
1988	3,761.0	3,996.0	-	24.83	7,781.83
1989	3,318.0	3,022.0	-	79.63	6,419.63
1990	2,415.0	3,507.0	-	372.62	6,294.62
1991	2,554.0	3,777.0	5,251.00	-	11,582.00
1992	2,285.0	3,436.0	-	-	5,721.00

Source: * Ministry of Finance, Economic Report, various issues

** Overseas Corporation Economic Fund (OECE) as of 31 March 1991

*** Aslam & Piei 1994, Appendix A1.5, page 42.

Japan is the largest donor in the world, and since 1980 Malaysia has been among the top ten major recipients of Japan's ODA, as we can see from table 5.21.

Table 5.21: Ten major recipients of Japan's ODA (in \$ US millions).

1970		1980		1990	
1. Indonesia	125.8	Indonesia	350.3	Indonesia	867.8
2. S. Korea	86.7	Bangladesh	215.1	China	723.0
3. Pakistan	39.5	Thailand	189.5	Philippines	647.4
4. India	32.7	Burma	152.4	Thailand	418.6
5. Philippines	19.2	Egypt	122.9	Bangladesh	373.5
6. Thailand	16.9	Pakistan	112.4	Malaysia	372.6
7. Iran	12.0	Philippines	94.4	Turkey	324.2
8. Burma	11.9	S. Korea	65.6	Pakistan	193.5
9. China	9.5	Malaysia	65.6	Sri Lanka	176.1
10. Singapore	5.7	Sri Lanka	44.7	Poland	149.8

Source: Hiraoka 1995, table 3, page 718.

After the Second World War, Japan, South Korea and Taiwan were financially supported by America to reconstruct their economies, because of America's ideological interest in Asia (Nester 1990). But today the dependency of Japan and S. Korea is over and they finance their industrialisation through their own savings (Black 1988;

IMF 1991). Before they were the 'workshops' of America, today they are the economic giants of Asia. The Japanese companies financed their investments through multi-sources such as undistributed profits, revolving funds, Japanese banks and foreign finance houses, and parent company sources (Denker 1994:68).

On the other hand, the average Japanese investment application for the period 1988 to 1992 was only 19 per cent of the total application. Investment peaked at the end of the 1980s and then declined in the early 1990s. Although investment in ASEAN countries increased by 5 per cent, to approximately ¥ 3.9 billion in the same period as claimed by Fukuchi (1993), this was not true in Malaysia. The declining investment trend, from 21 percent in 1988 to 12 percent in 1992, can be seen in table 5.22.

Table 5.22: Japanese investment applications received 1988 to 1992.

Year	Foreign investment in MR million	
	Japanese (%)	Total
1988	1,733.1 (21)	8,416.0
1989	3,894.9 (35)	11,010.9
1990	6,614.9 (22)	29,823.0
1991	1,485.4 (7)	20,141.6
1992	1,447.3 (12)	11,847.4

Source: MIDA 1993.

The picture becomes clearer by looking at the amount of Japanese investment in 1993 compared with 1992: It fell from MR 234.2 million to MR 171.0 million, a drop of 27 per cent. The reasons were decreased investment enthusiasm in manufacturing, and economic difficulty in industrialised countries. It was also argued that Japanese investment in 1987 and 1991 had 'apparently yielded a very poor return', that more cash flowed out than came in (Financial Times, 15 June 1993). In fact UK and Danish investments were ahead of Japan in the first quarter of 1993, followed by US, Singapore, Taiwan, Netherlands, Norway, Germany and South Korea. The amount of investment by these countries is based on foreign equity and loans attributed to foreign interest. The comparative investment between these countries can be seen in table 5.23.

Table 5.23: Top ten foreign investors in first quarter of 1993 in RM.

Countries	No. of Projects	January-March 1993		January-March 1992	
		No. of Projects	Amount (RM)	No. of Projects	Amount (RM)
UK	4	4	458,820,000	4	462,446,980
Denmark	2	1	203,400,000	1	14,775,000
Japan	24	32	171,017,711	32	234,215,742
US	8	12	151,842,000	12	686,163,860
Singapore	37	50	94,950,131	50	80,349,415
Taiwan	23	29	67,588,690	29	125,254,325
Netherlands	1	3	55,250,000	3	6,300,000
Norway	1	-	24,400,000	-	-
Germany	2	5	23,200,000	5	5,836,000
South Korea	2	11	8,993,215	11	59,399,863

Source: MIDA, 1993

Trade Balance between Malaysia and Japan.

The overall Malaysian balance of trade between 1981 and 1993 was unfavourable. Only in 1982 and 1991 was there a positive balance, the rest were in negative balance, as shown in table 5.24.

Table 5.24: Malaysia: Balance of trade, 1981 to 1993 (in RM. '000)

Year	Imports	Exports	Balance of Trade
1981	27,109,393	26,603,845	-505,548
1982	28,108,229	29,023,005	914,776
1983	32,771,199	30,795,188	-1,976,011
1984	38,646,855	32,925,896	-5,720,959
1985	38,016,732	30,437,826	-7,578,906
1986	35,318,559	27,921,362	-7,397,197
1987	45,224,893	31,933,871	-13,291,022
1988	55,260,033	43,293,357	-11,966,676
1989	67,824,493	60,858,106	-6,966,106
1990	79,646,373	73,118,572	-527,801
1991	94,496,634	100,831,065	6,334,431
1992	103,656,705	101,440,477	-2,216,228
1993	121,214,199	117,423,376	-3,790,823

Source: Malaysian Department of Statistics, 1994.

What does the Malaysian-Japanese trade balance look like? LEP actually makes the balance of trade favourable to Japanese. In table 5.25 we can see that Malaysia has faced a continuous unfavourable trade balance with Japan since 1983.

Table 5.25: Malaysia-Japan: Balance of trade (in RM.).

Year	Export FOB	Import CIF	Balance of Trade
1983	6,429,232,716	7,768,677,771	-133,945,055
1984	8,632,861,944	8,646,090,453	-13,228,509
1985	9,272,030,328	7,006,019,139	266,011,189
1986	8,053,055,975	5,722,013,378	2,331,042,597
1987	8,824,505,863	6,918,128,945	2,106,376,918
1988	9,347,470,460	10,153,439,162	-805,968,702
1989	10,904,258,500	14,721,850,824	-3,817,542,324
1990	12,590,469,493	19,071,305,202	-6,480,835,709
1991	14,839,608,946	26,289,248,848	-11,449,639,902
1992	13,921,110,789	26,366,090,418	-12,444,979,629
1993	15,729,206,112	32,229,631,751	-16,500,425,639

Source: Department of Statistics, 1994.

Only in 1985, 1986 and 1987 was the Malaysian trade balance favourable. These positive years were due to huge exports of mineral fuels and other natural resources (Woon 1989:37). However, the prices of these commodity exports were normally unstable in the long run. After that (from 1988 to 1993) the trade deficit widened. What products are exported and imported most? Table 5.26 shows the main products traded between the two countries.

Table 5.26: Malaysia-Japan: Export structure in 1993 by product groups (RM. million).

SITC Classification number	Value	Export to Japan	
		Composition (%)	Growth rate (%)
0 Foodstuffs, animals	357.7	2.3	120.8
1 Beverages, tobacco	2.8	0.0	466.7
2 Raw materials	3,218.3	20.5	98.9
3 Mineral Fuels	4,307.4	27.4	95.7
4 Animal Fats, vegetable oils	424.1	2.7	103.7
5 Chemicals, synthetic resins	321.3	2.0	102.4
6 Product by material	1,387.6	8.8	175.2
7 Machinery, transportation equipment, electric machinery	4,613.4	29.3	140.5
8 Sundries	1,051.7	6.7	122.1
9 Special products	45.1	0.3	125.3
Total	15,729.2	100.0	144.4

Source: Malaysian Department of Statistics, 1994.

Table 5.26 shows that the top three items exported to Japan are machinery, transportation equipment and electric machinery (29 per cent), mineral fuels (27 per cent), and raw materials are (21 per cent). In other words, commodities such as mineral fuels and other raw materials are still the biggest exports. On the other hand, import pattern is headed by machinery, transportation equipment and electrical machinery (68 per cent), followed by products by material (17 per cent) and chemicals, synthetic resins (6 per cent) and also sundries (6 per cent). See table 5.27.

Table 5.27: Japan-Malaysia: Import structure in 1993 by product groups (MR million).

SITC Classi- fication number	Value	Imports from Japan	
		Composition (%)	Growth rate (%)
0 Foodstuffs, animals	113.0	0.4	114.4
1 Beverages, tobacco	6.2	0.0	80.5
2 Raw materials	285.2	0.9	125.6
3 Mineral Fuels	65.1	0.2	90.9
4 Animal Fats, vegetable oils	7.6	0.0	176.7
5 Chemicals, synthetic resins	2,026.9	6.3	112.3
6 Product by material	5,392.2	16.7	113.6
7 Machinery, transportation equipment, electric machinery	21,849.0	67.8	123.3
8 Sundries	2,033.9	6.3	121.1
9 Special products	450.5	1.4	1,603.2
Total	32,229.6	100.0	122.1

Source: Malaysian Department of Statistics, 1994.

Now we will explore Japanese imports from Malaysia, and whether there are any similarities. The record shows, Japan's imports are mainly raw materials (34 per cent), industrial products (32 per cent), mineral fuels (28 per cent) and machinery equipment (21 per cent). The overall import structure can be seen in table 5.28.

Table 5.28: Japanese imports from Malaysia in 1993 (in US \$ 1,000).

Product Groups	Value	Composition (%)	Growth Rate (%)
Total Amount	7,642,031	100.0	16.3
Foodstuffs, animals	173,676	2.3	17.0
Raw materials	2,606,817	34.1	13.8
Mineral fuels	2,144,845	28.1	2.1
Industrial Products	2,461,089	32.2	35.0
Chemical Products	189,603	2.5	3.5
Machinery and equipment	1,604,196	21.0	30.9
General machinery	441,075	5.8	44.3
Electrical machinery	1,022,131	13.4	31.4
Transport equipment	11,347	0.1	48.4
Precision apparatus	129,643	1.7	-3.2
Textiles	95,389	1.2	9.7
Metal products	88,622	1.2	0.2
Non-metal mining products	24,489	0.3	5.9
Other products classified by materials	347,538	4.5	163.3
Sundries	111,252	1.5	33.0
Others and special products	255,603	3.3	21.3

Source: JETRO 1994.

This imports structure is further shown by individual products imported by Japan in recent years, most of which are still commodities such as liquid natural gas, crude oil, plywood, sawn tropical timber, other sawn logs, palm oil, thin boards and boards for plywood, natural rubber, gasoline; and manufactured goods such as computer parts, colour televisions, air-conditioners, radio cassette players including kits, piezoelectric crystal element and wire communication equipment parts. Detail of the values of those items are shown in table 5.29.

Table 5.29: Major Japanese imports from Malaysia in 1993 (in US \$ 1,000).

Products	Value	Composition (%)	Growth rate (%)
Liquid natural gas	1,344,927	18.9	3.5
Crude oil	663,335	2.4	3.1
Plywood	216,407	10.8	508.0
Sawn tropical timber	189,903	66.6	46.1
Other sawn logs	160,053	24.7	18.0
Palm oil	154,485	96.2	12.5
Computer parts	127,547	4.9	78.3
Thin boards and boards for plywood	124,520	58.8	74.2
Colour televisions	118,598	19.0	72.4
Air-conditioners (finished products)	115,878	54.3	2.9
Natural rubber	75,998	13.4	-7.1
Radio cassette players, including kits	74,820	44.3	20.5
Gasoline	60,802	2.2	-19.2
Piezoelectric crystal element	57,176	45.2	35.8
Wire communication equipment parts	56,357	17.0	533.3

Source: JETRO 1994.

The highest growth rates are wire communication equipment parts and plywood, with negative growth rate in gasoline and natural rubber. Japan's three fastest-growing imported items from Malaysia are central processing units, computers and instrumentation survey equipment parts. Auto components which are also in demand from Japan include electrical equipment and car stereos. On the other hand, Japan's rapidly declining import items from Malaysia are kerosene for jet engines, rare earth metals and tennis rackets (JETRO 1994).

Looking at Japan's export to Malaysia in 1993, more than 70 per cent were industrial products such as electrical machinery, general machinery, and transport equipment; followed by metal products (11 per cent). Likewise Japan's exports to Malaysia were dominated (more than 75 per cent) by audio visual equipment, IC parts, semiconductor devices. Japan's three fastest-growing export items are telephone and telegraph switchboards, tankers (609 per cent) and machining centres (286 per cent). Car related parts and components are also much in demand, such as automatic adjusting devices (178 per cent), iron and non-alloyed steel (175 per cent), wire transport communication equipment (163 per cent) and air-conditioners (155 per cent) (JETRO,1994).

The explanation above shows the interdependency between Malaysia and Japan on natural raw materials, parts and components, and machinery related to information technology and the automotive industry. Japan imported raw materials, parts and components at low prices from Malaysia, while exporting expensive processed electrical and electronic products, machinery and automotive components to Malaysia.

The transfer of Japanese technology.

Although Japanese technology is associated with Malaysian cars, air conditioners and computers, still there were comments that the Japanese failed to transfer their technology to Malaysian companies at the rate expected by their local partners (see chapter 1, page 5 & 6). A survey carried out in 1990 by the Japan-ASEAN Cooperation Committee indicated that technology transfer by Japanese-affiliated companies progressed smoothly only in 'hard technology' aspects, such as assembly techniques. In the future, however, it will be necessary to attempt to localise the 'soft technology' aspects such as management and administration techniques, in response to a shift to high-technology transfer (Keizai Doyukai 1993:87).

According to another survey of 230 Japanese affiliate companies in Malaysia, there was a high degree of technology transfer, especially in simple manufacturing and labour management technology. Development technology and business management technology were the kind of technologies being transferred least (JACTIM 1994).

Labour management and simple manufacturing techniques are the technologies most transferred. The full responses and analytical results are presented in table 5.30.

Table 5.30: The Status of Technological Transfer Within Japanese Affiliates.

Degree of transfer Item	100%	75%	50%	25%	0%	Other	Total
1 Simple mfg tech.	73	35	11	4	3	10	136
2 Advanced mfg.	26	32	16	14	4	29	121
3 Quality control	30	48	31	23	1	3	136
4 Mfg. control	36	50	36	11	1	1	135
5 Production	14	30	40	37	7	4	132
6 Purchasing	37	31	35	28	4	2	137
7 Development tech.	1	6	15	42	62	1	127
8 Labour mgt.	76	34	15	7	3	1	136
9 Financial mgt.	38	56	26	6	9	1	136
10 Sales mgt.	22	24	19	24	21	22	132
11 Business mgt.	7	13	34	38	37	2	131

Source: MAJECA-JAMECA 1994:69.

The Japanese seem reluctant to transfer their automobile-making technology in the national car project. It currently uses 80 per cent local components and parts, but the most complex parts, particularly engine and transmission, are still imported from Japan, so the most important technology in car manufacturing is still handled by the Japanese. It has been argued that, by transferring this type of know-how, might lose their competitive edge in the world market. (New Straits Time, July 1994).

Technological development is very much related to the internal research done by organisations and to imported technology (Dahlman & Westphal 1983; Lall 1992; Ali 1922). How far are the Japanese affiliates and others MNCs interested in having their research and development transferred to countries like Malaysia? The result of a sample survey indicates that in general MNCs do not have research and development activity in Malaysia. They would rather have it in their own home country, whether that is Japan, the US or in Europe (Henderson 1989; Nester 1990). Reasons given for retaining R&D at home or in Singapore and not in Malaysia were: the need to be close to marketing personnel, the long time taken to develop capable R&D engineers, who in Malaysia are very scarce; high pay for R&D engineers and the high turnover rate of engineers (Ismail 1993:246-7).

The level of engineering transfer in the electronics industry is very high and the most advanced manufacturing systems can be seen in electronic factories (such as the use robots and computer systems and computer aided machines). But sometimes Japanese companies are not keen to transfer engineering technology for fear of losing their competitive edge. For example, out of 1,000 Japanese MNCs operating in Malaysia, only Matsushita and AIWA have their technology centres and test facilities there

(Henderson 1989; Baba & Hatashima 1995). As pointed out by Isao Ichikawa, MD of Hitachi Consumer Product (M) Sdn. Bhd.:

We are in an engineering war in the world. If one company is anxious about the transfer of engineering and does not want to do so, that company will be able to survive in the engineering war. But even if the company wants to transfer the engineering, if the receiver side does not have the system for receiving it, it is a meaningless thing.

Ichikawa, 1993:20

The development of technology would be possible, when two sides are deeply involved- that of making the offer of it and that of accepting the offer. As a Malaysia Industrial Development Authority officer mentioned, " the Americans and British are more open compared with Japanese in transferring their technology to us. The Japanese still control the management posts tightly". We see this claim confirmed in the JACTIM survey. The composition of managers in Japanese affiliated companies shows most senior managers (including directors and general managers) are Japanese (69 per cent in 1994 and 65 per cent in 1993) and the percentage of locals was small (35 per cent in 1993 and 31 per cent in 1994). Only middle manager (including manager and supervisor) posts were mostly held by Malaysians (91 per cent in 1994 and 89 per cent in 1993). However the trend shows that fewer local senior managers were taken on (31 per cent compared to 35 per cent). For more details see table 5.31.

Table 5.31: Composition of senior and middle managers (1993-1994).

Post	Percentage			
	Japanese		Malaysian	
	1993	1994	1993	1994
Senior manager	65%	69%	35%	31%
Middle manager	11%	9%	89%	91%

Source: JACTIM 1994:72.

The picture is made clearer by looking at the comparative data provided by Ismail (1993), which shows that none of the Japanese companies had appointed a Malaysian managing director in their affiliates, as compared with US and Europe. The appointment of locals into their upper and middle management groups also shows that the Japanese companies are less interested in it. The details are shown in table 5.32.

Table 5.32: Localisation of top and middle management.

Country of origin	No. of Malaysian M.Ds*	Percentage of Malaysian in middle and upper management**
US	9 out of 16	90
Japan	0	40
Europe	2 out of 7	60

Note: * Data for the US firms are obtained from the interview survey and annual report of the Malaysia-American Electronics Association while data for Japanese and European firms are solely derived from the interview survey.

** Middle and upper management are defined as employees above supervisory level; figure are estimates based on discussion with managers.

Source: Ismail 1993, Table 5.2.p.240.

Most key posts, such as director, general manager and other managerial posts are occupied by personnel dispatched from Japan. In another study of 40 Japanese electronics companies, though over 50 per cent of the managerial staff were Malaysian, all the companies surveyed were headed by Japanese managing directors (Guyton 1994:80). Given these facts, the prospects of promotion for local staff are slim, regardless of how hard they work, so motivation to work long hours is low. European and American companies, on the other hand, employ a large number of local personnel (JACTIM 1994; Malaysian Industry, July 1995).

Moreover, English or Malaysian operation manuals are not adequately prepared at Japanese owned companies. This leads to a lack of technology transfer to the local staff through written materials. Personnel dispatched from Japan have a very low Malaysian or English proficiency, making communication difficult. European companies, in contrast, prepare detailed manuals. Fax messages and telephone conversations with the head offices in Japan, customers of Japanese-owned companies in Malaysia, and within these companies, are in Japanese. For this reason, it is difficult for local employees to grasp the flow of work, and they feel left out. Under these circumstances, they can hardly develop a sense of unity with the company (JACTIM 1994). But according to a Malaysian Chairman on a Japanese company, language is not the main problem, as compared to the readiness of the Japanese to transfer the technology (Malaysian Business 1994).

According to a Japanese expert at PROTON interviewed by me, in Japan, senior workers spend five to ten years at the workplace teaching junior workers the required skills. In Malaysia, both junior and senior workers quickly become competent after two years in the same job, and expect to be given higher pay and to be promoted. When their demands are turned down, they leave the company to work for a rival company. Japanese personnel managers find it hard to accept this fact. This hindered the kaizen and technological development process, because skills acquired were not capitalised within the company where the workers trained, but were brought out as they left it (JACTIM 1994).

There are cases where the trainees do not show a willingness to learn (JACTIM 1994 Malaysian Industry, July 1995). This leads to the loss of enthusiasm among instructors. Moreover, engineers do not like to dirty their hands at the workplace. As a consequence, technology transfer at the manufacturing site is minimal (JACTIM 1994).

Generally speaking, the level of technical education at vocational training schools, technical schools, special technical schools, and universities is still low. The number of

such facilities is not sufficient, and personnel required by industries are not adequately supplied in term of quantity and quality. For this reason, job seekers hold the upper hand in the job market (JACTIM 1994).

5.6 Conclusion.

Japanese foreign direct investment (FDI), like other FDIs, has an enormous positive effect on infrastructure development, exports income and employment creation. Their presence in Malaysian economic and industrial development has switched the economic and technological dependency of Malaysia from Britain to Japan. This was made possible by a strong 'co-operative working culture' between more than 1,000 companies, 22 private agencies and 12 public agencies, MITIj and parent companies in Japan. The linkage with local procurements and sales was minimal compared to the amount of linkage occurring between subsidiaries of the same company, or between firms of the same *keiretsu* group (Guyton 1994).

Information exchanges between them are conducted through the Japanese MDs' meetings. This platform is used not only to discuss the problems, but also thrash out the solutions. In fact, they have regional MDs' meetings for ASEAN (Keizai Doyukai 1993). The Japanese took the economic advantage with their strong structural and operational arrangements (Political-economy). The chances of success were great because Malaysia was being opened up with investment policies encouraging MNCs or foreign investment (as discussed in chapter 4). Since Malaysia adopted LEP in 1982, many Japanese MNCs have arrived to take advantage of the regional economic development of ASEAN, taking Malaysia as their procurement, production and marketing base.

Joint-venture alliances are supposed to be the best way of transferring technology. Has it taken place as expected? To what extent has the process taken place? What are the factors contributing to the process? All these questions will be answered in chapters 6 and 7. First, we explore the transfer process in 'PROTON', a national car project of Malaysia.

Chapter 6: Case Study 1: PROTON On A Learning Curve.

6. 1 Introduction.

It was explained in chapter 4 how Malaysia, in the thirst for technology and capital had been opened up so that foreigners, especially the Japanese, could take part in its economic development and industrialisation. It was also seen that the policies designed were not sufficiently supported by instruments to develop Malaysia's own technology. Then, in chapter 5 it was shown how the Japanese became deeply involved in Malaysian economic development. They came to reap the profits from Malaysia, but not necessarily to nurture technological development. Now, this chapter will examine empirically the level of JST or Japanese work organisation and management techniques as practised in one of the most prestigious strategic alliances: PROTON.

The establishment of the PROTON-Mitsubishi alliance in 1982, was one of the prime Look East Policy (LEP) projects to develop Malaysian technology. It was intended to enhance heavy industrial development, and Malaysians were envisaged as learning and practising the best Japanese work organisation, work habits, behaviour and management techniques (Jomo 1994; Lim, C.P. 1994; Machado 1994). Though there were Volvo (1967) and Malaysian-Japan assemblers like UMW-Toyota and Nissan-Tan Chong Motors prior to the establishment of PROTON, they were mere assemblers of imported panels and components. PROTON was the first assembler to manufacture panels and other components locally. It has been argued that JST has been practised and transferred more successfully in the automobile industry because of its higher technicality (Florida & Kenny 1991; Kenny & Florida 1993, 1995; Oliver & Wilkinson 1992; Abo 1994). In South Korea, Hyundai has manufactured its own engine since 1991, that is, after 24 years working together with Ford (since 1967), and with Mitsubishi. The PROTON-Mitsubishi alliance has now been going for more than a decade. Although PROTON has not yet been able to produce its own engine, this alliance is the best case to test to what extent JST is practised, not only from the perspective of whether it is fulfilling the objectives of LEP, but also to test the degree of transfer in the best sector and the best project to be studied.

This chapter begins with PROTON's corporate profile, then looks at Japanese influence on manufacturing systems, quality management, human resources management and development, industrial relations and supplier and assembler relationships.

6.2 PROTON's profile.

PROTON was incorporated in May 1983, as a subsidiary of the Heavy Industries Corporation of Malaysia Berhad (HICOM), and listed on the Kuala Lumpur Stock Exchange (KLSE) in March 1992. Its authorised capital was RM. 1,000 Million and paid-up capital of RM. 509 Million (as of March 1994). The equity of PROTON is owned by HICOM (27.5 per cent), the Ministry of Finance (17.5 per cent), Mitsubishi Group (17.2 per cent), other government agencies (8.2 per cent) and other local and foreign investors (29.6 per cent) (Corporate Planning, PROTON 1994). The plant has a total area of 862,000 square metres (a main factory, casting factory, engine & transmission factory, R&D building, semi-high-speed test track, administration block, car pool and other buildings). The PROTON plant has been upgraded from a single-model to multi-model production system.

To date there are 13 subsidiaries and affiliates of PROTON with various business activities, with an average of 45.0 per cent equity ownership belong to PROTON, as shown in Appendix 9. According to the MD and the Corporate Planning manager, it is the intention of PROTON to have more strategic alliances with other companies in future. It is important to note that Edaran Otomobil Nasional (EON), the sole distributor in Malaysia, is not a subsidiary of PROTON, but a subsidiary of HICOM. EON has about 232 service and part centres throughout Malaysia. Of those, 47 per cent are franchised out (Utusan Malaysia, August 1994).

In the beginning, using Mitsubishi's technology, PROTON concentrated on producing cars between 1,000 and 1,600 cc only, so the market segment was limited. To ensure that it could secure and dominate the market, PROTON is now producing cars below 1000 cc (with PRODUA) and 1,800 to 2,000 cc (with AMC at Pekan, Pahang).

In September 1995, together with Usahasama PROTON-DRB Sdn. Bhd. (USPD), and with Citroen technology, PROTON increased its model line-up and the new model will be launched in 1996 (PROTON Focus, October-December 1995).

As PROTON matured, supported by massive import duties on foreign passenger cars (Jomo 1994b; Machado 1994), its share of the passenger car market rose from 11 per cent in 1985 to 67 per cent in 1993 (PROTON Corporate Profile, 1994:6; Tharumagnanam 1994:55). Many analysts have argued that its market leadership was made possible not so much because of product quality and corporate capability as because of the full protection given by the government (Machado 1994; Jomo 1994b). This protection strategy for a newly created national car company is not new, but has been practised by other cars' manufacturing countries (Chang 1981). In fact, the 'prohibition on direct foreign investment in the Japanese motor industry' and 'high

tariff' were imposed by Japan in the 1950s to let Toyota grow and develop (Womack 1990:50).

The production capacity improved from 80,000 (1985) to 120,000 (1993) per year, but the limited local demand forced PROTON to seek an export market. Because exports of the PROTON series were not provided for in the agreement with Mitsubishi (Bartu 1992:75), in 1986 the Export Department was established, with 12 staff, to organise foreign markets. In the first year of operations, the 17,000 units produced were all marketed locally. In 1989, 600 cars were exported to the UK and other countries, and in 1993 19,400 cars were exported to 14 countries, with production of domestic cars rising to 83,400 units. The export market has increased from 0 to 19 per cent, but the quantities are very small, and the domestic market has been reduced from 100 per cent to 81 per cent. The details of the export market expansion can be seen in table 6.1.

Table 6.1: PROTON: Production and markets expansion of (1986 to 1993).

Year	Production units '000 (%)		Total (100%)
	Domestic	Export	
1986	17.0 (100)	0.0	17.0
1987	20.5 (100)	0.0	20.5
1988	30.0 (98)	0.6 (2)	30.6
1989	44.5 (93)	3.4 (7)	47.9
1990	59.3 (80)	14.9 (20)	74.2
1991	74.8 (85)	13.0 (15)	87.8
1992	88.3 (84)	16.4 (16)	104.7
1993	83.4 (81)	19.4 (19)	102.8
Total	417.8 (86)	67.7 (14)	485.5

Source: PROTON Corporate Profile, 1994.

The top three foreign markets are the UK (86 per cent), followed by Singapore (10 per cent) and New Zealand (1 per cent). All exports go to Commonwealth countries and Indonesia. The list of export markets and their development is shown in appendix 10. Now we look into the financial performance of PROTON since 1986. Sales increased by an average of 32 per cent from 1986 to 1993, but PROTON suffered accumulative loss of MR 137.2 million for the first four years of operation (Proton Corporate Profile 1994). It moved into profit in 1989 (the fifth year of operation), and retained profit was favourable for the first time, by MR 20.0 million, in 1990. The overall financial performance is depicted in table 6.2.

Table 6.2: PROTON: Financial performance (financial year ended 31 March).

	Sales Volume (‘000 units)	Turnover (MR million)	Pre-tax P (L) (MR million)	Retained P (L) (MR million)	Percentage of Profit over sales (%)
1986	16.6	172.0	(14.2)	(46.9)	(8%)
1987	18.7	227.1	(63.8)	(110.7)	(28%)
1988	32.5	450.5	(58.5)	(169.2)	(13%)
1989	47.6	820.5	32.0	(137.2)	4%
1990	74.4	1,398.6	158.7	20.0	11%
1991	87.7	1,786.1	261.5	192.1	15%
1992	104.0	2,191.8	407.9	270.2	19%
1993	103.1	2,286.5	310.3	453.3	14%

Source: PROTON Corporate Profile, 1994.

PROTON was only able to make a profit after five years of operation. In those early years (1986-89) it lost US \$15,000 on each vehicle sold (Bartu 1992:74). Table 6.2 shows that there were increases in sales, turnover and retained profit, but at an inconsistent rate, especially after 1990. Thus the financial growth of PROTON seemed to be unstable and sustaining profitability was in question (Malaysian Business, 1 July 1994; Machado 1994; Jomo 1994b).

Generally, PROTON workers' productivity has risen year on year. Cars per employee increased from 27.9 in 1989 to 33.3 in 1992, but decreased temporarily in 1993 to 25.6 and showed an improvement in 1994 to 29.4. Likewise, total labour hours per car fell from 143.2 in 1989 to 119.9 in 1992, but increased temporarily in 1993 to 156.3 and then dropped to 136.2 in 1994. The lower productivity in 1993 might be explained by the failure to maintain the standard operating procedure (SOP), established under Japanese management. It was also affected by the familiarisation processes in welding, painting and machining works, with the 19 new industrial robots and 26 CNC machines introduced in 1993/94. For further details see table 6.3.

Table 6.3: PROTON: Labour productivity trend (1989 to 1993)

[a] Year	[b] Car output	[c] Total Employees	[d] Car per employees per year	[e] Labour hours per car
1989	47,900	1,715	27.9	143.2
1990	74,200	2,509	29.6	135.3
1991	87,800	2,891	30.4	131.7
1992	104,700	3,141	33.3	119.9
1993	102,800	4,017*	25.6	156.3
1994**	123,000	4,188	29.4	136.2

Notes: * 1993/1994 Budgeted Annual Management Plan

** July 1994

[d] = [b] ÷ [c]

[e] = [c] * [4000] ÷ [b]

-16 hours a day, in a 5 day, eight hour of 2 shifts for fifty weeks.

Source: PROTON Corporate Profile 1994 Tables 8 and 11, page 8 & 9. Unless stated.

In the first decade of operation, PROTON'S average productivity was 29.4 unit cars per employee per year, lower than TOYOTA (44.3) but higher than Austin Morris-Rover (11.9). The comparative productivity levels can be seen in table 6.4.

Table 6.4: PROTON: Productivity bench marking.

Company	Average output (unit per year) a	Total employees b	Cars per employees (per year) c = a + b
TOYOTA (1991)	4,525,170	102,148	44.3
FORD (1916)	585,000	32,702	17.9
Austin Morris/ Rover (1990)	501,000	42,000	11.9
PROTON (1994)	123,000	4,188	29.4

Source: Williams et al. 1994, Various tables.

However the output of PROTON was comparatively low, 36 times smaller than Toyota. This small capacity and productivity put PROTON in a tough position and made it hard for the company to survive and compete with established global car manufacturers (see also Jomo 1994c; Machado 1994). In other words, PROTON had difficulty coping with variation and increasing demand. According to customers interviewed, it took 6 months to get the car after an order was placed.

PROTON has a management committee consisting of heads of divisions and offices. There are 4 divisions, 9 offices and 27 departments (Corporate Profile 1994). It is headed by a managing director and supported by two deputy managing directors, of whom one is Malaysian (for manufacturing), and the other is Japanese (for special projects). The four divisions are Corporate Planning, Administration & Finance, Business, and Manufacturing. These divisions are headed by general manager, except for Corporate Planning (run by Japanese executive director), and they are answerable directly to the MD. Though the structure is similar to a Japanese organisation, because the company is new and small, it is not as tall as a big Japanese car company's organisation structure (Morgan & Morgan 1991:55). In 1995, there was a reorganisation exercise and R&D and quality departments were upgraded to an independent division. Meanwhile the business division became PROTON Corporation Sdn. Bhd.. It is a marketing arm and a wholly owned subsidiary (PROTON Annual Report 1995). In 1994, of 14 management committee members, 50 per cent were Japanese advisers (PROTON Annual Report, 1993). However, in 1995, of 13 management committee members, this figures was reduced to 4 or 28 per cent (PROTON Annual Report 1995). The management committee is answerable to the board of directors. So far PROTON has been headed by 4 MDs, two Malaysian and

two Japanese, the two Japanese MDs being appointed from 1988 to 1993 to save PROTON from a business failure at the end of the 1980s (Bartu 1992; Jomo 1994; Machado 1994). The present MD assumed his office in July 1993. According to an informant from the procurement and vendor office, the change of leadership was necessary to ensure indigenous technological and business development.

6.3. PROTON's turbulent management.

In the initial stages of operation, from 1985 to 1988, PROTON had a local management team. The three top-ranking Malaysian executives were ex-civil servants. Though they were armed with high enthusiasm and were keen to develop the heavy industry, they had no automobile manufacturing or international business experience and exposure (Jomo 1994b:277-8). In fact the first nine HICOM National Car Project task forces which were created in 1983, to study the world automobile manufacturing system prior to the selection and the construction of PROTON's plant, also consisted of young engineers and administrators recruited from public departments rather than from industry. The task force were finally dissolved and absorbed as PROTON employees (Tharumagnanam 1994:7). During the first four years of the venture period, the company suffered a severe loss, which has been argued to be the result of management incompetence, combined with the collapse of the car market, economic recession, yen appreciation and higher taxation (Jomo 1994b:279; Machado 1994:304-5).

To ensure the profitability and the growth of PROTON, with the political intervention of the Prime Minister, a task force consisting of members from HICOM, PROTON and MMC/ MC was formed to save the company. As a result, PROTON was handed over to a Japanese MD, Mr. Kenji Iwabuchi (from MMC), in August of 1989. In this way PROTON's management and important decision making were transferred to MMC. By 1990, MMC staff had assumed the top five positions in PROTON. Though in the beginning they were meant to undertake a 'turn around' exercise only for two years, the prime minister asked them to stay on until the first model (Wira) change was effected (Jomo 1994:305-6). Nevertheless, Malaysian pressure for further export expansion, pressure to increase localisation of parts and component to 80 per cent, a privatisation exercise in 1992 where MMC/ MC shares was reduced, and finally the most critical one that is the need to nurture Malaysian automobile technological development made the prime minister decide not to keep the MMC management team, and the company handed back to Malaysian management in July 1993.

As indicated earlier, all executives and workers learned the automobile making and marketing as they joined HICOM and PROTON. The prime minister was still not satisfied that the car manufacturing and business as a whole whether it has being

transferred to the right entrepreneur. There were critical comments from intellectuals and people from industry, who felt that the project should be given to people with experience of industry. Following this, a further privatisation exercise was commenced in which government shares in HICOM were sold, through Mega Consolidated Sdn. Bhd. at RM. 1.717 billion (i.e. US\$ 3.777 million) to a Malaysian automotive entrepreneur. This operator who had a truck and car assembly, Automotive Corporation of Malaysia (ACM), jointly operated with Citroen of France, and other automotive and motor cycles manufacturing, components supply and distribution. The buy-out of HICOM by DRB saw the fusion between Japanese and French automotive technology under a single roof (Malaysian Business, 1 December 1995). The chronology of PROTON's turbulent management is shown in table 6.5.

Table 6.5: PROTON: Chronology of management, 1983-1996.

Year	Management	Managing Director	Remarks
1983-1988	Malaysian	Malaysian	Managed by ex-service government officer
1988-1993	Japanese	2 Japanese	Managed by former MMC managing director
July 1993	Malaysian	Malaysian	Shifted to one of the fourteen task force team members, established in the early (1982-3) phase of PROTON development
October 1995	Malaysian	Malaysian	The sale of government share in HICOM to Mega Consolidated Sdn. Bhd. under the privatisation plan
April 1996	Malaysian	Malaysian	Change of MD as a result of the buy-out in 1995

The change in ownership and management of HICOM and PROTON to people from the industry, in 1995, meant the company was in the hands of capable entrepreneurs and managers (Malaysian Business, 1 December 1995). However, the question of technological capability development is yet to be proved by the new management team. As an initial comment on the management changes, one engineer from vendor development pointed out:

It is still early to predict the future of PROTON. The previous MD had been with the company since the beginning (sic). He had more than ten years' experience in car manufacturing technology and international business. In 1994 and 1995, under his leaderships, the company started the car engine design and making, R&D efforts and started to build corporate culture with the introduction of PROTON's corporate philosophy. Although the new entrepreneur who took over HICOM and PROTON was from the automobile industry, relatively he has less exposure.

6.4 PROTON manufacturing system.

There is only one production line within the PROTON plant. Current production capacity is 30 completely built units (CBU) per hour, and PROTON can produce 3 models with 9 model variants. The plant capacity was increased from 80,000 units per year between 1985 and 1991, to 120,000 in 1992, to 123,000 in 1993. Expansion of plant capacity to 150,000 units per year level was completed in 1994. Now it is being expanded to 180,000 units per year (Annual Report 1995). The change of model from Saga (1985) to Wira (1993) took 7 years, compared to 3-4 years for Japanese car makers (Womack et al. 1990).

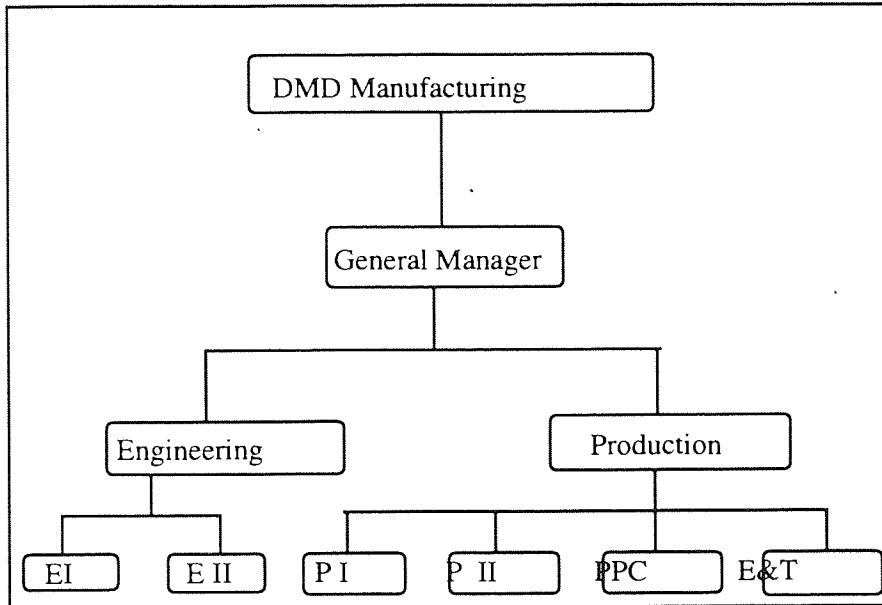
The choice of manufacturing system resulted from combining the technology in the auto industry studies in 1980s (by a special task force), with the national interest in labour-intensive policy. Thus the application of industrial robots and computer numerical control (CNC) automated tools was minimal in the early stages because priority was given to labour rather than automation. But the use of tools was increased from only 1 (in the painting section) in 1985, to 19 industrial robots and 26 CNC machines in 1993.

In 1994, the division had two offices, engineering and production, and 6 departments. Two departments are located under the engineering office, and the other four under production. The division is headed by a general manager, who reports directly to the deputy managing director of manufacturing.

The two engineering departments are Engineering I, which includes: die making, jig making, body making, stamping engineering, body and assembly engineering, painting engineering, trim and final engineering, and engine and transmission engineering; and Engineering II, which includes: plant maintenance and plant engineering. The main functions of the engineering offices are to keep the plant and machinery fit for the manufacturing process, and provide the facilities for new projects, new models, new plant, buildings and new machinery.

The other four departments are production I (PI), which includes stamping (S), body assembly (BA). Production II (PII), which includes painting (P), trim and final (TF). Production planning and control (PPC) of components, and finally engine and transmission (ET) who supply engine and transmission to the engine sub assembly line before brought to the main production line. The structure of the manufacturing division can be seen in figure 6.1.

Figure 6.1: PROTON: Manufacturing organisation.



Source: Production I PROTON.

Manufacturing activities cover two main functions, engineering and production. Of the total employees of 4118, almost 72 per cent (2959) are in the manufacturing division. Basically, there are four manufacturing processes in making a CBU; stamping, body assembly, painting and trim & final. This researcher was informed by the MD and also by a Japanese expert interviewed that PROTON has a mass production system geared to a flexible manufacturing system. However, an informant from production planning and control said that the manufacturing process begins with getting market information (demand). Market information will be analysed and become a base for material requirements. This practice is inclined towards flexible manufacturing rather than mass production. In mass production, firstly products are designed and produced in huge numbers, then the marketing staff will promote the products and find the buyers. In flexible manufacturing, demand from the market will be investigate first, then the design and production will be developed. Production line has to be flexible enough to be able to produce various products as demand varies. In other words, production varies according to the fluctuation in demand (Womack et al. 1990; Oliver & Wilkinson 1992).

At the stamping shop, big and medium panels are made. With 37 Hitachi press machines, 190 workers are able to produce 540 and 350 pieces of big and small panel per hour. The materials for these panels are coils imported 100 per cent from Nippon Steel and Kawasaki. About 98 per cent of dies are also imported from MMC. All panels stamped will be stored for a day before being assembled in body making. There are small panels stamped by PHN Sdn.Bhd, a company created by PROTON in 1989.

At the body assembly shop all panels are assembled to make the underbody. Site structure, main body, main body furnishing/fitting and furnishing repairs are completed. In this shop, setting the spots, clamping and sealing are done manually. However there are 19 robots used for spot welding in the shop. At MMC of Japan, almost 100 per cent of body assembly work is robotised. Productivity has improved from only 160 white bodies in 1985 to 540 in 1994. The cycle time (i.e. the total time taken to make a white body), also has been improved, from 216 to 104 seconds per unit, an improvement of 47 per cent. Although it is less productive than the 60 seconds of 9 transplants in the US and Canada, it is better than 363.2 seconds of Japanese transplants in Taiwan (Kumon 1994:157,159). In the 1980s there were a number of Japanese technical assistants, but at the time of my field research there was only one technical assistant for both stamping and body assembly shops.

All white bodies undergo painting processes using many ovens. All of these ovens, machinery and robots are supplied by MMC under the brands of Taikisha and Tokiko. The flow of the whole process is displayed on the centralised automated control board. If there are any problems in the process flow, the 'red light' automatically will be on the control board to show what and where the trouble is, and that it needs urgent attention. The author was shown the painting process and the control board by a foreman. After final painting, painted bodies are stored at painted body stock (PBS) area for 3 hours, then shifted by hanger conveyer to the trim and final process. To date, about 260 units of white body car per shift and one car takes 7 hours to be painted. There are 8 automated machines and 2 robots used in the painting shop. One paint engineer from ICI (M) Sdn.Bhd. (the only supplier for paints) is stationed at the painting shop for a period of one year. His duty is solely to provide a quick or instant response to defects in the paint.

The next process is trim & final. There are three major processes in trim and final, trim, chassis line, and final. The CBUs are brought by hanger conveyer. In trimming, the hidden parts have to be installed before the engine is fixed. In chassis line process, engine and related works are installed. In the final workshop, the workers have to fit components such as water tank, battery, carpet, seats, and put oil in.

After this, CBUs undergo a series of tests such as inner shower test, leak checking, exhaust smoke test (by six smoke testers), tyre inflation, lamp check, air-water wafer test, second chassis inspection, and lastly final inspection. If any CBUs need to be repaired, there is a repair shop area after the testing section. This repair bay at the end of the production line is different from the Japanese practice and typical of Fordism

(Kumon 1994:164). Beside the trim shop there is also a dash board panel instrument sub assembly line. The majority of the work in this shop is manually done. In the past, windscreen glass was fixed by hand, but today there are two robots performing this task. The production process is done on 'lot base'(model by model) in stamping and body assembly, and 'mixed base'(model is mixed) when it comes into painting and trim and final.

Japanese manufacturing influences.

The production system was learned from MMC of Japan. In May 1983, the first 14 initial production groups, including managers, foremen, assistant foremen and line keepers, were sent to learn the Japanese/ Mitsubishi manufacturing system for between 3 to 12 months at MMC plant at Mizushima, Okayama, Japan. When they came back to Malaysia, all the production trials and actual production running were still operated under the supervision of MMCs' manufacturing experts for a further period of 8 to 36 months. Therefore, PROTON took four years to learn and implement Mitsubishi's production system. According to a production manager:

most of them were Japanese systems, because most of our design and development works were done by the Japanese. Therefore the setting up of the system was based on Japanese ideas. Although there were some improvements or projects which were carried out by locals, the total system is still Japanese based.

Production Manager.

To enhance the technological capability, between 1984 to 1985, 330 engineers, R&D designers and managerial staff were sent to study Japanese engineering, designing and management techniques (Tharumagnanam 1994). Up to 1994, it was estimated that about 700 PROTON personnel had been sent to Japan for training (Leong 1994:8; Chew et al. 1993). The discussion below will explore how far the Japanese flexible production system has been practised at PROTON.

Just in time (JIT) production system.

In the JIT production system, the flow of parts from the total supply chain is on a day-to-day basis (Womack et al. 1990:62). Waste is minimised at every stage of production (Oliver & Wilkinson 1992:26). Stocks are reduced to the minimum level (Oakland 1993:275). The kanban or 'containers carrying parts', together with the part's card, are used as a mechanism of stock supply and control system. In the JIT system, parts are purchased, sub-assemblies are assembled, finished products are produced and delivered at the time they are required (Schonberger 1982). What is important about Japanese JIT is that they viewed it as a business philosophy rather than just a manufacturing process or tool for reducing inventories (Storhagen 1995).

At PROTON, the implementation of the 'just-in-time' production system and 'zero inventory' are still at the early stage. The components/parts, work-in-progress (stamped panels, and painted body), and finished products/ CBU's are not supplied and delivered at the time required. Instead, they are stocked for between 3 hours and 20 days. The picture can be seen clearly in table 6.6.

Table 6.6: PROTON: Just-in-time (JIT) practices.
Average storage period of parts, work-in-progress, finished goods.

Parts/WIP/ CBU	Supplier	Receiver	Duration of storage
CKD	MMC Japan	PPC	14 days
Local parts	Local vendors	PPC	8 hours
Panels	Stamping shop	Body assembly	1 day
Painted body	Painting shop	TF	3 hours
Engine & Transmission	Local vendors	E&T shop	24 hours
	MMC Japan	E&T shop	10 days
CBUs	car pool	EON	24 hours
CBUs	car pool	P.E.Ltd.	20 days
Small parts	Thailand	PPC	24 hours
Small parts	Singapore	PPC	7 days

Source: Various interviews from various departments 1994.

Out of more than 2,000 car components delivered to PPC, the 'car seat' is the only part which is supplied direct to the production line. It is supplied sequentially (hourly) by Car Seat (M) Sdn. Bhd., according to the model to be produced. The other components like instrument panels, exhausts, seat belts, wire harness etc. are supplied to the stock bay, and have to be piled up for 8 hours before being taken to the production flow. In other words they have to be stocked for a shift requirement in advance. As for work-in-progress practised according to JIT principles, only the white body, from body assembly shop, is directly transferred to the painting shop. As to JIT on CBU's output, an informant stated that:

In general, today we load the car into motor pool, tomorrow EON will take it. Before that, all documentation such as delivery order and custom approval has to be cleared. Normally business people will make it ready before 5.00 p.m. so that it can be delivered to EON. Regarding cars to be exported to UK, we actually don't want to keep them at our motor pool. However, we have to accumulate cars for the next shipment. Our experiences show that the first car was ready three weeks before the last car to be ready for export, which is seven days before shipment. Only after seven days is everything cleared for exports.

However, as regards daily deliveries of parts supplied by suppliers (Womack et al. 1990; Oakland 1993), all 5 vendors interviewed indicated that they deliver their components every 2 to 4 hours per day to production lines at PROTON. The details of frequencies of supplies from selective suppliers can be seen in table 6.7.

Table 6.7: PROTON: JIT practices within selected vendors.

Vendor	Parts/ components materials	Storage duration finished product		Frequency of supply	Market dependency (%)
Seginiaga	weather strips, door leaver	7-30 days	7-14 days	3-4 times a day	90
Dunlop	tyres	3 months	14 days	4-6 times a day	30
Century	batteries		14 days	2 times a day	15
MSG	stamped glass & laminated glass		6 months	4 times a day	40
PHN	small panels	3 months	6 months	4-6 times a day	100

Source: Various interviews with vendors 1994.

Although there were no definite number of vendors who supply daily to the production line, according to an informant from the vendor office, more than 50 per cent of local vendors supply their components daily to PROTON. The rest of the vendors supply once or twice a week. This number is smaller than the transit time found in the US where 90.3 per cent of first layer suppliers supplied between every half-hour and once per day (Florida & Kenny 1991:393). The logic behind the difference was the difference in production volume, and PROTON has smaller production volume.

It is important to note that JIT systems are only feasible when all firms in an industry or related industries use JIT together. It is not something an organisation can implement individually (Milkman 1991). The significant problems pointed out by many vendors are 'short notice in production changes', as claimed by one vendor:

As PROTON changed its production plans and schedules, it effects our production works. What happen is that they called us in the morning about the changes of models to be produced and they want the parts to be delivered in the afternoon. They give us very hard time to produce and deliver the parts.

Another supplier commented on the supply of new parts for new models:

Time given to produce new parts is not enough. The 30 days' notice is too short. One more thing is that they asked us to deliver with the volume either more or less than previous orders. This led to high cost of storage due to overproduction and having problems in getting immediate materials. Moreover, the price of parts or components is predetermined without considering the fluctuation of the Malaysian ringgit's value.

One manager claimed, "In MMC of Japan, on average, they keep stocks for about two hours. They have their JIT production system but with two hours' stocks in hand." To another manager, he said, "PROTON is practising JIT production system with its own standard and definition." One manager became emotional when the researcher asked him about the JIT practices. For him, "We started the car manufacturing industry with zero knowledge-base. Today we are not only acquiring the technology, but have also started to learn on our own. It isn't that good but having something is better than nothing. "There was no concrete evidence to support the claim that the factory was built

on the basis of a JIT production system and JIT city. (As a comparison, Nissan of Sunderland, since the beginning has attracted to the site suppliers who are prepared to join long term business relationships with Nissan (Oliver & Wilkinson 1992)). The facts show that the plant is not surrounded by any warehouses of PROTON vendors. The nearest suppliers are car seat and small panel producers (about 1 kilometre away). Instead of a 'PROTON city' there is a HICOM city where many HICOM affiliates and subsidiaries are located close to each other. Therefore the Toyota or JIT city concept (Womack et al. 1990; Oliver & Wilkinson 1992), where suppliers' warehouses are located around the assembler to ease the JIT system is less applied at PROTON. When a senior manager was asked whether the plant was constructed based on JIT and flexible manufacturing technology/ philosophy, the reply was:

The whole plant design, technology to be used and total manufacturing system was supplied by MMC. The JIT production system must be included during the plant development stages. However, this industrial area was purposely created for heavy industry factories. It is lucky indeed if we can locate all of our vendors near to us. But the current square feet price of land is very expensive and our vendors can't afford to purchase. Nevertheless, we have been working very hard to create and develop our local vendors since 1988, and fortunately most of them are located within 50 kilometres away from us. This enables them to supply parts and components to us on a daily JIT basis.

The informant indicated that the car factory was assumed to be constructed based on JIT manufacturing technology. However, in practice this was not the case. JIT in the Japanese logistic systems is viewed in a broader perspective as a concept for management and control, 'emphasising the elimination of waste in the total process from purchasing to distribution, where waste means anything which increases cost, not value for the customer' (Storhagen 1995:5). This means all costs related to sourcing, manufacturing and distributing have to be minimised. Apart from the intelligent manufacturing system, where humans, machines and their environment are harmonised (Ryoichiro 1994:12), the flexible manufacturing system at PROTON actually is just beginning.

Flexible team work.

Another central feature of the Japanese manufacturing system is the organisation of workers into self managed, flexible teams (Milkman 1991). These groups of multi-skilled employees work with a group of machines and they are rotated often in a day to produce products as demand fluctuates (Oliver & Wilkinson 1992). According to informants interviewed, PROTON has over a hundred manufacturing work teams or 'mini-factories within a factory' (Bratton 1992), which is synonymous with quality circle teams. They have their own 'process skills' for every work station. The teams are process-centred rather than 'product-centred' (as claimed by Bratton 1991:107). In Toyota, these employees 'agreed to be flexible in work assignments and active in

promoting the interests of the company by initiating improvement rather than merely responding to problems' (Womack et al. 1990:54).

At PROTON, their membership varied from 8 to 15. They master all the processes within their own station, but do not know anything about the process before or after them. In other words, they are flexible and rotatable, but only within their own production cell. The distribution of the manufacturing work teams is detailed in table 6.8.

Table 6.8: PROTON: Manufacturing' Work Teams.

Manufacturing section	Total workers involved	Work teams	Average memberships
Stamping	136	16	9
Body assembly	620	38	16
Painting	330	19	17
Trim and Final	509	30	17
Engine & Transmission	207	24	9
Total	1,802	127	14

Source: Production I, II & Engineering Department.

In other words, flexible team work with multi-skilling capabilities (Oliver & Wilkinson 1992; Bratton 1992; Kenny & Florida 1993) is practised. However, these workers have not been trained with proper skill career plans, for multi-skills development. Nevertheless, this is not unusual for Japanese transplants training programmes as observed by Graham in her study of Subaru-Isuzu Automotive (SIA) plant (1995:36): "I found these classes to be of little direct value in the plant....and no attempt was made to link them to our immediate situation." At PROTON, for example, in the trim & final line, there are six work stations (or cells) with six work teams, from TF 11 to TF 16. Workers in a team at TF 12 are skilful and rotated every day in fixing headliner, break pedals, accelerator cables, clutch cables and speed cables only. It is noteworthy, however, that they do not have any skills of those who are in TF 13 and vice versa, who are skilful and rotated in fitting rear absorber, air distributor, break booster, wiper motor, and weather strip. However, these workers are transferable within the trim & final production line. One senior worker from body assembly shop explained:

Sharp at 7.50 a.m., the siren goes. Workers are gathered and at 7.55 a.m. there are short and light exercises followed by beginning prayer. Then follows a briefing by foreman about yesterday's achievement, then daily task is given. After a short safety reminder, everybody makes a daily declaration such as 'hari ini tiada kecacatan berlaku' (today no defect will occur). Then everybody will move to their respective work cell by 8.05 a.m. At body assembly shop, workers are not moving, instead, the white body is moving on conveyer. There are three break times ranging from ten minutes to an hour; 10.30 a.m, 1.00 p.m. and 3.00 p.m. Job rotation is done daily within our own group. We might be transferred from B25 (to assemble underbody, site structure, to assemble framing with front deck, rear end, rear deck) to B22 (to assemble site structure, quarter panel, centre pillar, front pillar) or to B33 (door fitting line). So far we have never been transferred from body assembly to trim & final or to painting or to engine assembly. If there is overtime work, we will finish our work at 6.30 pm. In Japan we have been trained to sing but here we pray at work place daily.

Job rotation practised at PROTON is similar to MMC's cellular technology in Japan, according to one Japanese expert:

At MMC, every TF work cell is a team work by itself. Employees are rotated within this work cell only. Workers will remain in the same cell for 20 to 30 years and they don't complain. Only excellent workers will be transferred and be trained to the other work cells. Normally these workers are potential assistant foremen and potential foremen, where multi-skills are preferred.

Job rotation from team to team is uncommon both in Japan and in the transplants. In Japan, it is more mandated by management, whereas in America it is more for workers to apply for job transfer (Florida & Kenny 1991:385). At PROTON, it is normally for the latter and for promotional acquisition skills. When a foreman was asked whether they have a plan to have multi-skills and flexible work teams between cells, the answer was: "I do not know." Another foreman replied: "We do have constant job rotation and cross-training practices since 1985, but only applied to foreman and above." This was confirmed by a manager from the human resources department who explained that:

Actually we don't stress a flexible and multi-skilled workforce. However every employee is subject to transfer to any place and any job assignments. We do transfer workers from engine to car seat assembly. We also do transfer line keeper (production assembly workers) to non assembly works. However there is no written policy on cross-training for developing workers toward multi-skills development. We only transfer the workers when there is a need, such as for the purpose of promotion and request from workers.

Since 1987, production workers have worked in two shifts for five days a week (Monday to Friday). They also come to work on alternate Saturdays. For the day shift, their hours are from 8.00 a.m. to 5.20 p.m. For the night shift, they work from 8.45 p.m. to 6.05 a.m. During working hours, they have two meal breaks and on Friday they have a long break from 12.45 to 2.50 p.m. to perform mass prayers. Every day they begin their work with an opening prayer and morning meeting, and they close their work with an ending prayer. The morning meeting is a typical Japanese daily practice (Azumi Suzaki 1993; Graham 1995). But the daily opening and closing prayer is part of Malaysian working culture, and is not practised by Japan or Western companies nor non-Malay-dominated Malaysian companies. In the opening prayer, the whole PROTON staff asks guidance, blessing and mercy from Almighty Allah so that everyone will work delightedly, collectively and smoothly. In the ending prayer, they thank Almighty Allah for His help in the jobs completed. The Japanese receive moral guidance in the form of company philosophy, mottos, morning meetings and songs in the factory. The Malaysian receives work and moral guidance from '*masjid* (mosque), home and factory' so that they will walk and work in the path of righteousness. Therefore, there are some differences in the form and substance of works and moral guidance between Japanese and Malaysians.

***Kaizen* or continuous improvement activity.**

The principle of most Japanese management practices is *kaizen*, a philosophy of continuous improvement. It is an ongoing improvement process involving everyone, including managers and workers, and it is a way of life. It generates process-oriented thinking, since the process must be improved before we get improved results. It is people-oriented and is directed at people's efforts (Imai 1986). Therefore all Japanese management tools like QCCs, TQC or CWQC, TPM, zero defects, *kanban*, JIT, zero inventory, suggestion system, strike-free working, internal promotion, yearly bonus, continuous training, integration of design-production-marketing-research efforts, productivity improvement, and new product development are the means to reach continuous improvement, i.e. *kaizen*. How far are all these elements practised by PROTON? My interviews and observations show that PROTON practises some of it, but with a lack of integration between the tools, as shown in table 6.9.

Table 6.9: PROTON: The *kaizen* practices.

<i>Kaizen</i> elements*	Availability	
	never used	in use planned or being implemented
Customer orientation		√
Total quality control		
QCCs		√
Suggestion system	√	
Automation		√
Total productive maintenance		
Kanban	√	
Productivity and quality improvement		√
Just-in-time production		
Zero defects		√
Cooperative labour-management relations		√
New-product development		√

* Based on the *kaizen* umbrella, Imai 1986.

The suggestion system and *kanban* inventory control are still not practised. This is the reason why suggestion charts by individuals and groups, as practised by Japanese companies (Suzaki 1993), were not found in any of the *kaizen* offices. At PROTON, total hours devoted to *kaizen* meetings ranged between 12 and 14 hours per group per year. Management has allotted an hour per month for *kaizen* meetings for each circle, and they only meet within working hours, instead of outside of working hours as practised in Japanese companies (Milkman 1991; Oliver & Wilkinson 1992). However, quality meetings and discussions are constant, from the morning meeting through to sectional and departmental meetings, as in other Japanese transplants (Oliver & Wilkinson 1992:217; Suzaki 1993). These activities seem to be directed by management instead of being voluntary as in Japanese companies (Ozawa 1993). The

application of Japanese tools in *kaizen* activities can be learned in production. As a production manager stated:

We do apply many Japanese working concepts and tools such as 4 M (man, materials, machines, and methods) in problem solving and improvement exercise. The Ishikawa diagram or fish bone is used in problem analysis. The 3 M (*muri* or excess, *mura* or irregularity, and *muda* or wastefulness) is used as a guide for every workers in their work life. The 5 S (*seiri* or sorting out, *seiton* or systematic arrangement, *seiso* or cleaning, *seiketsu* or standardising, and *shitsuke* or discipline) guides their performance of daily jobs. The 5 why for getting the real final answer; and 5 W & 1 H (what, when, where, why, who and how?) in understanding any problems.

These Japanese lessons (4 M, 3 M, 5 S, 5 why and 5 W & 1 H) were illustrated by simple pictures, graphics and charts in front of workers within their section and also in their *kaizen* office (meeting room). In the *kaizen* office, problems and solutions are discussed by the workers, and sometimes with their respective assistant foreman, foreman, and assistant manager to boost their morale and to guide the discussions.

Nevertheless, when a question on the same issues was asked of senior workers, one replied:

We do apply all those Japanese techniques in solving problems for quality and productivity improvement like 4 M, 3 M, fish bone etc. But we are still learning to make it part of our life. In Japan, as the result of those practices, if the line is stopped, it is for less than one minute. Here, we had an experience where the line stopped for up to 185 minutes and we lost one car. The reason was that the time taken for shower test and equipment test is longer than in Japan (four minutes compared to one). In Japan, they fix many red spot lights to show the equipment in trouble and the line has to stop, whereas few such devices are available on our production line.

Another production worker replied: "We have implemented the Japanese methods of quality and productivity improvement techniques such as cleanliness, 4 M, 3 M, 2 way feedback system, punch card etc. In fact, Japanese managers are friendlier than our managers in implementing those *kaizen* elements." The above comments from workers show that the Japanese tools and techniques in quality and productivity improvement have been implemented but only in part. There were also remarks from workers that the local managers need to improve their human relations skills while implementing those techniques.

The application of flexible machines, robots and total productive maintenance.

Japanese workers are more likely to be engaged in routine, standardised operations characterised by the assembly line, and Japanese equipment is more automated than American machinery (Azumi et al. 1986). In 1989, Japanese corporations deployed 219,667 industrial robots in manufacturing compared to 36,977 for the US and 22,395

for West Germany (Kenny & Florida 1993:71). The Japanese car industry has been the example of advanced automation. But lately Toyota, in producing its new model RAV4, has restricted the application of robots and machines to those processes that make life easier for the workers. Though the number of line workers at the new factory was reduced, the number of maintenance personnel rose dramatically. Since they alone really understood the robots, there was 'little scope for *kaizen* or continuous improvement' (The Economist, 4 March 1995:81). Does Mitsubishi encourage PROTON to utilise machinery and industrial robots? At the time of this study, PROTON was effectively using 38 industrial robots and 73 computer numerical control (CNC) automated machines and tools. The installation stages of these robotics and CNC automated tools can be seen in table 6.10.

Table 6.10: PROTON: The installation of robots and CNC, 1984 to 1993.

	W	P	Shop		Tr	M	To	Total	Automation		CNC Total
			T&F	E					IR		
1984*	-	-	-	-	-	-	-	-	-	-	-
1985	-	1	-	-	-	-	-	1	-	1	1
1990	2	1	-	-	-	-	-	3	2	1	3
1991	4	-	-	3	5	-	-	12	7	5	12
1992	7	-	2	-	1	40	-	50	10	40	50
1993	13	8	-	-	-	20	4	45	19	26	45
Total	27	11	2	3	6	60	4	111	38	73	111

Notes: * 2 robots in welding and painting shops had been dismantled due to inefficiency.
W = welding, P = painting, T&F = trim and final, E = engine assembly, Tr = transmission assembly, M = machining, To = tooling, IR = industrial robots and CNC = computer numerical control.

Source: Engineering Department PROTON 1994.

These robots are employed in the quest to improve productivity, quality and product variance. Manually, four workers require 15 to 20 minutes to complete the painting of a car inside and out, in comparison to three minutes required by a spray robot to do the same job. The other evidence shows that the application of robots improved the productivity and quality levels of PROTON's manufacturing processes. For example, spot welding time was reduced from 2.5 to 1.5 seconds (saving time by 40.0 per cent); spraying time for underbody works, inside and outside was reduced from 113.5 and 7.5 minutes to 90 and 2/3 minutes (saving time by 21 to 90 per cent) (Perbadanan Nasional Berhad 1994:82).

According to a manager from the Engineering Department, this equipment is flexibly adjusted according to the models produced. The automation of its JIT system enabled Hino motors to produce 1,900 different types of trucks with 700 engine types, on the same production lines (Oliver & Wilkinson 1992:27). At the time of field research,

PROTON was only able to produce 3 models with 9 model variants from one production line.

In other words, the usage of robots and CNC machines is low at PROTON compared with MMC. As indicated by a Japanese expert who worked as coordinator for a new product (F 41): "we have very little automation and robots here. Maybe it's very expensive. At MMC, they have 400 robots. In other words they are 95 per cent automated whereas here it's only 20 per cent." The low level of automation was actually not in order to avoid expensive automation, but rather due to the initial choice to have a labour-intensive production process at the manufacturing and designing stage (according to deputy managing director). And PROTON has been slow in identifying and upgrading the latest or best methods of production as the manufacturing technology evolves. The other problem is that the total productive maintenance has only just started at PROTON. As a Japanese adviser commented:

As production adviser, all stamping, body assembly, painting and trim & final processes are under me. My responsibility is not only to plan and implement but also to follow up production schedules. At the same time I am responsible for quality, engineering and maintenance aspects of the machinery. Every day I spend four hours on the production line. In comparing PROTON with MMC, the practice of total productive maintenance (TPM) here is only 20 per cent compared with 80 per cent at MMC. What I have observed, is that people do not look at TPM from total perspectives, there is a lack of planning, scheduling is not proper, and follow-up is very weak. All counter measures are normally temporary and only short-term.

This view was confirmed by a maintenance manager:

We do have plant shut down, but only during long holidays. Frankly, we cannot afford to have long down time in a car manufacturing industry. Because one minute down time will incur a loss of thousands *ringgit*. There are few maintenance jobs being looked after by line keepers, such as cleaning of jigs, warm up test, welding nugget check and test piece trials. The rest is done by maintenance groups. In a real sense, PROTON is still at the early stage of TPM. TPM education for workers, foremen and assistant foremen has just started. However, 4S and the uses of check sheet for all equipment have been practised for a long time.

Conclusion.

Even though PROTON was given awards by the Asian Institute of Management for their excellent practices of operation management in 1993 (Tharumagnanam 1994:127) and by Institute of British Carriage Automobile Manufacturers for their quality and performance in 1988, 1990 and 1992, as its MD proclaimed:

We are still at the stage of flexible manufacturing system not lean manufacturing system and technology has been transferred but not fully. This was due to the conflict of interests we had with our investors. They were more interested in profit growth than in technological development.

MMC of Japan has succeeded in exporting its machinery, parts and components. The basic materials for body making (coil) are 100 per cent imported from Nippon Steel Corporation. The methods are Japanese supplied and designed. The model designs are

approved by Japanese. The machinery and robots are supplied by Japan almost 100 per cent. The most expensive and critical parts like engine, gear box, and transmission parts or components are also supplied by MMC. These findings are similar to research conducted in American (Abo 1994a, 1994b; Milkman 1991; Graham 1994), UK (Abo 1994b) and Taiwanese (Itagaki 1994) transplants. Although the employees were trained by the Japanese, they were trained in ordinary operations and maintenance and limited to car manufacturing system 'but did not include design, research and development' (Jomo 1994b:286). There were also remarks that the technology given to strategic alliances and affiliates were 'obsolete plant' (Bartu 1992; Jomo 1994a) or older technology (Al-Ghailani & Moor 1995) and 'knock-down factory' (Kumon 1994; Itagaki 1994).

The manufacturing system was designed, executed, and upgraded by MMC, and the training, production trial and new training for new machines and new models was completed by the Japanese experts. But the full implementation of JST with the alliances studied is slow and still low compared to what their parent companies have in Japan, because the JIT manufacturing technology plan and JIT city concept were not considered and incorporated when the system was set up and the plant was constructed in 1983. The parts and components have to be stocked for between one hour and one shift, mainly because the systems chosen were taken for granted from MMC. Though there was a claim by top management that the systems were studied and investigated and chosen to be the manufacturing system of PROTON, the system selected (i.e., labour-intensive) is not like the highly automated car manufacturing systems applied by other world-class automobile producers. As a car manufacturer, the planners have to develop from the beginning their long-term competitive strategies and view the project from the total business perspective. For example, the total manufacturing system design is not based on the JIT technology concept. The plan to design and manufacture PROTON's own engine had to be in place as early as 1983 (during the study tour of the 'task force'). The total manufacturing system and plans are important and must be available from the beginning so that they are incorporated into the total business system design.

The state of the manufacturing process will determine the level of the product's quality and durability. What is the quality system adopted by PROTON? How does it manage quality? Is everybody in the company involved in building the quality chain? How far has PROTON learned from and followed the company-wide quality control of MMCs? These questions will be answered in the next section.

6.5 PROTON quality management system.

The previous discussions have shown the limited transfer of the Japanese flexible production system to PROTON. We now turn to the transferability of a second popular features of Japanese management, company-wide quality control. This will touch on corporate quality policy and organisation, quality circles movement, quality convention, suggestion systems, quality assurance and audits, quality visits to vendors, quality education and quality research. These elements are intended to find ways and means to cut costs, to improve productivity levels and to improve work processes and product quality within Japanese companies, so as to make their products competitive in global markets (Womack et al. 1990). Through the circles, production floor workers' intelligence is mobilised together with that of designers, technologists, and marketers (Kenny & Florida 1993). To what extent has this Japanese quality management been transferred to PROTON? Another question that needs to be addressed and explored is to what extent the Japanese experts are guiding Malaysian colleges to promote and establish Japanese quality management.

In most Japanese companies, quality is regarded as the way to run the business and as one of the corporate policies and strategies, instead of a special programme (Westbrook 1995). The workforce of Honda for example, has a goal shared with management to improve productivity for the entire corporation and elevate the quality level of the working life of the individual member of the workforce (Sugiura 1992:7). Some examples of implementable quality policies are shown in table 6.11:

Table 6.11: Quality policy of selective Japanese MNCs

Company	Period	Quality policy
Matsushita	1946	"testing every product before it went to market"
	1990s	"ensure goods reach the consumer in perfect condition"
Nippodenso	1970s	"100 per cent reliable products and service"
	1983	"the world's No.1 products and the world's best corporate quality system"
Honda	1990	"to attain utmost satisfaction for customers"

Source: Sugiura 1992, Westbrook 1995.

These quality policies and mission statements, as well as corporate philosophy, are used as guidance for the quality of working life, i.e. activities and movement in the companies (Westbrook 1995; Inohara 1990). From the documentation searches, PROTON operates with a belief that 'quality must be built into the product, not only by a specific group of PROTON alone, but also by PROTON in totality' (Quality Department 1994). The quality assurance of PROTON was designed to 'secure a product quality that is satisfactory to the customer' (Quality Department 1994). This belief comes from the quality control department, as their concept and working

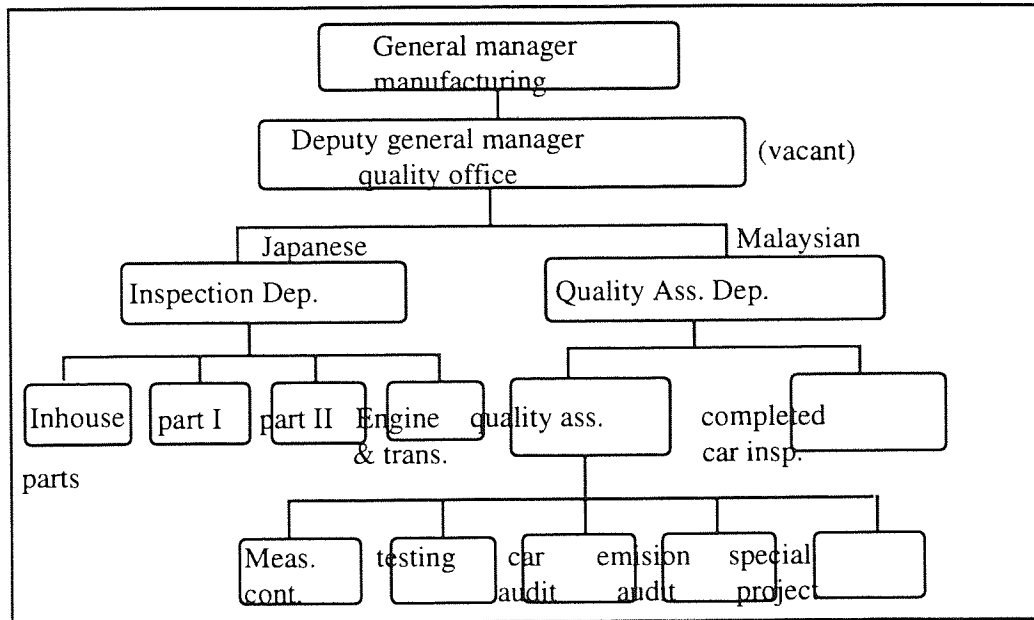
guidance, but has it affected every level of PROTON's operations? When this researcher explained that the company-wide quality policy should be known to every member of the company at corporate and departmental levels, to subsidiaries, vendors and subcontractors, inside and outside PROTON, an assistant manager in the QC department said, "The quality policy can be observed in the mission statement, that is, to be competitive, innovative and customer oriented." This suggests that they don't have a clear corporate quality policy which can be used as guidance and direction for PROTON and its subsidiaries, affiliates and vendors.

At Honda Motors, quality has been planned, executed, audited, coordinated and managed integratedly and globally from head office in Japan. Quality education and programmes are widespread at headquarters, dealers, subcontractors and overseas. They talk about corporate and global quality business, rather than factory quality development. At PROTON, the quality office is headed by the general manager of manufacturing and the office is not an independent office. The position of a deputy general manager of the office was vacant at the time of the research. This is another indication that quality is less emphasised.

In the quality office there were two departments, inspection and quality assurance. Within quality inspection there were four sections: (i) purchase parts inspection I, responsible for the evaluation, inspection and testing of purchased electrical, metal and functional parts; (ii) purchase parts inspection II, responsible for the evaluation, inspection, and testing of purchased plastic and rubber parts; (iii) in-house parts, responsible for the inspection of stamped parts, sub-assembly parts, and white body; and (iv) engine transmission and machining, responsible for the inspection of engine assembly, machining parts and casting.

The quality assurance department has two main sections, completed car inspection and quality assurance sections. They are responsible for measurement control, testing, completed car audit, emission audit, and special projects. The structure of the organisation is as in figure 6.2.

Figure 6.2: PROTON: Quality Office organisation chart.

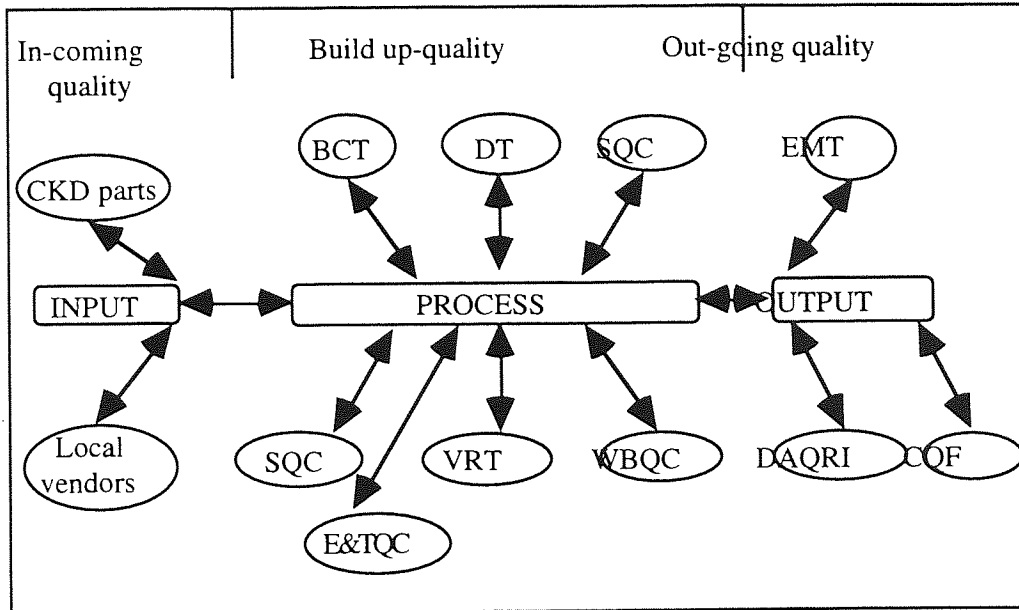


Source: Quality Office Department, PROTON 1994.

The head of quality office is assisted by two managers. At the time of my research, the inspection department was headed by a Japanese manager and the quality assurance section was headed by a local manager. The offices were staffed by 286 workers, about 8 per cent of PROTON's employees, about the same ratio as the 7 per cent of MMC in Japan.

The interviews and observations show that responsibility for quality is still the responsibility of the quality office staff, which is a conventional approach to managing and developing quality (Westbrook 1995). In other words, 20 quality inspectors and auditors have to inspect and audit vendors' manufacturing processes, incoming parts from vendors, panels stamped, spot welding and door fitting, paint appearance and outgoing quality checks. They also have to test wheel running, chassis, electrical and car's emissions. These quality inspectors also have to periodically test the instruments and equipment used. This quality inspection chain can be seen in figure 6.3.

Figure 6.3: PROTON: The quality inspection chain.



Note: CKD completely knock down parts
 DT dynamic testing
 EMT emission test
 E&TQC engine & transmission quality check
 DAQRI direct acceptable quality receive index
 CQF customer quality feedback
 ECT equipment calibration test
 SQC static quality check
 SQC stamping quality check
 WBQC white body quality check
 VRT vendor related test

According to a deputy manager from the quality assurance group, for in-coming quality checks and inspections, PROTON has an agreement with local vendors enabling quality inspectors to audit all vendors' manufacturing processes. PROTON also proposes local vendor-MNCs technical aids match, provides quality education, and motivates them by giving awards to top performing vendors. The CKD parts quality is checked at random. As mentioned by one senior deputy manager: "There are four types of CKDs defects. They may be damp, broken, rusty or scratched. Any urgent parts, like Trim & final and engine components, we have to fly back to Japan. For less urgent items, the defective components are sent by sea."

To build up quality, all panels, engine & transmissions, vendor related parts and white body are checked periodically in a day. According to one informant, all repair work must be done before white bodies enter the ovens for painting. Weekly and monthly quality reports will be based on this check sheet report for quality corrections and prevention of errors. After painting, there are also the static quality check and dynamic testing. Things like paint quality, interior fitting, chassis, wheel running and electrical functioning are tested. According to the informant 40 cars (CBUs) are being examined per day at 1K inspection and 2 K dynamic testing point before the end of the production line. K is a short form of '*kensa*', a Japanese word meaning 'inspection'. Quality of products also depends very much on the quality of equipment and machinery used, so equipment calibration test are necessary for all equipment. It is tested at intervals of

between one month and three years, depending on the equipment, by Standard Industrial Research Institute of Malaysia (SIRIM), Aerospace Research Organisation and Development (AEROD), or else sent back to manufacturer (such as Horiba of Japan).

For out-going quality, there are three important quality checks: (i) build-in quality (defects per car) with direct acceptable quality receive index (DAQRI) meeting criteria [number of cars meeting the criteria ÷ total car audited per week x 100]; (ii) emission test, which involves car performance test, noise test, export requirement; and (iii) customer quality feedback.

At the time of field research, the number of cars meeting the criteria of out-going quality was 75 per cent and defects per car in buildup quality was 15.9. The target was 90 per cent of out-going quality and 8 defects per car by March 1995. Emission inspection takes 20 minutes per car. Only 4 cars are audited daily, compared with 500 cars in Japan, and this auditing is done only once a week.

In testing equipment and tools, PROTON appears to prefer automation rather than increasing the number of workers. As one QC Deputy Manager indicated:

as the volume of engines produced increases, we don't want to increase our manpower, but to speed up the use of automation in inspection works. For this, we have to equip our manpower with more automation inspection skills. Normally the suppliers of these machines will provide the necessary training for that.

In the beginning they used manual workers, who thus received basic knowledge. Today they are supported by automation. Either there is an increase in market demand or, with the introduction of new products, a new verification of quality is needed. New test machines and skills are therefore needed. The concept adopted by the QC department, according to one senior QC manager, is: "production workers produced build in quality on the line, and the QC department just verifies". However, this concept was only marginally adopted by production workers. There are two reasons for this. Though build-in quality is the main responsibility of line keepers, they sometimes have to forgo quality because there are pressures to produce more. The other reason is lack of quality training for line keepers. Since there was an average turnover of 25 to 30 line keepers per month (as reported by an assistant manager, at Human Resources Department), many newly recruited line keepers have to be trained to master the process, which contributes to the defects.

There are two main problems in quality control, lack of training and the difficulty in getting a budget for new expensive equipment. According to an informant, at the time

the Japanese managed the venture, from 1989 to 1993 (see also Jomo 1994b:278; Bartu 1992:78), they delayed the automation process and insisted on buying Japanese tools. The new management has adopted an open policy but went over budget. If the testing equipment costs MR \$ 500,000 and below, they can proceed, but if it is more than that, workers have to wait till the next budget. This affects the quality inspection processes. According to a quality control manager, what is needed is more training in software, either in-house or outside (technical training). He further stressed:

We believe that quality is crucial for the car making industry. We also understand that quality education is very necessary. Everybody must be educated with the total quality control (TQC) concept, especially production line workers. Through this, everyone will understand that quality is the business of everybody, not only that of QC staff, as people normally think.

According to an informant from the maintenance department, there is always room for quality improvement. It can be done through communication with the line keepers and with management in smaller groups, but needs to be done more than one or two times per year. There are jobs such as cleaning, changing coolant and tools which can be done by workers. Only when there is a breakdown will the maintenance people be called.

Japanese influences.

According to the quality control department, the division of labour and the structure of the quality department of PROTON was copied from MMC of Japan. The majority of tools and equipment for testing were from Japan. Quality slogans, graphics and some pictures are also Japanese (but written in English or in the Malaysian language). And the most important or strategic element in organisation, that is 'quality control circles' (QCCs), was also learned from and fostered by MMC. In the beginning (1985/86), PROTON staff learned the QCCs movement from Japan (between 6 to 12 months). Japanese experts from MMC came down to PROTON and spent 24 to 30 months implementing QCC techniques. According to a quality manager, all quality staff are Japanese trained. However, do they consistently implement company-wide quality control (CWQC) as prescribed in Japan? To what extent do the Japanese experts help and guide quality staff to develop quality work life at PROTON and its vendors?

Quality and productivity movement.

At the time of field research, the participation rate in QCCs was 71 per cent of manufacturing workers, and 63 per cent of the total workforce of PROTON, still low compared with 90 per cent participation rates in Japan (Milkman 1991). The highest participation within manufacturing was from painting (100 per cent), and the lowest

from trim and final (56 per cent). The distribution of QCCs in manufacturing division is as in table 6.12.

Table 6.12: PROTON: QCCs participation rate in Manufacturing Division.

Department	No. of QCCs	Membership	Population	Participation (%)
Engine & Transmission	24	207	215	96
PPC	5	31	54	57
Production I				
Stamping	16	136	190	72
Body Assembly	38	620	881	70
Production II				
Painting	19	330	330	100
Trim & Final	30	509	909	56
Total manufacturing	132	1,833	2,579	71
Total participation	231	2667	4188	63

Source: PROTON's QCCs Secretariat 1994.

These different levels of participation were due to the lack of promotion and motivation to participate. According to the secretariat, the only rewards available were for the best circle and the best audio visual aids used in the presentation. Recognition such as monetary rewards, promotions visits and competitions was needed to increase take-up. The membership of QCCs ranges from 5 to 22, and the secretariat of QCCs has been standardising the membership at 10 only. In Japan, quality circles usually have 5 to 10 members (Oliver & Wilkinson 1992:23). All circles came from non-executives group. There was a campaign to encourage the executives (foremen and above) to have their own managerial circles, but at the time of study there were only two, Engineering II and PPC. The number of QCCs has increased from only 100 in 1986 to 174 in 1990, and to 231 in 1993. The development of these circles can be seen in table 6.13.

Table 6.13: PROTON: QCCs Development by year.

Year	QCCs formed	Percent increased (%)	Accumulated QCCs.
1986	100	-	100
1987	-	-	100
1988	-	-	100
1989	-	-	100
1990	74	74	174
1991	-	-	174
1992	-	-	174
1993	36	20	210
1994	21	10	231

Source : QCCs Secretariat, PROTON 1994.

The growth of circles was not consistent. There were no new QCCs registered in the years 1987, 1988, 1989, 1991 and 1992. After the formation of the first 100 circles

with the assistance of Japanese quality experts in 1986, the running was left to local managers and the circles became inactive. This inconsistency of circles' activities also happened at Nissan of Japan in the early stage of QCCs development (Cusumano 1985). In 1990, another 74 circles were formed at PROTON as soon as a Japanese MD took over in 1989, but again they did not work well. It shows that there was little attention given to QCCs activities by management and the movement was not properly organised as in Japan. The QCCs were apparently reactivated only in 1994, after the appointment of a deputy manager with special responsibility for them.

According to the secretariat: "There was a survey of employees' interest in quality circle activities and fifty per cent of them were interested." The secretariat was asked to improve the situation. The workers were not interested because they felt that the management commitment was not serious and clear about quality circles movement. In fact, according to him, "the secretary alone was asked to promote QCC activities without a proper team and facilities. Before the circles had been managed by production progress control, then in February 1994, they were passed to the QCC secretariat in the manufacturing division." To support this argument, when QCCs problems were put to a foreman at CKD storage, the answer was, "Workers are not clear about the objectives of QCCs and do not see the benefits of them. In other words, the supervisor or managerial team had failed to explain the purpose and the benefits of quality circles activities to company and workers alike. There was also a lack of recognition, such as monetary rewards, promotions, study visits, competitions etc."

To enhance the QCCs movement, a QCCs steering committee was established in 1994. It was headed by the deputy general manager of manufacturing, and advised by the general manager of Manufacturing. Eight managers (from Engineering I & II, PPC, E & T, Production I & II, Inspections and Quality Assurance) were appointed as members of this committee. The secretariat task was given to a senior deputy manager with special functions. The secretariat has to co-ordinate monthly meeting with managers to discuss the QCC performances, problems and future action.

The responsibility of this committee is very great, covering matters such as planning, implementation, evaluation, suggestion to improving QCC activities and reports on quality movement.. However it is not properly implemented because there is no proper team to run it. To date, nine Japanese experts sit on this committee, but only as observers. According to the secretariat, the Japanese manuals are more diagrammatic, more concerned with time saving, better expressed and more user friendly.

There are a total of 231 hours monthly allotted for QCC meetings at PROTON. These meetings are held in their respective QCCs or *kaizen* offices during working hours, instead of outside of working hours and voluntarily, as in Japanese companies (Ishikawa 1985; Cusumano 1985; Sugiura 1993). However, more than half of all companies in Japan have institutionalised the QCCs system and made it compulsory (Williams 1994:79). The circles are smaller and more effectively managed in Toyota and Nissan than in PROTON, the circles spend more hours per month in Toyota and Nissan than in PROTON. Quality circle activities are also more rewarding at Nissan and Toyota, as shown in table 6.14.

Table 6.14: PROTON: Comparative Characteristics of Quality Circles with Toyota & Nissan.

	Toyota	Nissan	PROTON
Participation rate of factory workers (%)	-	99 (1980)	71 (1994)
Average number of members per circle	5.9 (1984)	9.2 (1984)	14 (1994)
Number of hours meeting per month*	21 hours	3.0 hours	1.0 hour
Reward system	regular wages, overtimes, bonus of 300 yen per hour	allow claim of 2 hours in overtime for this activities	receive awards in convention only

Source: Cusumano 1985; Quality circle Secretariat, PROTON 1994

Note: * PROTON circles meet within working hours, whereas in Toyota and Nissan they meet outside working hours.

It shows that the commitment of workers is positive, despite of lack of support from management. These QCC projects are finally taken to PROTON's internal and external QCCs convention. At the moment there is no plan for a PROTONwide QCCs convention (which would include its vendors, subsidiaries, subcontractors and overseas members) as practised by Honda (Sugiura 1993), Toyota and Nissan (Cusumano 1988). Toyota took 3 years (1963-66) and Nissan 4 years (1966-70) from the first circle establishment to a total quality control programme with subsidiaries (Cusumano 1985:360). Honda had its first international convention participated in by overseas subsidiaries and affiliates quality circles in 1979 (Sugiura 1993:7). In Japan, the prevalence of QCCs is a result of massive quality-related education and training programmes, starting with upper management and continuing down through the organisation to non-supervisory levels (International Trade Centre 1986:134).

Statistical process control (SPC) and Open Suggestion System.

The Japanese often call quality control 'management by facts and data' (Ishikawa 1985:8). Using checksheets (Cusumano 1985), operators periodically sample their own process or production, in order to present a chart of how the process is behaving (Oliver & Wilkinson 1992:25). Statistical process control (SPC) is a tool in TQM or CWQC, used to observe and to record, to analyse and to improve the production

process. It is made simple and so practical that even the operator or production worker can do it (Oakland 1993). At PROTON, from interviews and observations, SPC is applied extensively in three instances, quality inspection, QCC information searches and maintenance records. Quality inspection takes place in each manufacturing process; stamping, body assembly, painting, engine assembly and trim & final. A check sheet is prepared to record the data of the work process and any irregularities or problems or defects that have occurred. These are very useful in tracing the reasons for the defects, or non-conformance. The foreman or assistant foreman will explain the performance of his section, why the target of output quality has not been met, and why there may be a high number of defects.

They also use statistical checksheets as their main document to record the behaviour of the process or defects/ irregularities, as part of QCC activities. But it is applied only on a project basis, so not every process is recorded. Another application of statistical control is the use of a main checksheet which accompanies each car to record what and where defects are on the car. The same sheet is used for QCC and *kaizen* activities. Therefore, SPC is not used properly as a tool to establish natural variations, to forecast and to trigger corrective actions (Oliver & Wilkinson 1992:25).

It has been argued that quality circle activities in Toyota became successful after it was combined with the suggestion system, where managers recorded who submitted suggestions and used these data when determining bonuses (Cusumano 1985:357). Information gathered from interviews and observations shows that no division organises and manages the suggestion system. When managers were asked whether they have any kind of suggestion system or not, the answer was:

We already give our workers an opportunity to make suggestions, that is through *kaizen* and QCCs activities. They can also give their opinions in daily sectional and weekly departmental meetings to their supervisor. If the proposal is worthwhile, as managers, we will definitely consider it and bring the matter up during the top management meetings.

Production Manager I

The manager was unable to differentiate and integrate between open suggestion system with QCC activities on production line with the *kaizen* philosophy as the whole. In response to the same question, an assistant manager replied:

It is good to have it soon, so that we can hear more openly our employees' opinions on how to develop the company, but they must be listened to, acted on, and supported consistently.

Quality education toward company-wide quality control (CWQC).

Although PROTON has been trying to follow Japan in promoting everyone as a quality builder, this element is not yet a part of the life of PROTON employees. QC staff still have to spend most of their time on quality inspections and daily quality discussions with line supervisors. In Japanese companies, TQC or CWQC is a fundamental production function along with other manufacturing functions (Oliver & Wilkinson 1992:23). Another point is that most repair jobs are done off the line, which requires space for a repair bay, by contrast with the on-line repairs of Japanese companies (Womack et al. 1990; Kenny & Florida 1993). In Japan they use more robots and high precision tools and reduce the defect rates, to boost productivity, and therefore a big repair area was less necessary (Ryoichiro 1994).

The productivity and quality of output depends not only on workers fitness but also on the fitness of the machinery and equipment (Nakajima 1994). The line keepers still concentrate on production, and the responsibility of maintenance lies with the engineering section. Unlike MMC of Japan, PROTON repair activities are done off line. When this question was put to a production manager, the reply was:

We are very pleased with the idea of zero defects. But, we are still at the learning stage. At the moment, normally we cannot repair on line because it will disturb the line, and the whole process will stop. The line mustn't stop unless there are critical faults in the machinery. However, we have been able to identify some problems which we can repair on line. For examples, small defects in painting and body assembly shops are repaired on line, such as in body fitting where rear door and hood adjustment is taking place.

The evidence shows that there is a need to study the capital/ machinery-labour ratio as the demand increases. If the policy is not to increase the pool of line keepers, PROTON has to upgrade its usage of more speedy machines and robots. Systematic quality education programmes for everybody in the company are crucial (Westbrook 1994), but they were absent at PROTON, except QCCs training. Without a continuous quality education programme for everyone in PROTON, and without a motivated working environment (such as money and recognition), it is very hard to produce a right or positive attitude within employees towards the quality of their working life. As we can see from QCC programmes at PROTON in table 6.15, the quality education programmes are only for QC members, not for the whole staff:

Table 6.15: PROTON: The QCCs activities.

Activities	Frequency	Achievement & remarks
1. Report writing:		
Monthly report-each circle	every month	on-going
Project report-each circle	project base	on-going
Department activities report	every month	on-going
2. Display QCC report at QCC area	every month	on-going
3. QCC convention		
PROTON convention (exclude subsidiaries)	annual	on-going
Participating in HICOM QCC convention	annual	on-going
National and regional QCC convention	annual	on-going with NPC*
4. Viewing video tape	periodical	on-going
5. Training on 7 tools of QCC	not yet decided	proposal stage
6. QCC presentation		
Internal presentation	twice a month	on-going
Monthly invitation	once per month	on-going
7. QCC display corner/ centre	permanent office	proposal stage
8. QCC poster	monthly	on-going
9. QCC notice board		shared with Admin. office
10. Training on QCC	annual	worked with HRD**
11. Research on QCC activities	will be decided	worked with HRD**
12. Coordinating QCC activities with NPC	monthly	on-going
13. PROTON QCC newsletter	quarterly	proposal stage

Source: Secretariat Quality Circles, PROTON 1994.

Notes: NPC* National Productivity Corporation

HRD** Human Resources Development

The above QCC training programme shows no classified programmes for top managers, engineer, assistant manager, manager, new employee, foreman and assistant foreman, which are a prerequisite for total quality control in any organisation (Westbrook 1995). The most important total quality education is needed even for top management, because unless the quality vision and strategy are clear, and total commitment is guaranteed from them, then there is little chance that the quality movement will be successfully implemented (Coulson-Thomas 1992).

My analysis shows, there is also a need to improve the communication between the quality office, production, human resources department, QCCs steering committee, management information system office, Engineering, engine & transmission, R &D, production planning & control, procurement & vendor development for the CWQC. At present the office can not take care of the total corporate quality management and build quality culture in PROTON, its subsidiaries and vendors.

The management wants to promote a self quality inspection, so that 'get it right first time' is maximised, as the car moves from one process to another. For this, workers are asked to meet every day in the *kaizen* room to thrash the problems out. But the policy has not been implemented and workers raise those problems only at their

monthly one-hour *kaizen* meeting. According to one informant, there are problems or defects which frequently occur, are difficult to solve and involve many sections. For this reason they established 7 task forces to tackle 7 major problems: door heavy force, head lamp, water leak, rear lamp combination, electrical function, scratches and roof drip moulding.

The study revealed that quality inspections of parts, components, and work in progress are still mainly the tasks of quality officers. PROTON has been able to involve 63 per cent of its population in QCC activities, but the circles operate without company-wide quality education and training, and there is no corporate quality policy. One could use the corporate mission statement as a guide to form a specific and clear quality policy, but quality policy has to be more focused. The policy should be a clear statement involving aims, objectives, targets, and approaches to be taken at all levels, and cover everyone. It should be used as a guiding principle in daily working habits, displayed at every strategic location, and a controlling factor in creating the right environment for quality working life in the company. This policy (together with the company's philosophy and mission statement) has to be a systematic guidance to everyone in the organisation, and would result in quality as a way of life and formal recognition (for example an ISO 9000 certificate).

Quality starts with education (Ishikawa 1985). Kaizen and TQC or CWQC programmes will be workable only if supported by quality education (Imai 1986). However, long-term quality education programmes which covered everyone are not being established and executed at PROTON. To what extent Mitsubishi has transferred its human resources development and management practices into the venture?

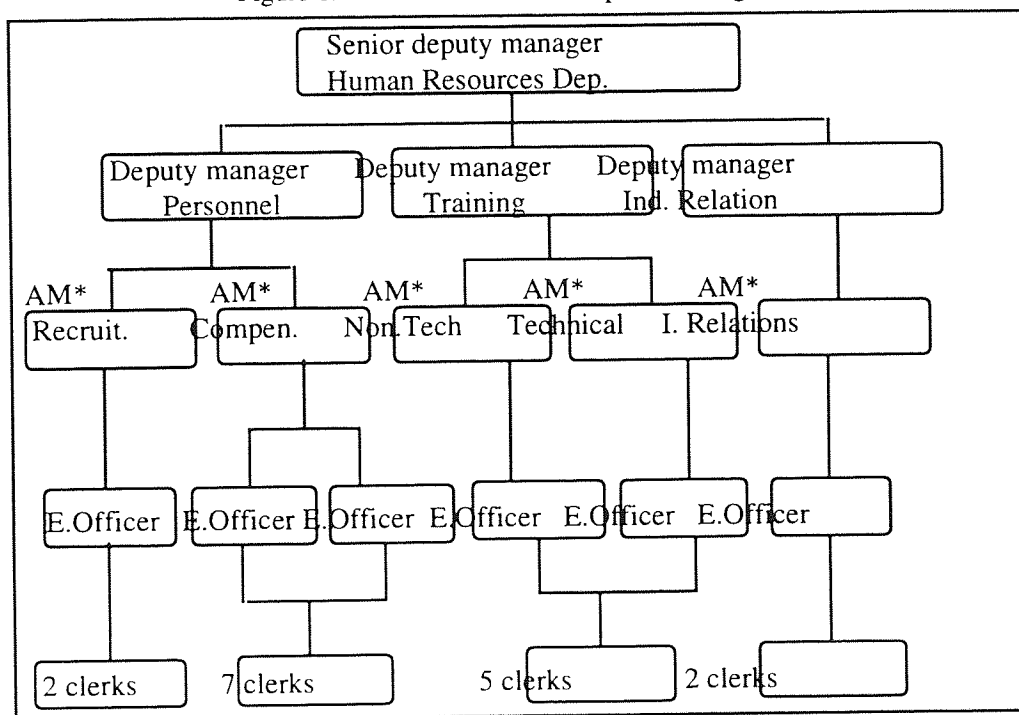
6.6 PROTON human resources management and development.

Japanese management is widely publicised as human-centred management. The company-based welfare system or high-cost personnel management has enabled the company to mould its young employees towards the company's culture and values. It also leads to high job satisfaction and performance, longer tenure and acceptance of change. To what extent has PROTON been influenced by MMC to manage its employees? Have high-cost personnel management and a company-based welfare system been exported from MMC to PROTON? And, since the venture is a Malay dominated company, does this give a different colour to its human resource management practices?

The organisation is headed by a senior deputy manager, who is assisted by three deputy managers and five assistant managers. With 30 staff members, they are responsible for

the development and welfare of the employees. The senior deputy manager reports and is answerable to a general manager for administration and finance. There are three main areas of responsibility, which are headed by three deputy managers; personnel matters, training and industrial relations. The deputy manager for personnel matters is responsible for recruitment, compensation and benefit. The deputy manager for training is responsible for the development of technical and non technical training. The other deputy manager is responsible for industrial relations. For further details, see figure 6.4.

Figure 6.4: Human Resources Department organisation.



Source: Human Resources Department, PROTON.

Note: AM* assistant manager

In 1993, of 3914 total employees, 50 per cent were production workers, 33 per cent were indirect and clerical and 18 per cent were executives (Industrial Relation Section, PROTON 1994). There were only 144 (3.4 per cent) female workers, and nearly a quarter (24 per cent) of them were in the executive group. This is similar to the Japanese standard where 'very few females' apply for sogo-shoku, i.e. candidacy for managerial positions (Inohara 1990:59). In terms of racial composition, there were 1.5 per cent Chinese, 2.2 per cent Indians and the rest (96.3 per cent) were Malays. The main bulk of managerial teams are also dominated by Malays. This is in contrast with the other Japanese transplants where top management is dominated by Japanese (Ismail 1993:240; Guyton 1994:80; JACTIM 1994). It also contradicts Malaysian manufacturing industries' managerial and labour patterns, which are dominated by Chinese (Imaoka 1985; Jomo 1995).

Japanese dispatched workers.

At the time of field research, there were 20 Japanese experts working at PROTON. They originally spoke only Japanese and a little bit of English, but now they can also understand a little bit of Malaysian. They are classified in three groups, management, engineering support, and tooling shops. Half are in manufacturing work, whereas the rest are in the MD's office, Business, R & D, Casting, Administration, and Finance. Even though they have worked for more than 20 years in the auto industry, their present work with PROTON only lasted 4 years. Most of them had been transferred overseas before being seconded to PROTON. Their secondment normally lasts between 24 and 36 months. All of them are classed in the managerial group, being deputy managers (45 per cent), senior deputy managers (15 per cent), managers (5 per cent), senior managers (10 per cent) and advisers (25 per cent) (Human Resources Department, PROTON 1994).

The number of Japanese staff working at PROTON has decreased from 100 in 1985 to 30 (1987) and 16 (1988). These experts are very important in operating the production line. Their function however, has changed from coaching and controlling the production operation, in the first three years of commercialisation (1985-87), to advising their Malay co-workers to solve problem themselves (Jomo 1994b:285-6). According to a manager interviewed:

Their functions are to assist and guide the Malaysian workers in operating the car assembly plant. Normally they will assist when problems arise, or if asked by Malaysian workers. Sometime they do identify and suggest solutions on their own. The rest of the time they do their own jobs prescribed by MMC. One of their most important duties is to send reports to Japan.

Japanese influence.

On 28 May 1983, the first fourteen workers left Malaysia for periods of between three months to a year (Tharumagnanam 1994:79). For the first 4 weeks, they learned Japanese, the fifth week they studied Japanese history and society, and after that they went to the Mizushima factory of MMC for practical operation and engineering training (Jomo 1994b:286). In 1985, some 330 trainees including engineers, research and development designers and managerial staff were sent to Japan. Concurrent training in Malaysia was supervised by the same (Japanese) instructor co-ordinating the programmes in Japan. Most of the subsequent training has been conducted in Malaysia by a core of MMC-trained PROTON staff, monitored by their previous trainers. "Although never before required to train such a large corps within such a short time, MMC obtained the necessary approvals from Japan" (Tharumagnanam 1994:79).

However, except in manufacturing technology, according to a manager interviewed: "PROTON is not bound to follow MMC's or the Japanese way in managing, mobilising and developing and taking care of its workers." So to what extent does PROTON take up the JST elements, especially the three pillars of Japanese human resource management; lifetime employment, seniority-based wage system and company-dominated enterprise union system (Inohara 1990:251)? In what way is PROTON's human resources management different. The discussions below will explore those questions.

Job classification.

Basically, the industrial Malaysian labour force has been divided into: professional/technical workers, managers and supervisors, clerical, sales workers and house keepers (Malaysia 1994). At PROTON there are two categories of workers, non-executive and executive. Foremen in the production line, executive officers from non-production line and above are classed as executives. Whereas anybody below that, is considered to be non-executives. This minimum number of job classifications with various capabilities is a characteristic of many big Japanese companies (Milkman 1992; Abo 1992, 1994a), such as Nissan Motor Manufacturing (UK) Ltd, where all manual task are covered just by two job titles, manufacturing staff and technician (Bratton 1992:24). This job classification is specifically applied at PROTON and other car assemblers in Malaysia, where employees are divided into worker and executive categories (Jomo 1994b:284). However, most of the other assemblers' executives and engineers were Chinese as the firms are Chinese-owned. Therefore, PROTON's job classifications match the job classifications of other car firms but are fewer than in other manufacturing industries. However, it differs in terms of racial composition.

Non-executive workers in the production line are classified into 6 categories (GI, G II, G III, G IV, JTSS, and Assistant Foreman), with a starting salary of RM. \$ 360 to RM. \$ 1,760. Administrative grades, are also classified into 6 categories (A,B,C,D,E,and F), with a starting salary of RM. \$ 320 to RM. \$ 1660. Annual salary increments for both range from RM. \$ 30 to RM. \$ 60.

The executive group are classified into 14 levels. A new officer enters as Executive Officer or Foreman, then can be promoted to assistant manager I, assistant manager II, deputy manager, senior deputy manager, manager, senior manager, deputy general manager, general manager, chief general manager, senior chief general manager, executive director, deputy managing director, and managing director. In other words, it

is a tall organisation hierarchy (Azumi et al. 1986) and it may take long years of service for an executive to reach the top, as acknowledged by a Japanese expert.

Life-time employment and lay-off policy.

In Japan, permanent or lifelong employment (Shushin koyo) is based on an unwritten employment contract but relies on mutual trust, except for nonregular employees who they have to renew their employment contract annually (Inohara 1990:23). Lifetime employment encourages loyalty, reduces labour mobility and is reinforced by the seniority pay and promotion system (Oliver & Wilkinson 1992:44). This is in contrast with some Japanese plants in California which avoid lay-offs so as not to invite unionism. It is also argued that a big company worker enjoys lifetime employment benefits at the expense of temporary workers (normally women) working for its subcontractors (Milkman 1991:85-6).

In the case of PROTON male and female employees can work until the age of 55 and 50 respectively. Similar retirement ages are found in the public sector. The company can still offer re-employment on a month-to-month basis to an employee who has retired (Collective Agreement, Article 47.A 1992/93). At present, no workers have been dismissed due to the business downturn. Under article 48 of the collective agreement, there is provision to retrench (dismiss) workers provided such employee (s) shall be given two months' written notice, and the company shall pay retrenchment benefits in a lump sum at the rate of one month's basic salary.

During a tight time in 1986/87, instead of dismissing workers, they managed to keep their workers by working only three days a week. They persuaded their workers to do landscaping, cleaning and repairing their own machines within their own premises, etc. As a resignation occurs, the personnel department will not refill the post. This practice is different from the general Malaysian practices of the mid 1980s where many factory workers were laid-off (Abdullah & Keenoy 1995). Similar practices took place in Japan. When there is business turned down, they used to transfer their workers into other departments and also to other subsidiaries (McMillan 1989; Inohara 1990).

Compared to the 3 per cent industry monthly turnover, PROTON's 0.6 per cent turnover is low. According to an assistant manager, the actual number of resignations per month, on average in 1994, was 25 to 30 production workers and 1 to 2 executives. Commenting on turnover, one senior deputy manager argued:

As a company, we are trying our best to satisfy our workers. It is up to them to evaluate what they get, and stay with us. In Malaysia, many people hop because of better offers, but they fail to see the long-term gain that he/she might get by staying in one company. For me, I'm working to satisfy myself. I'm happy working with a company that can contribute not only to me but also to the nation as the whole.

Most production workers who resigned came from body assembly and trim and final shops, where the hard and heavy jobs are located. In order to prevent this, according to assistant manager interviewed: "There are two ways to prevent turnover. One is to have stricter selection process, whereby only those who are physically fit will be recruited. The other one is to offer an extra allowance of RM.10 per month, for hard/ heavy jobs."

Job entries and recruitment process.

According to HRD, there are two points of entry, one for operatives and another for executives. Both target new school or college leavers and graduates. PROTON's human resources department imitated MMC and Japanese companies, which specifically recruit a young workforce, fresh from school, and ready to be inculcated in the strong work ethic of the company, which stresses dedicated performance of tasks, discipline, productivity and total commitment to product quality features, which are generally associated with Japanese automotive manufacturing (Dore & Sako 1989; Tharumagnanam 1994:79).

PROTON uses both internal and external advertisements to fill vacancies. When there is a vacancy for a top management post, it advertises openly and preference is given to internal candidates. But if there is no suitable person, it will try the open market. It is also a policy of PROTON not to recruit foreigners as employees, though foreigners worked at the PROTON vendors visited. Japan has one job entry and promotion has been always internal. At PROTON, workers are hired for the post, compared with recruitment for the company in Japan. Therefore regardless of their degree, these employees will be given very low level jobs so that new entrants 'experience hard jobs' (Inohara 1990:65).

The screening process takes 7 to 14 days, and interviews take another 7 days (approximately). At the time of interview, the workers are not informed where they are going to be posted. Their abilities and willingness to work in a group are also not tested and examined during the interview. Big Japanese companies and transplants employ an aptitude test, written attitude test, drug scanning, team leader interview, and teamwork problem-solving exercises (Graham 1994:133-4). Every new worker will undergo a three day orientation programme. After this, they will be told where they will be placed. They then undergo three months' on-the-job-training in their respective department or

section. Respective managers and foremen act as facilitators and trainers. According to one production manager, an engineer is trained for three months at PROTON compared to three years at MMC.

Merit-based promotion.

Another basic feature of Japanese human resources management is the seniority-based reward system (*nenko joretsu*). *Nenko* means the length of the service, and age is said to play a more dominant role in determining salary than job performance and competence (Littler 1982 cited by Bratton 1992:29). This is a misinterpretation. *Nenko* refers to all the technical and social merits or capabilities accumulated over the years in working cooperatively with colleagues (Inohara 1990:85). It was reported that with the increase of competition among workers, as many as 80 per cent of Japanese firms which employ over 1,000 workers use personnel assessment systems in considering individual pay and promotion (Endo 1991 cited by Oliver & Wilkinson 1992:48).

At PROTON, according to a spokesman from HRD, assessment is carried out annually for the yearly salary increment and not necessarily for promotion. At the time of submission, the department is asked whether there is a chance for promotion. Assuming there is a budget and the candidate is capable of performing new roles, the promotional exercise can proceed. In other words, the promotional exercise is done as the need arises. Merit is the main criterion in the promotional system. The ability to perform the job and work performance are very important criteria in upgrading any staff members. Seniority alone is not enough to promote or to give an increment to a worker. Seniority will only apply when there are more than two candidates qualified for one vacancy. Regarding internal promotion, an article in the collective bargaining agreement says that:

It is the company policy to promote employees from lower grade to higher grades, including executive positions, when suitably qualified employees by merit, qualification, ability and experience are available, and this policy will continue.

Article 18 (A), Collective Agreement 1992/93

The head of each department will evaluate the worker to be promoted. To avoid inconsistency in promoting workers from different departments, the human resources department (as facilitator) will apply its 'bench marking evaluation analysis' method, and meet with the promotional committee which is chaired by the MD. The department will have to consider whether there is a budget or not, whether there is a need or not, whether to recruit new or existing workers or not, etc. However, it is the MD who will have the final say, and this is a very confidential exercise.

According to an informant interviewed, up to 1994, one production worker was promoted to assistant manager. In other words, on average he was promoted three times within three years, from line keeper in 1985, to assistant foreman (1988), foreman (1991) and assistant manager (1994). In this respect PROTON does not follow Mitsubishi in promoting personnel. According to informants from the human resources department and a Japanese expert, promotional exercise at PROTON is faster than in Mitsubishi, at 3 years against 15.

At the same time, many executive officers have been newly recruited. It is a second job entry for PROTON. In early 1994 alone, there were 11 new executive officers and 2 deputy managers recruited from outside (Nadi PROTON, Jan./Feb., 1994), instead of promoting from inside as practised by Japanese companies (Inohara 1990:31). The details can be seen clearly in table 6.16.

Table 6.16: PROTON: Executives' length of service.

	Length of service years (%)			Total.
	4 & below	5 to 9	10 & above	
Executive Officer	177 (57 %)	109 (36%)	21 (7%)	307
Foreman & A. Foreman	1 (1%)	150 (88%)	19 (11%)	170
Assistant Manager I & II	97 (54 %)	74 (42%)	7 (4%)	178
Deputy Manager	22 (59 %)	14 (38%)	1 (3%)	37
Senior Deputy Manager	8 (21 %)	23 (61%)	7 (18%)	38
Manager & Senior Manager	8 (26 %)	7 (23%)	16 (51%)	31
Deputy General Manager	1 (17%)	-	5 (83%)	6
General Manager	-	2 (40%)	3 (60%)	5
Executive Director	1 (100%)	-	-	1
Deputy Managing Director	-	-	1 (100%)	1
Managing Director	1 (50%)	-	1 (50%)	2
TOTAL	316 (41 %)	379 (49 %)	81 (10 %)	776 (100 %)

Source: Human Resource Department, PROTON 1994.

Overall, the main bulk of executives have been with the company for 5 to 9 years (49 per cent), followed by executives (41 per cent). As we can see, more than 50 per cent of executive officers, assistant managers, and deputy managers joined the company 4 years ago or less, as did about 21 per cent (8) senior deputy managers and 26 per cent (8) managers and senior managers. This shows that internal appointment and promotion to managerial posts as in Japanese companies is less common at PROTON. In fact, one deputy general manager, one executive director, and one managing director were recruited from the open market. On this matter, one of the Japanese experts commented: "there are executives with little car industry knowledge and experience." This appointment and recruitment culture, I argue, slowed the performance of the company for 4 reasons. First, the company gave less priority and attention to experienced production workers, which is a priority in many successful Japanese and

German manufacturing businesses (Inohara 1990; Lawrence 1992:81). Second, it demotivated and demoralised senior foremen and assistant foremen who had been with the company from the beginning. Third, manufacturing management was given to new and inexperienced executives, who took time to learn how to manufacture and to manage. Finally, conflicts tended to arise between highly experienced workers and lack of experience (shallow) technical administrators. However, most foreman, assistant foremen, assistant managers and top managers, joined the company at the beginning.

The 'open-market intake' phenomenon, is not only happening at PROTON, but throughout industries in Malaysia. What are the reasons for this? As one deputy manager pointed out, there are three barriers to truly internal promotion, i.e. from bottom-upward, in Malaysia:

First, the wage system. There is a great difference between the take home pay of an engineer compared with a technician. In Japan, the difference is not big. Here, higher salaries are offered to those who have more experience. Second, the education system. There is a lack of vertical and horizontal career development. A technician will never be recognised as an engineer, even though their experience is deeper than an engineer's, unless they sit again for another engineering class to acquire an engineering (paper) qualification. Third, job hopping. This culture offers a good service to other companies who do not want to invest in training. By offering attractive perks and remuneration, they get workers in shorter period at less cost from market.

When Mr. Takahara, adviser to PF 41, a new car model under development, was asked about intake and promotion practices at PROTON, he explained:



Aston University

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In this sense, one cannot claim any simple transferability of JST to new soil as claimed by JST promoters such as Kenny & Florida (1991, 1993, 1995) and their camp. In the case of Malaysia, it shows JST is nationally bound as noted by Elger & Smith (1994). In other words, internal promotion on the JST or Japanese model probably can not operate in Malaysia, unless there is total educational, socio-cultural and industrial change, which is not likely to take place in a short period.

Human resources education and training.

Japanese companies consider 'training and development as a prime responsibility' (Inohara 1990:69). The training is face to face, person to person and is learned by performing the job with co-workers. The developmental programmes for PROTON's

workers were initiated not only by the human resources department and specific department concern, but also by many other parties, such as unions, clubs, the welfare committee, the prayer room committee, and PROTON housing apartment's association. The budget for human resources development in the 1993/94 financial year was RM. 7.487 million (0.25 per cent from sales), and until September of 1994, RM. 1.979 million was spent. In Malaysia a job is considered part of one's religion, as explained by HRD manager:

In Japan, work is treated as a responsibility. Therefore, they work hard because they have to work. In other words they work with lack of sincerity. In Malaysia, work is considered a trust and general worship of Allah. Therefore everyone willingly and sincerely does the job. Through the designed programmes, everyone is prepared to be knowledgeable and skilful. Their knowledge, skill, faith and morale are developed so that they are fit to work and behave in and outside the factory. They are taught to be highly self-motivated, desire to excel and to learn continuously. They are also taught that work (to earn a living) is a good deed which will be rewarded in the hereafter. Thus everyone is taught to present their best deeds or best works for the acceptance of Allah.

As explained by the HRD spokesman, the human development programmes can be classified in six categories: (i) physical and health development programmes through sports, games, and recreation activities; (ii) Job related knowledge and skill development programmes through in house on-the job-training and outside skill training, including in Japan; (iii) values and morale development programmes through continuous religious guidance classes, beginning and ending prayers, leadership courses, monthly religious talks, National Biro programmes; (iv) cohesiveness or groupism development programmes through daily family gatherings, daily congregational worship, weekly Friday prayers, funeral gifts and visits; finally (v) 'Banseki or Adventure Learning' (Malaysian model), a four-day outward bound campaign to develop inner strength, confidence and skill in managing changes and uncertainty; (vi) a 'bina insan' or 'human improvement' programme, where staff are sent on an outward bound integrated training programme, which includes jungle tracking, games, sports, back home work improvement action plan, daily congregational prayers, night prayers, discussion of work and its responsibility from a religious point of view, and its links with the job in the factory.

The programmes teach managers to assume the task 'as a trust and a form of general worship', so they are responsible for providing a comfortable environment to workers. This led them to set up a company housing estate nearby (about 2 kilometres from the factory), housing and car loans, financial funeral gifts, kindergarten, prayer rooms etc. And they offer the facilities to please Almighty Allah, not to please the workers. The programmes teach the workers to work not for money and promotion, but 'as a trust and also as a form of general worship'. So they too must do excellent work. If there is

disagreement between management and labour, they hold meetings and consultations rather than moving quickly to lay-offs, strikes and disputes. Though many authors have claimed that Malaysian labour is generally weak and poorly organised (Wad & Jomo 1994, Smith, W.A. 1994, Jomo 1995, Abdullah & Keenoy 1995), I believe that Malaysians (particularly Malays), whether managers or labours, still pay their 'budi bahasa dan adab' or 'courtesy' as taught by Islam which is embedded within them.

Nevertheless, from my interviews with human resource personnel, there is still a lack of efforts to link those values education programmes (religious sermons, talks and workshops) to work habits and productivity. The systematic measurement and evaluation of these programmes for further improvement, and the selection and schedule of the modules in relation to objectives are less developed. There is over emphasis on the non-executive programmes, whereas these programmes are also essential for executive and managerial teams. The classifications of the programmes are listed in Appendix 11.

Multi-skills career development, cross training and transferability.

In Japan, the idea of creating multi-skilled and flexible workers is enhanced so that both company and employees are not limited to one specialised skill, which may soon be obsolete (Inohara 1990). Multi-skilled workers and a flexible machine layout are needed in order to react to fluctuation in demand (Oliver & Wilkinson 1992). Article 17 in the Collective Agreement 1992/3 of PROTON states: "All employees are subject to transfer from one work station or location to another in accordance with the company's operational requirements." Even though there is provision for transferring the workers, according to an assistant manager interviewed, "in practice it was hardly implemented, except in the managerial group (foreman and above)." For example, a production manager II (since January 1994) was previously in maintenance (1984-88), then transferred to production I (1989-93). No transfer exercises take place among employees below assistant foremen. There are job rotation exercises for line keepers but only within their cell (with a specific range of skills), not between cells. The stress on a flexible or multi-skilled workforce is a prerequisite for a flexible manufacturing system (Bratton 1992; Kenny & Florida 1993). The likely problems, according to a senior deputy manager, are:

If a worker is transferred from assembly line to non assembly line, they regard it as promotion, but if we transfer a worker from trim and final to body assembly, they will take it as a demotion. It is a hard policy to implement. What is sure is that, so far, we have never transferred a worker from non assembly line to assembly line.

The president of the PROTON workers' union (PWU) agrees to the transfer of personnel, provided it is based on multi-skills acquisition, or is a form of promotion. Otherwise, as stated by him:

We agree to any transfer of workers based on skill upgrading and for promotion. But it is demoralising when a person transferred out from his section and his seniority is lost, or if it is done as another way of punishment.

Both statements show that union and workers have considerable power to prevent unacceptable labour deployment, so that management can not transfer and rotate their workers without proper grounds. There is no written policy on multi-skilled development in the company, but there is some movement to enrich workers' skills. This is done only within a section, not between sections. For example, a trim and final worker may work one day in TF 12 to fix head liner, brake pedals, accelerator cable, clutch cable, speed cables, and the next he may be fixing rear absorber, air distributor, brake booster, wiper motor and weather strips in TF13. Both these work stations are located within trim and final. This transfer is neither periodically planned nor ad hoc, but rather arises from the worker's requests. According to a assistant manager at HRD, when there is a promotional exercise the potential employees will be transferred for job enrichment and familiarisation. Research by Florida & Kenny (1991) also showed that transfers between departments are rare.

Welfare practices.

Company-based welfare systems are another feature of Japanese personnel management (Oliver & Wilkinson 1992). In the West, company welfare is grouped under extrinsic and intrinsic rewards to workers (Child 1984:172). Today, organisations in the East and the West work to satisfy their customers, which in the end increases profit. Culturally, the Japanese take more care of their workers than does the West (Othman Alhabshi 1994). On the other hand, Japanese companies are said to impose 'inhuman-robot-like work', and to overwork their workers (Kamata 1983 and Kawahito 1991, cited by Oliver & Wilkinson 1992:50-1).

PROTON believes that its employees must develop and become better equipped in order to contribute effectively. It has five commitment charters, to share-holders, business associates, workers, customers and the nation. As declared by the head of the human resources department: "PROTON must promote a conducive environment, focusing on long-term human resources development. All programmes are directly or indirectly related to the above commitment".

The salary offered is competitive when compared with other companies. But in certain circumstances, PROTON had to offer more, not only to attract excellent workers but also to retain them (Nadi PROTON 1994). At PROTON, yearly increments are balanced between innovation and workers' capabilities. If workers contribute continuously through abilities and skills, they will be given a higher increment. The supervisor will assess the individual performance and a rating will be given. To ensure that the increase of salary is justifiable and reasonable, there are certain criteria to be followed such as: (i) expertise (ii) ability (iii) performance (iv) education background and (v) demands of the profession (Nadi PROTON, *ibid.*).

At the time of the study, a 3-month bonus was given to all non-executive employees, regardless of whether the targets were met or not. The executives can only get their bonus after they have met their targets. Besides basic salary, yearly increment, and bonus, workers receive payment for work on non-working days, gazetted public holidays, non-working Saturdays, outstation allowance, shift allowance, and a mileage claim. The same practices are found in most industries (Abdullah & Keenoy 1995).

To give employees satisfaction, PROTON provides many work facilities, sports and recreation, religious facilities and transportation facilities. Other fringe benefits are education assistance, company housing, subsidised housing loan, subsidised car loan, compassionate leave, funeral expenses, a gratuity for celebrating the ending of fasting month (Ramadan), pilgrimage and such like leave, annual leave, maternity leave, disablement alternatives, retirement benefit and paid holiday. This was similar to the practices of big corporations in the US (Kanter 1983) and Cadbury of the UK in 1900 (Smith, C. 1990:60).

According to a HRD manager, two recognition schemes were reactivated in 1994, the best group award (every two months), and long service award (for ten, twenty, thirty years of service). The criteria used for this best group award are: quality of work in following standard operating procedures, neatness, attendance and punctuality, safety and health, application of 4 S, and QCCs. From the yearly PROTON QCCs' convention, an award is also given to the best group (first, second, and third) and also to the groups that participated in the final presentation.

Another form of recognition from company to workers is that when the company wants to do or have something, it usually informs and involves the union. However, under Japanese management, the union was even called in at the discussion stage. Further recognition to workers is through company gifts. For example, pens and coupons are given to each worker when the company achieves outstanding performance such as

passing sales targets or launching new products. Internal promotion is also a strong indication of recognition. But until now, only one line keeper has been promoted to assistant manager (as reported by a deputy manager at human resource department).

After 9 years of operation, in 1992 PROTON was publicly listed. About 3.8 per cent shares were reserved for the directors and employees (Tharumagnanam 1994:29). A majority of 91 per cent of the shares belong to 36 investors (as of May 31, 1993). In other words, the company belongs to outsiders. This contrasts with the ownership pattern of Japanese company, where the majority of shares belong to insiders (Zainuddin 1993:22). Japanese shareholders have little influence on the running of the company, the balance of power overwhelmingly favouring the managers. However, in Malaysia shareholders have great influence on the running of the company, such as on the appointment of the managing director, on corporate strategies and dividend disbursement.

Supervision.

According to Rehfeld, who worked for nine years with Toshiba of America, the Japanese are not interested only in results, but are equally interested in the process and in how you can do it better next time. They also, without getting emotional, fix the problem without attributing blame (Rehfeld 1990:169-171). At PROTON, according to a senior worker interviewed: "Generally, Malaysian managers are result-oriented, and put less emphasis on how to achieve the targets. Work-in-progress, production volumes and the services targeted act as a driving force for all workers. When the time is due, the results must be submitted to the boss. Follow-through and follow-up are not really carried out". When a manager goes to the shop floor, his concern is with the products and machines, not the workers. By contrast, Japanese experts emphasise the 'know how and know why of the process' and practise close and continuous supervision throughout the projects. As commented by a foreman: "to some extent Japanese managers are smarter or cleverer in winning the hearts of workers than local managers are". The way Japanese managers supervise seems to be admired by foremen and production workers.

Engineers in management team.

Some say that Japanese and German manufacturing management is dominated by engineers. They are production oriented, responsible for quality and associated with Japanese manufacturing excellencies (Lee & Smith 1992). Moreover, in Japan (McCormick 1992) and Germany (Lawrence 1992), the status of engineers and industry is high. Different treatment of engineers has been argued as a contributing factor to the success of Japanese and German industry compared with British and

French firms. In Malaysia, engineers are generally regarded as technical people who are good with machines and numbers. However, in the late 1980s the image of engineers changed as the role of manufacturing industries changed. Many engineers assumed the role of managers and top management.

In 1995, there were more two hundred engineers and designers in PROTON's research & development (R&D) department (Malaysian Industry, November 1995), mostly mechanical and electrical engineers. About 70 per cent of them were graduates from the US., the UK., and Australia. In the past they did not understand the Japanese system and language. Today about 10 per cent of them speak Japanese. In terms of promoting engineers into the management team, they seems to be positive, and 63 per cent (50 out of 80) of PROTON's section heads are engineers. There are also engineers who head non- engineering departments. This could bring a better chance of future success for PROTON with high recognition of engineers.

When a question on the technological learning process with Mitsubishi was asked, a spokesman from R&D replied:

In the beginning, the automobile technological development plan was not in the agreement package. However, when we told them that we had to have R&D for local technological and industrial spearheads, they gave way. We admit that we did not give the best product with the best knowledge for Saga, i.e. first car, because we were still at the initial learning stage. However, as the pressure for product quality from customers, competition and the needs of different specifications from overseas markets increased, from 1983 to 1993, we have been engaged in supporting production groups and to assist vendors (in design, production and other aspects related to conformation of products efforts). Only in 1993/ 1994, did we start to learn and know the engine making and testing equipment development.

According to interviews with R&D informants, there has been no involvement from Mitsubishi in R&D activities. In other words, the technological development capability of the alliance is totally dependent on Malaysians. As noted earlier, the managing director said that "they are not interested in Malaysian technological development".

Summary

In 1992, the Malaysian government launched '*masyarakat penyayang*' (caring society) and '*rumahku syurgaku*' (my home is my heaven) campaigns. The propaganda message of the government was for everybody to love everyone in society. Leaders, parents and bosses, were encouraged to take care of their children, workers and subordinates. And subordinates should love and be loyal to their bosses and parents. And everyone shall be responsible for their environment. The purpose of these campaigns was to nurture love and affection within society and a green and healthy environment. At the organisational level, a reward was given for the 'caring

organisation', and PROTON was awarded the 'Caring Employer Award' by the Ministry of Human Resources for the year 1994 in conjunction with workers' day celebrations. The award is for model employers in the manufacturing sector with more than 500 workers (Proton Focus 1994).

Looking to the practice of PROTON's human resources management, it seems that PROTON has a mixed or 'cross-cultural' management style (Waters 1991). On the one hand it practises normal human resources management and development, such as promotional exercises based on merit not seniority, and promotes people from outside although internal promotion is preferred. An element of apartheid still exists in PROTON, where top executives and workers have separate car parks and take lunch or dinner in different cafeteria. The rewards and appraisals are mainly for individual performers, and the supervisors stress results more than the process. On the other hand, PROTON has also adopted some Japanese human resources management and development style, such as a fresh intake of workers from college and universities, and continuous training and development. It also has double work entries (intake), open offices and the wearing of a single uniform. It avoids lay-off, involves workers in operational matters, and enable engineers to become managers. Slowly, rewards to the best group performers are being introduced, and sports and other facilities are provided. Those are the Japanese elements practised by PROTON, though normally for 'core workers' only (Oliver & Wilkinson 1992:57; Kenny & Florida 1993:10; Elger & Smith 1994:42).

Malaysian values and culture definitely influence the human resources management of PROTON, as in the implementation of adventure learning, human improvement programme, monthly and periodic religious talks/workshops, yearly family days, yearly fasting month programmes, daily prayers and worship, weekly congregational Friday prayer and other religious facilities. All these practises inculcate and develop cohesiveness between PROTON citizens, respect and loyalty, sincerity of action, and develop morale and ethics. Good human resources management is believed to lead to a harmonious labour-management relationship, which will be explored in the next discussion.

6.7 PROTON industrial relations.

Regarding trade unions, the Secretary General of the Malaysian Trade Union Congress (MTUC) proclaimed that:

All employers are the same when it comes to having unions or not. Regardless of whether they are from the East or West, whether they are local or foreign, they prefer not to have a union. But the law of the country insists on a union. So many of them prefer to have an in-house union. In Malaysia, Japanese and Malaysian owners always try to influence workers to have an in-house union.

Historically, Malaysia's trade unions are craft, industrial and nationally based, an inheritance from the British colonial period. Unions were strong among Indian rubber plantation workers and tin miners (Chinese workers) before and after 1957 (Jomo 1995). As the core economic sector shifted from primary to manufacturing and service industries, today trade unions have expanded into manufacturing united under the MTUC. In the service sector, especially the public sector, trade unions are united under the Congress of Union of Employees in Public and Allied Civil Services (CUEPEC). Both bodies represent Malaysian workers at the annual International Labour Organisation meetings (Jomo 1995:188).

It has been argued that in the interest of Malaysian socio-economic development, and the need for a successful industrial relation system suited to Malaysia, the government promoted enterprise unionism (Wad & Jomo 1994; Jomo 1995). In-house unions have existed for some time in Malaysia, 'mainly in the statutory bodies' (Jomo 1995:206). This enabled PROTON's management to adopt a company-wide union in 1988. Does the union cooperate with management as in Japan, or is it hostile, as in the West? What factors contributed to the formation of the union, and how harmonious are labour-management relations at PROTON? The discussions below will explore these questions.

The Industrial Relations Section at PROTON was established under HRD to act as a sponsor or an organiser to develop harmony in the company. It is headed by a deputy manager, helped by an assistant manager and an executive officer. There are five team members in this small organisation, including two clerical workers. For the welfare of all workers, this section has a budget of RM. \$ 120,000 a year. Some of their responsibilities are: (i) to create awareness within workers that work is a form of '*ibadah*' or 'worship', and everyone shall do it professionally, by organising monthly religious-based work ethic and morale development programmes, Ramadan (fasting) month programmes, periodic '*Bina Insan*' (human improvement) programmes, etc.; (ii) to look after and improve the conditions of the 20 prayer rooms; (iii) to facilitate the implementation of the Best Group award; (iv) to arrange for the renewal of the collective agreement every three years; (v) to settle any grievances; and (vi) to act as mediator between management and union. Emphasis was given to the first three as prevention measures rather than the last two (as corrective measures). In this way the

cost of absenteeism, strikes and other negative work attitudes could be minimised or avoided.

The only union at PROTON is the PROTON Workers' Union (PWU). It was officially formed in 1988, with strong support by management. The membership of the union is from assistant foreman and below, i.e. non-executives. In MMC, according to the Japanese expert interviewed, all assistant managers and below are unionised under one company-wide union. There are others who are not covered by this union, such as confidential staff, security personnel, and temporary employees. These groups are considered as peripheral workers, who are excluded from high-cost personnel management (Dedoussis & Littler 1994) and are paid less (Milkman 1991). However, their numbers in PROTON are less than two per cent.

There was no union between 1983 to 1988, because under the Investment Tax Credit act workers cannot establish a union within five years of forming the company. Within this period, a joint consultative council (JCC) between labour and management was formed to act as a platform where workers could express their needs and views to management. In Japan, JCC is a place where both labour and management tried to improve the social status of union members and the continued growth of the company (Inohara 1990), and where worker and management work as a family (Sasaki 1981:7).

The committee council of PWU for the years 1992/1994 was headed by a president and a team of four senior officers (secretary, deputy secretary, deputy president, and treasurer). The president worked full-time for the union. These senior officers were supported by executive members of four sections, training and education, economy, welfare and safety, sports and social. Of 13 senior officers and official members, ten of them had worked since 1985, holding the post of assistant foreman. The committee is selected every two years by its members through ballot. Membership of PWU is not compulsory, but it has been consistent at an average of almost 80 per cent. This was due to the efforts made by committee members to encourage the staff to join the union. The membership increased from only 1,179 in 1988, to 2,975 in 1994. The trend of membership can be seen in table 6.17.

Table 6.17: PWU memberships development.

Year	Memberships	Total non-executive workers (%)	Density rate
1988	1179	1384	85.1
1989	1127	1473	76.5
1990	1909	2250	84.8
1991	1792	2484	72.1
1992	2156	2661	81.0
1993	2469	3336	74.0
1994	2975	3610	82.4

Source : PROTON Workers' Union 1994

The first annual general meeting was attended by all members and held in November 1988. By secret ballot, 15 officers were elected, with a president, vice-president, secretary and 12 other members. By 6 December 1988 PWU members were already involved in collective bargaining. The first Collective Agreement (CA) was concluded on 20 December 1988, and was sent to the Industrial Court for recognition. Apart from the statutory terms and conditions of employment, additional side agreements were signed. They covered festival advance, free transportation to and from home, sales of PROTON flats, job evaluation, staff purchase discount, ambulance, uniforms, upgrading of workers, line keepers'/sub leaders' allowance, milk subsidy, driving licence reimbursement, incentive allowance, etc. There were many important points of the CA such as: (i) the establishment of a Labour-Management Council to ensure harmonious and good labour-management relations; (ii) major changes in terms and conditions of service; (iii) a 5 per cent salary increment across the board; (iv) medical and hospitalisation benefits for non-executives and dependants - 50 per cent subsidy; (v) 15 days' paid pilgrimage leave; (vi) payment of incentive (bonus); (vii) creation of additional job grades to increase promotion prospects, especially for Japanese trained workers. Until today there have been 7 annual general meetings, and the union has had by four presidents.

On 20 December 1991, the second CA (1992-1994) was signed. There were new major fringe benefits agreed such as: (i) a decrease in working hours from 44 to 42.5 hours per week; (ii) salary adjustment of 11 per cent; (iii) housing and car loan subsidy; (iv) night shift allowance from RM. \$6.00 to RM. \$7.00; (v) transport assistance of 0.80 cents per production and scheduled maintenance day; (vi) laundry assistance of RM. \$10.00 per month; (vii) education assistance; (viii) dental treatment of RM. \$100.00 per year; (ix) increased medical benefits for employees and dependants; (x) funeral expenses RM. \$1,000.00, and insurance advance RM. \$ 3,000.00; (xi) food and outstation allowance etc. The Japanese management team approved all these facilities.

The third CA negotiations (1994-1996) were held on 12 October 1994 at Langkawi Island, Malaysia. This was the first CA meeting held under the new Malaysian management team. According to the president, there were many issues like salary increment, more recognition programmes, training and development, etc. to be discussed. Employees were given a 10 per cent salary increment (Nadi PROTON, January-April 1995), and the share option scheme was revised to enable employees to participate in the future prosperity of the company (PROTON Annual report 1995:30)

According to a union committee member, the PWU has a yearly budget of RM. 50,000 to finance all their activities, including sports and social, economic, welfare and safety, training and education. This fund has been generated by the Union, with a contribution from the company. All activities are run under four operational divisions. The first one is sports and social division, to which the union has allocated RM. 10,000.00 to support the activities and facilities organised by the PROTON Club, an association at PROTON that is active in games and sports and involve the management group in the company. Some of the programmes are sports competitions between union members, between departments, or between union and management; and helping to celebrate the yearly finishing of the fasting month. The welfare and safety section has a budget of RM. 10,000.00 to look after the welfare of the workers, such as a gift of RM. 500.00 to families on the death of a union member; to provide prayer facilities, to determine the menu in the cafeteria, a health service at plant and PROTON's housing estate, and organising an anti-smoking campaign.

The economic section has a budget of RM. 15,000.00, and is responsible for strengthening the union's financial state. At the moment it is involved in monthly sales and promotion activities. The other division is training and education which is very important to workers generally and members specifically, because it develops the workers' understanding of their rights, responsibilities and role in developing the company. Local training institutes and consultants have been utilised to serve this purpose. According to the union committee, to motivate workers management allows them to attend this training on paid leave. The courses include labour laws and acts, organisational development and unity, strategies for union strength and team building. Some of these courses are repeated for the benefit of members, some are not. About RM. 15,000.00 was budgeted for these courses. The courses are held once or twice per month, and attended by 25 to 30 workers per class. The union also sent its workers and officers to other external courses and seminars.

According to a union spokesman, there are other courses organised by the union, like leadership, human relations, industrial relations, and religious/ *'Iman'* or faith

development. For example, in April 1989, Jan. 1993, and 1994 some PWU principal officers were sent for training to MMC, Japan, and two were sent to Japan to attend the International Union Seminar in May, 1990 (Minda 1994). The expenses of these trips and courses were borne by the company. In fact, the company had its training programme plans to send a few PWU officials to Japan to deepen their knowledge and understanding of the Japanese industrial relation system.

Japanese influences.

There is a strong Malaysian state and Japanese management influence on labour-management relations, especially in the formation of the company-wide in-house union. The state, through LEP, wanted every company to establish an in-house union, because it believed the enterprise was a key factor underlying Japanese supremacy (Wad & Jomo 1994:216). Dissatisfaction and grievances are discussed within the walls of the factory, without interference by any 'outsiders' (Inohara 1990). In the beginning, PROTON workers were more interested in joining the national union than an in-house one. However, it was opposed by the management, as noted by the union spokesman:



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This event proved the truth of the claim made by the secretary-general of MTUC cited above. However, this is not a total 'union avoidance' as in California factories (Milkman 1991). It should rather be called 'preferred unionism'. According to a spokesman from industrial relations unit, the Japanese management under Mr Iwabuchi, the first Japanese MD at PROTON, not only supported the formation of an in-house union but also worked closely with it:



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On 27 July 1988, a temporary in-house union committee was formed and had its maiden meeting. The committee comprised 7 members, a chairman, a vice-chairman, a secretary, a treasurer, and three official members. They applied for registration and obtained recognition from the registrar of trade unions in August 1988. In December that year, the first Collective Agreement was signed between PWU and PROTON. The

evidence gathered shows that the union was founded to cooperate with rather than to confront the management. In fact, when compared with unions in Japan, PWU is tolerant and not militant. As noted by one Japanese expert interviewed: "PWU is very friendly and co-operative to management, compared to Japan, where the union is much stronger and difficult to handle."

After the formation of this in-house union, according to a union member: "There was a move by the president of the union to joint PWU with a national union. But he experienced difficulties and gave up the mission." However, the labour-management foundation laid by the Japanese management was not built on by the new management after a Malaysian MD was appointed in 1993. The practices of labour-management council established in 1983, the open suggestion system though it was suggested by union in 1992, and consensus decision-making or participative management in true sense were all absent. All union officials have been trained in Japanese union administration and know the rights of the union.

Recognition of the union and collective bargaining.

In Japanese companies, unions are 'cooperative rather than adversarial' with management (Milkman 1991:699). At PROTON, the relationship between union and management is quite close and cooperative. So far, management has respected the union not only in collective agreement arrangement, but also in other functions. According to the Union's president:



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This co-operation can also be seen in the many benefits concluded by both parties from year to year in the finalising of their CA.

Labour-management Council.

The council is supposed to provide a platform where management can communicate their plans, and discuss issues such as production, marketing, and personnel. They also negotiate items and provisions to be agreed later at formal collective bargaining. The representatives come from management and the union in equal numbers, with the chairmanship taken alternately by union and management (Inohara 1990:135). At PROTON, the labour-management council was established in 1988 as an alternative to

a union. Its purpose is to ensure good relations between workforce and management, by working together for the growth of the company (Collective Agreement 1992-94:7). However, the council is not active, as noted by the union's president: "the council exists only on paper, but does not actually function". According to the union, although the JCC could be used to channel workers' requests and dissatisfactions, its role in the welfare of the workers was unclear (Minda 1994:18). The union spokesman said that since the establishment of the union, workers recognised the union rather than the council in voicing their needs and proposals.

In the case of factory accidents, for example, a worker was involved in an accident while working in the body assembly shop on the production line. The safety crew from the production office sent him to hospital for treatment. The worker was hospitalised and it was medically recommended that he could not work after that. The worker asked for compensation because the injuries had taken place during working hours. The safety officers and union investigated the causes, and they found that the injuries were due to misbehaviour by the worker, and the compensation was disallowed. PROTON offered him lighter jobs and token compensation, but he decided to quit with a token compensation. Therefore investigation and consultation were undertaken by safety personnel and the union before any decision was made.

Personal communication and social interactions.

In Japanese companies, personal communication and social interaction are emphasised and become a way of life. Managers and supervisors invite their staff for a drink after work. They discuss their intentions with each other and report the results to one another. When a manager is transferred to another plant, his subordinates come to the house to help with the packing, cleaning and on the day he leaves they line up at the railway station to see him off (Sasaki 1981:5,7). In Japanese society, if a person does not turn out for three days, it is the responsibility of others to pay a visit to find out whether (s)he is sick (Imai 1986). The trust between managers and subordinates has been built through eating and drinking, mountain climbing and golfing together, and it 'makes communication much easier' (Rehfeld 1990:173). At PROTON there are different types of personal communication and social interaction opportunities between managers and workers. Some of them are daily congregational prayers, Friday congregation prayers, managing director-executives luncheon discussions once every two months and yearly sports and games events. They also have a yearly family day, annual dinner and yearly gatherings and top managers hold open house at the end of Ramadan.

Through these events, communication between managers, workers and their families is supposed to become very close and a sense of belonging and groupism is strengthened. However, when asked about the effects of these programmes on their work behaviour, for example group cohesiveness, a production manager II said:

From my experience, in daily work life, though we have been inculcated with '*gotong royong*' (cooperation) and '*meminta dan memberi nasihat*' (to ask for and to give advice), nevertheless there are many cases where we tend to do our jobs individually without the consent of others. In meetings and making decisions, we tend to answer, to give out opinions or suggestions and to make decisions without consulting, referring to and informing other team members. It is in contrast with the Japanese, who always consult their team members before giving any suggestion or decision.

Thus, the effects of social interaction seem to be less prevalent in their work practices. Japanese experts and their local workers communicate through scheduled meetings and daily personal communication. Some interviews were conducted at PROTON to see the pattern of communication, which seems to be confined to the managerial level within the department concerned. There is no communication at all between Japanese experts and local non-executive workers, except when they go to the production line. Experts and local managers frequently visit the shop floor to practice 'management by walking around', but, as mentioned by a foreman, there are differences in the habits of these managers:

There is a difference of behaviour between local and Japanese managers. When local managers visit the floor, they walk along the line, and sometimes some of them just give '*salaam*' or greetings and go away. But when Japanese managers visit the floor, they greet most of the workers and sometime put their hands on the shoulder of the employees and acknowledge the workers and their works, and then they go.

The frequency of discussion or meetings between Japanese experts and local executives varies from twice a day to three times per week for formal communication, and from two times per day to six times per week for informal communication. The discussions normally concern solving problems, how to take countermeasures, and report making or feedback. These experts arrive at seven in morning and leave after eight, whereas local managers arrive at eight and leave at six. As mentioned by one manager: " If Malaysians want to learn and to acquire more knowledge and skill from Japanese experts, Malaysians must work as hard as the Japanese and go home after eight p.m."

There is minimal communication between Japanese experts and managers in other departments, and only occasional communication between these experts and local vendors. These practices go against the need for closeness and frequent communication between suppliers and recipients in order to enhance technology transfer (Dahlman & Westphal 1983; Lall 1992; Al-Ghailani & Moor 1995)

Changes in management-union relationships.

Although PWU was formed prior to the period under Japanese management, the union was nevertheless fully acknowledged. The Japanese management gave very strong support to the union. In this period, every week there was a management-union meeting. The Japanese MD would call managers or assistant managers (not the workers), if there were any defects and problems in production processes. For any important decision making or events, the union was informed and consulted and points were discussed before matters were formalised. During this time the QCCs were very active and every year workers got various small presents from management.

After PROTON moved back into profit, in July 1993, the leadership was given back to Malaysians. According to the union, the new management tended to modify the Japanese method of running the organisation, particularly in dealing with the union. For example, the frequency of communication with the union was reduced to once a month, compared to once a week. In addition, as profits dropped, instead of sharing ideas and motivating workers, management claimed that the workers' request for a higher salary was one of the factors that contributed to the low profit margin (NST December, 1993). To cut costs, according to the union, the training budget was slashed and all personal telephone calls outside Kuala Lumpur had to be paid for by the callers (Union informant 1994; Nadi PROTON, January-February 1994)

The union also claimed that workers received many more small company gifts for any achievement (such as pens and special coupons when there was a launch of new models) during the Japanese era compared with current management, and that the QCCs were more active. Moreover, the venue of the end-of Ramadan celebrations changed from a hotel (with family) to the PROTON plant and (without family). It was further noted by the union that work memos sent to workers were inappropriate, because when workers referred the matter to the union, the union knew nothing about it.

These facts show that the current management had not maintained the level of management-union relationships set up by the Japanese managers. Probably the changes were only temporary during the transitional period (1993/94) from Japanese to Malaysian management. But they could also be a sign of failure to understand the importance of the system developed by the Japanese and a failure of Japanese experts to pass on know-how and know-why to their Malaysian partners. However, this cost-cutting exercise was not as bad as downsizing and redundancy in Europe and America (Doherty et al. 1993)

Participative management and consensus decision-making.

One of the most widely discussed features of the Japanese model is the emphasis on worker participation (Milkman 1992:74), where their intellectual capabilities are used in company's improvement process (Kenny & Florida (1993:14). At PROTON, both direct and indirect participative management are practised. Examples of direct participation are *kaizen* activities on the production lines and yearly production plan and schedules. For indirect participation, there are monthly meetings and consultations with the union as the need arises. In QCC meetings or *kaizen* activities ideas come from line keepers, and management approve their suggestions. According to a senior deputy manager:

Whatever activities involve workers, we will discuss with the union first before a decision is implemented. One good example occurred in 1986. There was a business turndown as the result of economic recession. The management discussed the problem with the union to get their opinions and suggestions. Finally, both of us agreed to work three days a week, and as a result of it we were able to keep (1500) employees.

At PROTON, the managing director himself is also ready to accept ideas from subordinates, but it must be through the right channels. As he stressed in the internal worker bi-monthly magazine, Nadi PROTON:

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Nadi PROTON January-February 1994

In Japanese companies, management, theoretically, normally discuss and collaborate with everyone before making a decision (Rehfeld 1990:174), so it normally takes a long time to reach an agreement. However, things move quickly after that (Imai 1986; Rehfeld 1990). At PROTON, the best example of consensus decision-making, with workers or the union taking part in the decision-making process is perhaps in production planning. Given a production target by PPC and the Business department, union and management must come to an agreement on a production schedule (daily, weekly and monthly), how many working days, leave, over-time, which Saturdays are working days, etc. On the other hand, both parties have to agree on the new terms and conditions of work in their CA.

Other than that, normally management make all decisions. For example, according to a union officer, any new agreement with outsiders, the allocation of shares, new investments, policies and other aspects, were discussed and finalised by the management committee (deputy general manager above and office heads). Only then is the union informed. The union is not involved in the process of decision-making and therefore there is no consensus decision-making. This practice is similar to the Japanese

transplants in Australia (Dedoussis & Littler 1994), Brazil (Humphrey 1994) and Singapore (Wong 1990), where workers are excluded from any corporate strategic decision-making by management. The only difference is that in those countries Japanese management excludes local workers from decision-making processes, but in the case of PROTON, Malaysian management excludes local employees from consensus decision making.

To date, the suggestions system has not been implemented at PROTON although it was suggested in 1992 by the union. It is generally considered an important complementary programme of *kaizen* activity (Imai 1985; Milkman 1991).

Summary

Research revealed that, though the foundation of the labour union was laid by the Malaysian management in 1988, within four years (1989-1993) the Japanese management had laid the foundations of the Japanese style of industrial relations at PROTON. However, the implementation and the continuation of it was left to the local managers, union leaders and workers. The assessment of labour-management practices suggests that PROTON has not followed the Japanese way of communication with workers and union. The in-house union was established as a result of the management interest and government encouragement, and against the wishes of some workers, who wanted to join a national union. The union has not been involved in any corporate strategic decision-making except for annual production target and schedules. The application of a labour-management council as a means of communication is also absent at PROTON. Though management-labour relationships are not hostile but it does not mean that there are few conflicts. The management and union had the advantage of the Malay '*syura*' or consultation culture in their factory life, but it was not optimised.

A few structural modifications took place after the Malaysian management took over in 1993. According to a union president, "the way the Japanese communicate, appreciate and recognise the union should be retained. Today communication with union is not as frequent as before. Regarding any changes which affect the future of workers, we (the union) expect to be brought into the discussion from the beginning, rather than just informed." Labour-management relationships could be further improved by practising the Malaysian way of communication and settling grievances. As noted by one union member, through the system of '*masyuarah*' or consultation, management could prevent unnecessary strikes and dissatisfaction.

After exploring the transferability of JST or Japanese work organisation and management practices within PROTON, next we examine the Japanese inter-organisation relationships, that is the long-term closed assembler-vendor relationships.

6.8 PROTON-vendor relationships.

In the following discussion, the Japanese practice of strong, long-term and close inter-firm relationships will be examined within PROTON and its' vendors (vendors is the Malaysian term for suppliers). The interorganisation relations (Florida & Kenny 1991), Japanese-style partnerships (Dyer & Ouchi 1993), and obligational-based contractual relations (Sako 1992) will be considered. Has PROTON adopted this strategy, and if so, to what extent has MMC helped PROTON to establish it in Malaysia? As background of the discussion, it should be noted that Malaysia doesn't have many big conglomerates like the *keiretsus* of Japan, *chaebol* of South Korea and big family businesses of Taiwan and Hong Kong. What Malaysia has is small and medium family industries, mostly owned by Chinese, with minimum links to MNCs in the Free Trade Zone.

Three parties are involved directly in the creation and development of PROTON's vendors: MITIm, the Procurement and Vendor Development Office (PVD) and the PROTON Vendors' Association (PVA). It is estimated that of the total value of the national car parts and components of RM. 600 million in 1993, approximately RM 19 million was accounted for by local SMIs (Malaysian Business, 1 July 1994). In other words, only 3 per cent was supplied locally, which is extremely small. In 1985, only 228 parts and components were supplied by 17 SMIs (Malaysian Business July, 1994:15). This figure however improved to 125 vendors in 1994, with about 52.8 per cent (or 66) vendors who are SMIs (Procurement & Vendor Development Office, 1994). In 1990, PROTON achieved its local component usage of 70 per cent and the reason for this success was the 'PROTON vendor development programme' (Malaysian Business. Ibid:19). However, it was not SMIs who supplied these components, but Japanese transplants and other MNCs operating in Malaysia. SMIs have been defined as manufacturing enterprises with shareholders' funds below RM 2.5 million.

For passenger cars and commercial vehicles, there was a Mandatory Deletion Programme in 1980, imposed by MITIm. As a result, a total of 30 components were localised (MITIm 1994b), including body panels for PROTON's cars, other body parts, engine parts, electrical parts, trim and upholstery and general parts. These components contributed to local content of over 70 per cent for PROTON and about 30 per cent for other passenger vehicles and commercial vehicles (MIDA 1994b:158-9).

However as noted the majority of the suppliers were Japanese transplants and other MNCs operating in Malaysia, rather than Malaysian-owned companies. Thus the policies had encouraged further internationalisation of foreign capital with little improvement of national capability.

Another programme was the vendor development programme (VDP), initiated and supported by MITIm in 1988. Banks, MNCs and local SMIs were encouraged by MITIm to work together to localise parts and components supplies (MITIm 1994b). PROTON was the first anchor company, pioneering the vendor development projects, and it became a role model to others (MITIb 1994:12). Assistance (in the form of grants) was given to create local vendors. A grant scheme was established in 1988 by MITIm (MITIm 1994a). According to the officer in charge, 55 vendors were created with the collaboration of 9 banks and 35 anchor companies (SMI Division at MITIm 1994). A total of MR \$11.3 million grant assistance was awarded to 19 vendors to manufacture 135 components. The main objectives of this programme are to create an industrial market in which Malaysian SMIs can become reliable manufacturers and suppliers of industrial inputs (parts and components), machinery, and equipment used by the large-scale MNCs. At the same time it provides greater integration and linkage between SMIs, large-scale industries and MNCs, and financial institutions to enhance industrial development (MITIa 1994:258).

After a recession in 1987, PROTON realised that it could no longer depend on Japan exclusively for its simpler automobile parts, given the weakness of the ringgit vis-a-vis the yen. The solution to this was for PROTON to nurture its own vendors, to ensure a steady supply of parts and components at competitive prices (at the same time protecting itself from the danger of a high yen). So that year, it launched the PVD programme in order to develop local manufacturing of parts and components, and to enhance local content. PROTON helps vendors to develop their technical and commercial proposals or feasibility studies, and at the development stage provides production schedules to help in production trials, pre-mass and mass production, and confirmation of quality.

The PVD Office is headed by a deputy general manager, and supported by three managers. Each manager examines different tasks, from the development of vendors, procurement administration, and sourcing of the parts and components. These managers are supported by 4 senior deputy managers, 3 deputy managers and 17 assistant managers. The Vendor Development Section takes care of the development of chassis & body, engine & transmission, rubber parts, plastic parts, electrical parts and others. Procurement administration department is responsible for importing steel and

completely knocked down (CKD) parts from MMC, procurement control, generalised system of preferences (GSP) matters and localisation strategy. The Procurement department are responsible for the administration of supply of components, traffic flow, engineering and consumable parts, international purchase control and also casting. As of June 1994, the office strength was 128 workers.

It is the policy of PROTON to appoint only one vendor per part or component, in other words to adopt a single sourcing strategy. Once the vendor is appointed, the responsibility of PROTON is not only to get the supplies but also to develop the vendors. As mentioned by a senior deputy manager at the PVD office: "our duty is to develop the vendors not to terminate them". Long-term relationships are ensured through another policy of "No displacement of investment, but a harnessing and optimising of available facilities". The other policy practised by PROTON is to have *bumiputera* (indigenous) preferred vendors (PVD Office, 1994). If there are any problems with the quality, production, and raw materials, PROTON will solve them together with vendors. It seems that PROTON and its vendors have 'obligatory relationships' (Sako 1992).

This department links the internal operation of various departments within the company to various suppliers outside the company. According to a deputy manager interviewed, their duties vary from long-range product planning, in which they identify the carry forward parts and components, supply parts, select vendors, assist vendors to meet the targeted quality, cost and delivery. They also plan and implement the localisation policy, develop new models, develop strategic business plan, and give recognition to vendors. They also give education to vendors with the cooperation of the PVA.

The PROTON Vendors Association was established in July 1992. To date 125 vendors are registered with PROTON, and 97 per cent of them are members of PVA (PVD Office 1994). There are six main objectives of PVA: (i) to foster closer relationships among members and between members and PROTON; (ii) to organise seminars and workshops to up-grade members on aspects like quality improvement, productivity improvement, product development, management, etc. (iii) to organise educational tours locally and overseas, to enhance members' capabilities; (iv) to promote organised export programmes and channels of request for technical assistance (arranged with overseas manufacturers); (v) to promote good relationships within the auto component industry and government agencies; and (vi) to organise any functional activities which are considered beneficial to members and PROTON. Regarding the achievement of the association, the president of PVA noted:

Though we achieved about 60-70 per cent of the objectives of the association, there is still a lot more room for improvement. More activities between members such as social activities and sports should be provided. Concerning the relationship with PROTON, they only insist on business relationships, and on directives than consultation. Another area where PROTON has to do its homework is, to reduce the high price of accessories placed by EON (the only domestic marketing company).

The association headed by a chairman, with 14 committee members (grouped as advisers). The organisation is supported by an executive secretary and operates through four sub-committees; management, technical, business and study. The technical sub-committee includes the metal, plastic, rubber, casting and machining, and electrical groups. The business sub-committee consists of planning, seminars and workshops, conference and trade mission, marketing and export and public relations. Under the study sub-committee there are the management, production, quality control, human resources, and value engineering groups.

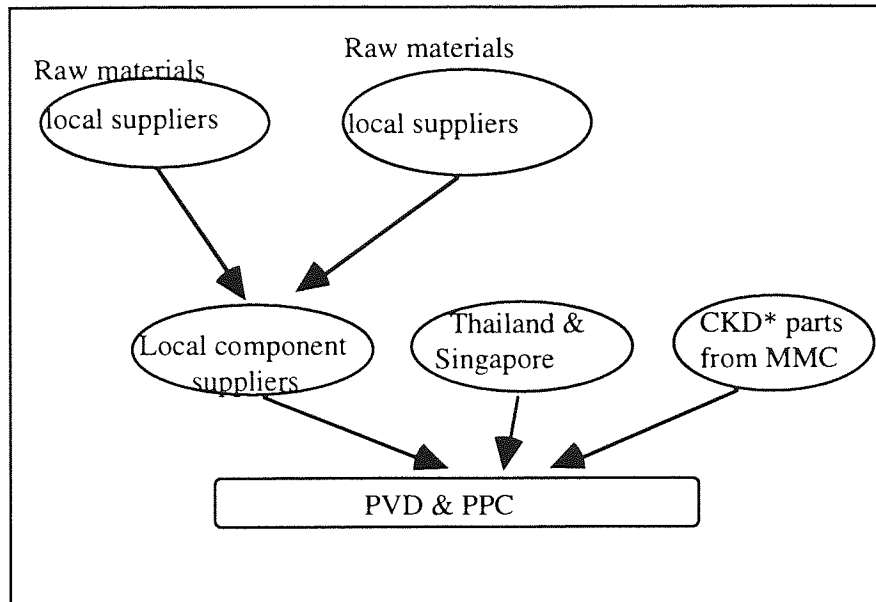
At the moment, PVA gets technical assistance arrangements from overseas manufacturers, mainly Japanese vendors to MMC. At the same time the association, with the collaboration of the NPC, is organising some productivity and quality programmes to PVA members. According to PVA, in future the association will move towards providing technical assistance to other developing countries and participating in export programmes.

The number of vendors has grown from 17 in 1985 to 125 in 1994. Of these, 78 per cent (98 vendors) are located in Klang Valley (Selangor and Federal Territory) where the PROTON premises are. There are two layers of vendors, component suppliers and raw material suppliers. The manager from the PVD office called them "direct or main suppliers and indirect or minor suppliers". At the moment, PROTON has only established relationships with component suppliers. All 125 registered vendors come from the first category. No attempt has been made to extend the relationship to the material suppliers, and they did not even know the exact number of second-level vendors. An assistant general manager from PROTON Parts Centre Sdn. Bhd., a subsidiary of PROTON which acts as 'Sogasosha' or marketing agent to market car parts and components, was asked about this. At the moment PROTON is concentrating on the component suppliers, but in future it should extend its relationship to the second layer, he said.

For PROTON, most first-level suppliers of components are locals, while the second level of material suppliers are overseas suppliers, mainly from Japan. There are also components supplied from Singapore and Thailand. This makes the JIT manufacturing system at PROTON difficult. The PVD Office and Production Planning and Control are

the internal parties who ensure and co-ordinate the flow of these supplies. This supply network can be seen in figure 6.5.

Figure 6.5: Vendor layers and parts flows.

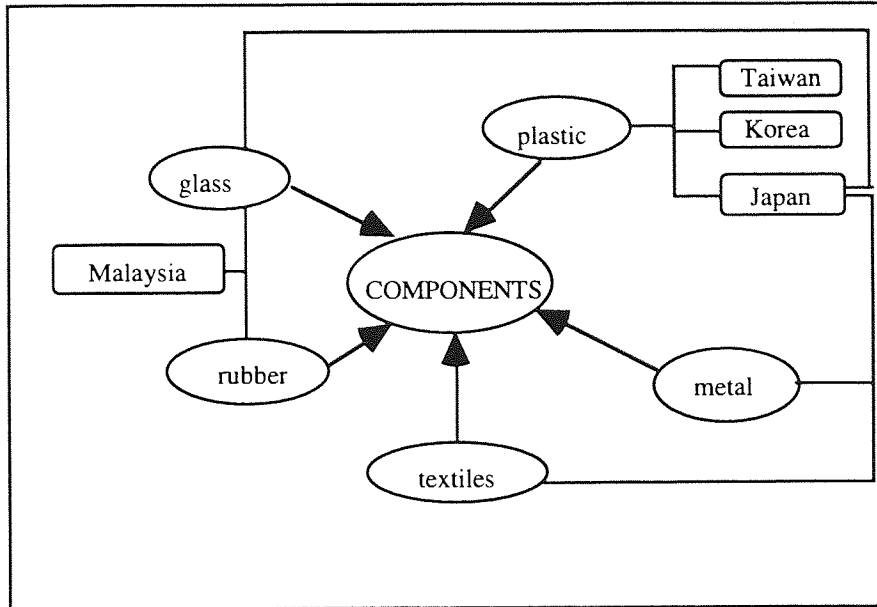


Source: Procurement and Vendor Development Office (PVD), PROTON; as well as an interview with the AGM of Proton Part Centre Sdn. Bhd. (PPC).

Note: CKD* Completely knocked down parts and components

More than 16 per cent or 20 vendors are owned or part-owned by the Japanese (PROTON Vendor Directory 1992/3). They are very important in the supplying of parts and components. Apart from the rubber and glass base components, all parts made of textile, plastic and metal are supplied by vendors who have links with Japan, in terms of both technology and raw materials. There are also smaller amounts of raw materials supplied by Korea and Taiwan. The picture of the Japanese-dominated supplies chain can be seen in figure 6.

Figure 6.6: Japanese-dominated supply chain.




Source: Interviews with vendors.

40 per cent of raw materials such as steel, nylon, polyester in making tyres are still imported from Japan (Dunlop Malaysia Industries Berhad 1994). Ninety per cent of raw materials such as stainless steel and PVC in making pillar drip/roof drip/belt line/ weather strip are imported from Japan (Ingress Sdn. Bhd 1994). 100 per cent of raw materials such as processed silica ash and soda ash for making tempered safety and laminated glass are also imported from Japan, (Malaysian Sheet Glass 1994). The significance of these vendors becomes more serious as the value of the yen keeps on increasing. This will lead to a higher cost of components and make the price of PROTON cars less competitive.

Japanese influences.

PROTON's vendor development strategies are derived from Japanese practices, subscribing to the long-term rationale of working closely with single source component suppliers, and the wisdom of viewing suppliers as an extension of the corporate network, even collaborating in their expansion and upgrading (Tharumagnanam. 1994.77). It was confirmed by the president of PVA, who said:

PROTON - based in Malaysia - has a long history of working closely with single source component suppliers, and the wisdom of viewing suppliers as an extension of the corporate network, even collaborating in their expansion and upgrading (Tharumagnanam. 1994.77). It was confirmed by the president of PVA, who said:

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Japanese car assemblers have a smaller number of vendors than the Americans. For example, at Toyota's Takaoka's plant there were only 125 vendors (as of 1983) as compared to the range of 300 to 1,200 vendors (as of 1986) for General Motors (Asanuma 1992:103). In this context, PROTON's numbers of suppliers (which is 127) is inclined towards Japanese model. However, how far and how closely has PROTON managed and developed its vendors as the Japanese do?

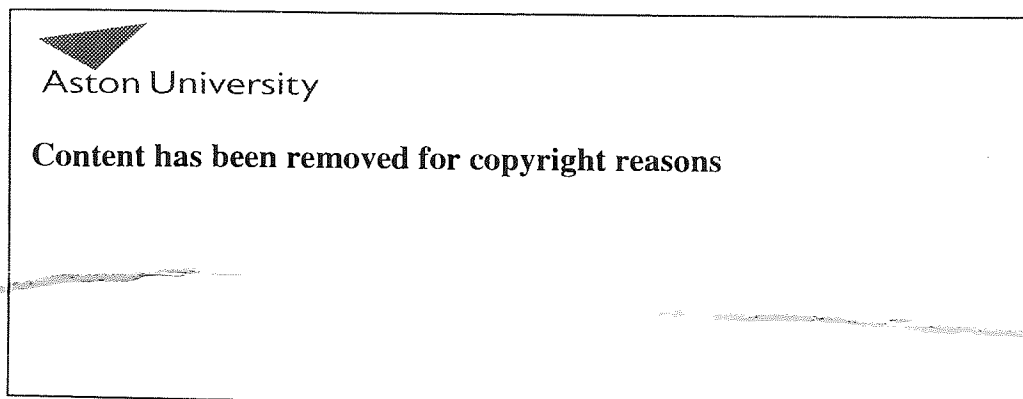
Direct commissioning and single sourcing strategy.

Single sourcing is one of the Japanese features in close and strong interfirm networks (Sako 1992; Dyer & Ouchi 1993). PROTON practices this strategy, with only a few parts such as tyres supplied by dual sources. As claimed by an assistant manager from Century Battery Sdn. Bhd.: "We are the only supplier of batteries to PROTON since 1985". A manager for the Safety Glass Division of Malaysian Sheet Glass Sdn. Bhd. who was asked whether they do business based on written contracts as others do, said: " we have no written contracts with PROTON. Our contract is trust and the strength of the relationships. There is no bidding and less emphasis on paperwork."

When the same question was asked to the assistant manager at Century Battery, his reply was:

We supply to PROTON on a purchase order basis. They don't simply change a vendor. In the case of shifting to other suppliers, PROTON must ask why they need a second vendor, they must justify, then they will go for it.

The single sourcing and long-term relationships strategy practised by PROTON is probably the only example of long term and close (obligatory contractual relationships) (Sako 1992) in Malaysia. However, it does not necessarily mean there are no problems. As pointed out by a vendor interviewed:



The interviews revealed that there are also signs of nervousness and suspicion within PROTON's suppliers, especially the new and non-yen-related suppliers, as there were

in some of the British-Japanese companies studied by Sako (1992). Sako found that the assembler threatened its suppliers regularly and even dropped them periodically to show them that it had alternative suppliers, and that the suppliers 'wished to include all kinds of clauses to protect themselves from being locked into a long-term - and possibly fixed-price - contract' (Sako 1992:84). Moreover, it has been argued that non-Japanese component suppliers, no matter how good they are, will be 'handicapped' if they cannot start work on a particular item until Japanese designers have finalised designs in Japan (Turner 1987:94). So far, according to manager of the PVD Office, none of PROTON's vendors has been dropped.

Equity ownership strategy.

Currently, only 4 per cent (or 5 out of 127) of vendors are owned by PROTON (PROTON Annual Report 1995), with an average equity ownership of 26 per cent. This is very small compared with Nissan's 33 per cent equity ownership for its 29 direct supplier partners (Dyer & Oichi 1993:60). There is no written corporate policy that PROTON should have some control of vendors by having equity in them. However, the managing director has indicated that there will be more strategic alliances with other overseas firms to produce components and parts in future. There is also no control of ownership in the sole distributor (EON) in Malaysia, and there is no plan for any.

When the general manager of the PVD was asked whether it is difficult to get supplies on time at the right quality and quantity, the answer was: "we have never had the production line stop more than one day due to the lack of parts and components". On the other hand, he admitted that there were cases where the line is stopped for about 45 minutes to one hour, due to a lack of parts. He also said that there are difficulties dealing with EON, such as the customer having to buy limited (5) colours and limited models. The problems were eased after asking them to display all (7) colours. When a question was put to a deputy manager from Corporate Planning on EON's ownership strategy, the answer was: "We do face some problems with them, but we cannot do anything on the ownership because the establishment of EON was done by a higher authority outside PROTON." Ironically, on 11 July 1994, Proton Corporation Sdn. Bhd. (PCSB), a wholly owned subsidiary, was incorporated to facilitate the sale of PROTON vehicles in the domestic and export markets. PCSB commenced operations on 1 April 1995 (PROTON Annual Report 1995). PCSB was supposed to be created in 1985, as every big Japanese manufacturing company has its own marketing corporation in which it has some equity. PCSB also seems to overlap with existing domestic and overseas marketing agents.

Both PROTON and EON are owned by HICOM Bhd. (27.5 per cent and 30.09 per cent respectively) (Malaysian Industry, August 1995). This could possibly be the reason that cross-ownership is not necessary. When a deputy general manager of PPC Sdn.Bhd. was asked about owning some equity in vendors, the answer was: "There are intentions about it, but it depends on the readiness of vendors". The point, which is very, clear is that PROTON is following the Japanese way of dealing with vendors. They develop the vendors, rather than trying to get parts through open tender and forgetting the existing vendors (Sako 1992). The assembler keeps on helping the vendors and they solve their problems together. Of course the communication with the Japanese related vendors are closer than the rest. According to an assistant manager from PVD Office: "our policy is not to create a new vendor but to utilise current ones. We must develop and supplement them."

High reliance on Japanese parts and components.

The dependency of PROTON on MMC parts and components supplies is still very high (already described in page 221-223). In 1994, about 35 per cent of PROTON's car value consists of imported or completely knocked down items, notably engine and transmission parts supplied by MMC and other companies in Japan. The same thing happens in EU Japanese car makers, which have to import many key parts such as gear-boxes, clutches, and axles (The Economist, 10 December 1994). The same experience of importing engine and transmission parts from Japan has been found in Japanese transplants in Taiwan (Kumon 1994), America (Abo 1994a, 1994b; Kumon 1994) and Brazil (Humphrey 1994). It was even pointed out by PROTON's current MD that: "A lot of the raw materials for the parts are still yen- denominated. Steel materials, resins, they all come from Japan. We haven't been able to source these from other people. It will take time for the situation to change" (Malaysian Business, 1 July 1994).

Some effort has been made to lessen this dependency by establishing a casting shop in a plant 10 kilometres from PROTON. By August 1994, this plant (PROTON Casting Sdn. Bhd) was able to supply engine blocks, but the main raw material to make it, 'black ash', still has to be imported from Japan. Some Japanese transplants in the US and Canada, have started to assemble their own engine locally, but, for Taiwan it is still difficult (Kumon 1994:164).

Long-term close versus short-term arm's-length relationships.

PROTON has been working towards long-term close relationships with its vendors. For example, today tyres are supplied by the same supplier as ten years ago, (DIMB and Goodyear (M) Bhd.). The same thing is true of brakes and clutch pedals, (

supplied by Tracoma Sdn.Bhd.). In terms of closeness, every month there is a visit by PROTON staff, which is a social visit, besides providing information on changes of model and delivery schedules. This is confirmed by the responses of various vendors who claimed that:


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Business Manager, MSG.

PROTON sent its staff to nurture their social and public relationships with its vendors on a periodic basis. The same practice takes place at Mitsubishi Motor Corporation, whose R&D staff were engineers and technicians borrowed from Mitsubishi Electric and Mitsubishi Heavy Industry (Fruin 1992:157). According to the PVA president, continuous assistance is given by PROTON to its' newly created vendors in all areas, right from sourcing, production, quality audit, maintenance, engineering work, personnel, to securing long-term markets and offshore market penetration, and giving advance information to vendors on long range product plans. There are also special services such as acting as co-ordinator for QCD. PROTON also acts as an advocate or adviser to PVA, as a matchmaker from introduction until implementation of matchmaking programme and as an initiator for the government technical assistance scheme.

The assistant manager at the PVD Office categorised the vendors into three groups: problematic, normal and excellent. The monitoring and visits are aimed particularly at the newly and problematic ones. To these vendors, PVD send their staff (i) on weekly basis, (ii) a one-month stay at vendor plant, and (iii) a three-month stay. At the time of study, 59 PROTON's executives were working with its' vendors as seen in table 6.18.

Table 6.18: PROTON: Executives transferred to vendors.

Company	Per cent (%) of direct sales to PROTON	Per cent of shares owned by PROTON	Executives transferred from PROTON	Major Products
Hasu Ind. Sdn. Bhd.	60	Nil	3	Wire harness
Amalgamated Parts Mfrs. Sdn.Bhd.	60	Nil	5	Wire harness
Malaysian German Auto.Equip.Sdn.Bhd.	80	Nil	1	Head, clearance, RR comb lamps.
Usra Industries Sdn. Bhd.	100	Nil	3	Splashshield, Cover
Metal Former Sdn. Bhd.	60	Nil	3	Fixture, Reinf, I/ panel, striker glove box, PP set
TRW Steering & Suspension (M) Sdn.Bhd.	85	Nil	3	Tie Rod
HICOM Engineering Sdn.Bhd.	100	Nil	3	Exhaust manifold, Flywheels, Engine bracket .
HICOM Teck See Mfg. Malaysia Sdn. Bhd.	80	Nil	30*	Plastic bumper, Radiator grille, I/Panel.
Tong Yong Ind.Sdn. Bhd.	70	Nil	2	Run channel
APM Plastics Sdn.Bhd.	20	Nil	3	Body side moulding
EP Polymers (M) Sdn. Bhd.	80	Nil	1	High mounted stop lamp, Licence plate lamp, Switches, Etc.
Bertool (M) Sdn.Bhd.	100	Nil	2	Wheel nut
Average	74.5%		4.9	

Source: PVD Office, PROTON.

* Include production workers

Table 6.18 suggests an average of 3 staff (normally engineers) sent to vendors to monitor and solve current problems. For example, at Malaysian German Auto. Sdn. Bhd., they found that water condensation in rear lamps was due to a lack of pressure, inconsistent sealant, poor quality sealant, and lack of testing points. There was one case where PROTON took over the whole operation of the vendor for three months, and returned it when the operation had been made efficient.

When the same question on the payments was posed to vendors visited, all were satisfied with the payment. According to one: "we have no complaint on payment, because so far payment is satisfactorily delivered to us. The only issue which sometimes arises in the transactions is documentation, where they need more speed and accuracy". The term of payment is 30 days, and PROTON delivers on time. The problems were more on quality, failure to deliver on time, price agreements and to some extent financial assistance. There were comments from MMC that local vendors

supplied low quality parts (for examples plastic and rubber parts) (Bartu 1992). It was noted by a MD of a vendor: "In producing new models, it would be a great help if PROTON could increase the grant more than RM. 1 million, to upgrade the machinery and equipment as the cost of these robots and machines increases".

The 'PROTON city'.

There is no significant policy for all vendors or warehouses to be located around PROTON. Fortunately 78.4 per cent of vendors are located within 50 kilometres (in Klang Valley) from the PROTON plant. This PROTON city concept is very important so that the JIT city or supply concept can be easily materialised (Schonberger 1982; Oliver & Wilkinson 1992; Juran 1992).

One vendor is Malaysian Sheet Glass Sdn. Bhd. which is located about 25 kilometres from PROTON. They supply tempered safety and laminated glass to PROTON. The average delivery to PROTON is 4 times daily (within 12 working hours). There are two vendors located only one kilometre from PROTON, that is Car Seat Sdn.Bhd. (who supply car seats), and PHN Sdn. Bhd. (who supply small panels). Car seat are delivered by sequence according to the models produced. Car seat are the only component supplied in line with the concept of just-in-time requirement. According to a DGM of PROTON Part Centre Sdn. Bhd. (PPC):

In 1985-87, there was a PROTON CITY concept, whereby all vendors should be sited around PROTON, but the lots were sold to others because vendors were not able to buy at that time. The concept did not come true.

I argue that the car production system has been studied from MMC, but the total JIT manufacturing system was not incorporated. The reason was that the localisation policy and vendor development programme only came into the picture five years later (in 1988), whereby the creation of SMIs (vendors) was enhanced, and luckily HICOM has some more land to locate them, though it was not based on JIT system. In other words a PROTON city was not seriously planned in the beginning, at the time of the plant's design and construction in 1983. However, according to an executive from the vendor division, the new plant of 2,000 acres with production capacity of 250,000 to 300,000 units per day, at Tanjong Malim, Perak, 45 kilometres from Kuala Lumpur (PROTON Annual Report 1995), is based on a PROTON city JIT concept. In this PROTON city, vendors warehouses' and workers' accommodation are located surrounding the plant. At the time this thesis was written, the clearance and foundation works had taken place. Production is expected to be launched in 1998. How far the set up of the second factory is based on the JIT concept is yet to be seen.

The JIT production and zero inventory.

Due to the current manufacturing system, neither PROTON nor its vendors practise 'perfect JIT' and 'zero inventory'. Both parties hold excessive stocks, either in raw materials form or finished/semi finished products. For example, Century Battery Sdn.Bhd has to keep finished stocks for 2 months, and to deliver two times per day (10.00 a.m. and 14.00 p.m. with 400 total units). At Ingress, they have to keep their raw materials for two weeks (local) to one month (import) and keep their finished products between one and two weeks. DIMB have to keep their imported stocks for 3 months and local stocks for one month, and their finished products for 2 weeks. On the other hand MSG Sdn.Bhd. have to keep their materials for 6 months. In other words, the JIT system does not work, due to the large amount of raw materials imported from overseas, which takes a long lead time, and unstable production schedules provided by the manufacturer.

There has been a lack of research and development by PROTON together with its vendors, to improve the performance of the cars in general, and in parts/components in particular. This cooperation in design, research and development is often practised by other world class car manufacturers (Womack et al. 1989; Oliver & Wilkinson 1992; Kenny & Florida 1993). What normally happens at PROTON is that the assembler gives out ready-made designs and asks the vendors to produce prototypes of the parts. Regarding this matter, a business manager from MSG Sdn.Bhd. suggested that:



Aston University

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He also suggested that there should be a pool of R & D engineers' efforts between PROTON and its vendors. By having this pool of engineers, they could work together closely to design future cars, future parts and components, future moulds and dies, future engineering, future markets, etc. It was found that, in the 1980s, the Japanese had more technological strength in patent innovation than to American and European companies (Womack et al. 1990:133).

Pluralistic vendor relationships.

PROTON has complex relationship with its vendors. It is more than just a long-term close or short-term long-arm relationship between suppliers and assemblers/manufacturers, as claimed by Sako (1992). Basically the relationship is moulded by

two major factors: (i) age (new or established); and (ii) Japanese and non-Japanese related vendors. First we look into the relationships from the perspective of time.

More than 20 vendors have been created by the initiative of PROTON and MITI. Some of them were sponsored by MITI under the VDP. Their technical ability and their market are highly dependent on PROTON. As the president of PVA put it:

PROTON promises long-term market for us and makes our business life easy in the long run. With commissioning of parts from PROTON our business is more secure than if we had to compete every year in tender bidding and were uncertain of getting the contract.

The market dependency on PROTON is very obvious. Their sales were as high as 60 per cent (such as Hasu Sdn.Bhd., Amalgamated Parts Manufacturer Sdn.Bhd., Metal Former Sdn.Bhd.), 90 per cent (such as Ingress Engineering Sdn.Bhd. who supplied weather strip, door opening inner/outer, etc.), 100 per cent (USRA Industries Sdn.Bhd., HICOM Engineering Sdn.Bhd., Bertools Sdn.Bhd.). The average market dependence of PROTON's created vendors was higher (74 per cent) compared with transactional dependence on Japan (69 per cent) and Britain (26 per cent) (Sako 1992:108). It was also higher than the market dependence of Nissan's suppliers, which was 50 per cent (Dyer & Oichi 1993:60).

In 1992, 19 vendors received grants from MITI (valued from RM. 46,740.00 to RM. 1 million each). Their products vary from brake and clutch pedals to cassette tape stands. Many of these companies' managing directors and workers previously worked with PROTON, and their market dependency was 100 per cent on PROTON. However, the dependency of these newly created vendors has decreased as they also now supply to a new car assembler, PERODUA (a joint venture with Daihatsu for manufacturing cars 1,000 c.c. and below) and USPD (a joint venture with DRB and Citroen for cars 2,000 and above). Therefore, both the state and large firms created a cluster of dependent vendors whose existence, management, technical capability and market rested on a few big assemblers.

Some vendors are technically, technologically and financially independent of PROTON. In fact, the technology owned by these companies helps them in making PROTON's cars. These vendors are Carpet International (M) Sdn.Bhd., Century Batteries, Dunlop (M) Industries Bhd., Goodyear (M) Bhd., Malaysian Sheet Glass Bhd., NGK Spark Plugs (M) Bhd. etc. Their sales to PROTON range from 15 per cent (Century Battery (M) Sdn.Bhd.), to 30 per cent (DIMB), and 40 per cent (MSG Sdn.Bhd.), so their market dependency on PROTON is lower than that of newly

created vendors. In fact, some of them are Malaysian MNCs which have been exporting their products overseas since before the establishment of PROTON.

There are Japanese-linked vendors with some Japanese share ownership, and vendors brought to Malaysia by MMC as part of their supply chain in Japan. They have good long-term relationships with PROTON, and receive full assistance from Mitsubishi and PROTON. Some Japanese companies came together with MMC in the 1980s, in the early phases of the national car project. These companies are very important to PROTON because they are already established in manufacturing car parts and components. Examples of them are Car Seat Sdn.Bhd., Nippondenso (M) Sdn. Bhd. More than 20 vendors fall into this category. Although the total contribution or value added of these vendors was not known, in 1988, in terms of cost, 55.2 per cent of the parts of Proton Saga model were imported from Japan. And if we take into account the total parts supplied by Japanese imports and local Japanese subsidiary companies in Malaysia, the figure would be higher (Jomo 1994b:282). Whatever model is produced by PROTON, Mitsubishi and other Japanese companies benefit most, not only because their monopoly of parts and components, but also because of intra-firm trade transfer pricing, which is higher than the market price (Marappan & Jomo 1994; Guyton 1994). The Japanese relocated their parts and component manufacturers in Malaysia as a result of yen inducement (Jomo 1994b:282), and as part of Mitsubishi's aiming for economies of scale in ASEAN's brand-to-brand complementation scheme through regional sourcing (Jayasankaran 1993:276-7; Machado 1994).

There are vendors in whom there is no Japanese interest in them. They might be indigenous, non-Japanese MNCs or Malaysian-non-Japanese joint ventures. PROTON will give help only when there are problems, to stabilise production. Although they too are important to PROTON in terms of supplying parts and components, according to a vendor, PROTON makes more frequent visits to Japanese-linked than to non-Japanese-linked vendors. PROTON is unaware of this trend, because as pointed out by one vendor: " When you are all right, they do not come to you...there is inequality of visits and assistance by PVD, because...Japanese experts are dictating Quality Office and PVD Office which part suppliers they should visit and help." Since they were technically, technologically and financially independent of PROTON, we can conclude that their market dependency on PROTON is also low.

Japanese management practices within PROTON's vendors.

Without any systematic plans, PROTON's vendors have been practising some of the Japanese way of managing their organisations. The managing director of Sapura

Machining Sdn.Bhd., a company supplying water pump pulley, rocker shaft, control shaft and other transmission controls mentioned:

We took all Japanese manufacturing systems, including company-wide quality system, maintenance and information system. We are also practise management by walking about, which is strange to Malaysia, 4 M, Kaizen and QCC. But we manage our human resources in our own way. We believe and practise our work as 'Good Deeds' and we are a 'human centred organisation'. The Japanese are very committed to the decision they made. If it is not met, they are ready to commit '*hara-kiri*' or commit suicide. For Malaysia we believe in flexibility, we must try our best, but we can still change the methods and decisions. Our philosophy is 'team work, discipline and communication'. To acquire this philosophy, we provide one library, 3 badminton courts, and one big prayer hall for us to establish daily congregational prayer 5 times per day. We start and end our daily working with a beginning and ending prayer.

Commenting on the practice of the JIT production system within vendors, one assistant general manager mentioned:

Most vendors are very new to JIT and other management techniques. They belong to SMIs, where their owners are not exposed to these modern management approaches. Added to which, lack of technical knowledge, machines which are not up to date and unskilled labour make this practice impossible.

Assistant General Manager, PPC Sdn.Bhd.

On the other hand, Car Seat Sdn.Bhd., the company supplying car seats to PROTON does not have a union at all, and its QCCs are not active. As mentioned by its Chairman:

The management of this company left their best management techniques at home (Japan). Here there is no consensus decision-making, QCCs activities are minimal, workers are not unionised, and they are not able to keep employees a long time. But they are smart in keeping their labour costs low, that is, by taking on Indian workers.

Conclusion.

There are areas where PROTON is following Japanese methods of dealing with vendors. Elements such as single sourcing instead of bids; contracts based on trust; helping vendors in design, procurement, production, quality and maintenance; and developing rather than terminating the vendors. These are the areas where PROTON closely follows identified Japanese practices. The other Japanese strategies, such as equity ownership of vendors and distributors, and locating all vendors' warehouses closely with PROTON, are minimal and occurred by chance, not through deliberate policy.

However, the nature of PROTON-vendors contractual relations is not as simple as has been suggested in Japanese management literature. In practice, PROTON has a pluralistic pattern of relationships with its vendors. First, there is a group of independent, long-term and close relationships. They are old and established vendors like tyre, battery and safety glass suppliers, which are technologically and financially

very strong and market their products globally. Second, there is a group of highly dependent, long-term close relationships with PROTON. They are newly created, indigenous and Japanese-related small vendors, technologically and financially relyant on PROTON. Their markets are also dependent on PROTON. Third, there is a group of independent, long-term, but less close relationships. They are newly created and non-Japanese-related small vendors, which are technologically weak and are supported by Korean or German or American technology. They are also less dependent on PROTON markets. For the first and the last, there is a feeling of business insecurity and they tend to move away from market dependency on PROTON, whereas, the second group, since they are technologically and financially weak, are unlikely to lessen their dependency on PROTON.

The other important aspect of PROTON vendors is that more than 16 per cent (20) local vendors have Japanese interest in them (PROTON Vendors Directory 1992/1993), and about 30 per cent of parts (mostly coil or metal sheets, resins, engine parts and transmission) are supplied direct from MMC of Japan. Other than rubber, the majority (sometimes 100 per cent) of the raw materials are imported from Japan, which means a high dependency for materials, parts and components on Japan.

6.9 The summary of overall JST transfer at PROTON.

The first conclusion which can be drawn from the case concerned is that, the transfer has taken place but largely in the form of 'hard' rather than 'soft' technology. The Japanisation process took place in the form of plant construction, supply of robots, supply and the maintenance of machines, materials and components supplies, methods and standard operating procedures, the approval of the car designs, all these coming from Japan. The technical training of PROTON staff was also organised by MMC. This was the 'ready made' (Abo 1994a, 1994b; Kumon 1994) or 'embodied technology' (Al-Ghailani & Moor 1995) which is easy to transfer. PROTON also started to develop its vendors and established long term relationships with them, as discussed by Sako (1992), in its obligatory contractual relation system.

The transfer of the strategic 'soft technology' or 'work and management methods' within PROTON is very low. It was not properly guided by MMC. For example, QCCs or the *kaizen* movement, company-wide quality education, control of vendors and marketing agencies through equity ownership, plant physical arrangement for the implementation of JIT and zero inventory environment, and the robotisation of the production line were not fully developed. A corporate information system and computer integrated manufacturing system have been introduced, but this 'substance' must be nurtured. These programmes and many other things show that there is a lot of room for

improvement. This does not imply that there will be a fuller Japanisation process in the future, since the process has been relying on the commitment of local managers rather than of both Malaysians and Japanese parties.

Although there was dissatisfaction within the company about the readiness of the Japanese to transfer the technology, as one assistant general manager from a PROTON subsidiary said, "Technologically and in terms of business they don't want us to be strong and on par with them. They could have advised us from the beginning to own some shares in the vendors, affiliates and subsidiaries so that we could develop and manage smoothly, not like now, where there are so many procedures and barriers to be overcome". But the spirit of learning and the capability to develop and manage by local managers are the key in this transfer debate. The car technology transferred to Taiwan (Kumon 1994) and South Korea (Lee 1996) was also derived from Japan, but the local management was able to acquire whatever they had to learn (both hard and soft technology), and from there they further developed their technology and turned their companies into independent business organisations

In terms of manufacturing system, PROTON practices flexible production. Nevertheless, the JIT manufacturing technology has not been fully implemented. For total quality management or company-wide quality control, PROTON is still in the midst of the implementation of quality and productivity activities. On human resources management, it is moving towards a high cost human development, and relationships between labour and management can be considered as co-operative. PROTON-vendor relationships are long-term but pluralistic. The scores recorded above were given to PROTON, after some discussions with Japanese experts, union officials, workers, managers, and finally of course the researcher's judgement.

In other words the soft technology or Japanese management has not been fully practised and transferred as a deliberate policy by both parties. This study suggests that both Malaysian and Japanese experts are concerned with 'hard' rather than 'soft' technology. Overall, despite the specificity of the case study example, I believe that PROTON will remain dependent on Mitsubishi and Citroën if investment in R&D on engine design and manufacturing is neglected. In the final analysis, it is the Malaysian managers and workers who can improve the situation. They must learn whatever good lessons need to be learned, adapted and practised. Malaysians must appreciate the readiness of MMC to share its resources and people in the venture, but the ultimate result is in the Malaysians' hands.

Chapter 7: Case Study 2: PERNEC at turnaround.

7.1 Introduction.

This chapter will explore the transfer of Japanese soft technology (JST) in another Malaysia-Japan strategic alliance: PERNEC Corporation Sdn.Bhd. (PERNEC), which was established ten years before the commencement of LEP. The electronic and telecommunication industries, because they are less technical than automotive industries, have been said to practise low levels of Japanese management techniques and work organisation (Kenny & Florida 1995). Moreover, it has been found that the smaller the company, the lower the chances the company will adopt high-cost Japanese human resource management (Dedoussis & Littler 1994; Dedoussis 1995). PERNEC is smaller than PROTON in terms of capital, labour, sales and profits, but a decade older than PROTON. After more than 20 years of alliance with Nippon Electronic Corporation (NEC) of Japan, to what extent has JST has been transferred to PERNEC? Is it more than at PROTON because of the age of the venture? Do factors such as technical complexity, sector difference and age affect levels of JST transferability?

PERNEC is a pioneer company in the telecommunications industry (particularly in switches and transmissions). PERNEC was established in partnership with Nippon Electronic Corporation (NEC) in 1973, only three years after the Samsung-NEC venture in South Korea was established (Bloom 1994:142). However, PERNEC has performed poorly in terms product and market development, as compared to Samsung. If Samsung has had its own brand and globally marketed, PERNEC has not had its own brand and its market is locally bound. For those reasons, I believe PERNEC is another best case to investigate to how far JST is practised.

This chapter will begin with a PERNEC profile, followed by discussions of the practices and the Japanese influence in each element of JST: manufacturing system, company-wide quality control, human resources and management, labour-management relationships and supplier-assembler relationships. The factors that affect the process of transfer will be also discussed, and the chapter will end with a summary of JST practice in PERNEC.

7.2 PERNEC's profile.

PERNEC Corporation Sdn. Bhd, formerly known as Pemas NEC Sdn. Bhd., is a joint-venture between two Malaysian companies, Pemas Engineering and Perbadanan Nasional Berhad, with NEC, one of the electronics *keiretsus* from Japan. The establishment of the alliance was to meet the requirement of the Malaysian government that suppliers of telecommunications equipment must be local. An assistant general

manager said: "whoever is to get the tender must go through a local company. This is our government's policy, and they must follow it". In other words, they must form a venture with local partners. The other major purpose of joint ventures is to ensure that the transfer of technology took place and to realise the localisation policy (MIDA 1994b). In 1974 Pernas-NEC Multiplex Sdn. Bhd. began operations as a an engineering company, with 40 workers. It was established by the government to undertake engineering services/ business. Today it has over 700 workers and 4 subsidiaries. By Malaysian definition, it is a big company (more than 75 full-time workers and capital of more than MR 2.5 million). It supplies telecommunications network and computer-related products such as switches (digital switching), transmissions (digital multiplexer and Drmass), pay phones, Stratus computers, data communication, test instruments, peripherals and mother boards.

The composition of ownership is as follows: 14 per cent belongs to Perdagangan Nasional Bhd. (PERNAS), 30 per cent to NEC and 56 per cent to Permodalan Nasional Bhd.. Despite its small equity ownership, NEC has restricted the market for PERNEC products to Malaysia. However, in April 1994, that is after 21 years of working with NEC, the company created it's own R&D unit with 4 engineers, in an effort to release PERNEC from NEC technological dependency. As pointed out by the chief executive officer (CEO) of PERNEC. "It is also our goal this year to initiate R&D activities. It has long been our desire to start our own indigenous product" (NADA PERNEC 1994). Being a mature organisation, today PERNEC has its own vision, that is, 'to be the Preferred Organisation for people to work with and the Preferred Vendor for customers to engage on any communication and computer projects' (NADA PERNEC, April-June 1994:7). For this purpose in 1993, under its new CEO, PERNEC underwent major reorganisation, and new subsidiaries such as Pernec Technology Sdn. Bhd. and new departments like R&D and Integrated Management Information were established.

PERNEC is the leading switches and transmissions equipment supplier in Malaysia. Almost 100 percent of its products go to Telekom Malaysia, the major operator of telecommunication industry in Malaysia. The same conditions apply at GB Electronic plc, where British Telecom and the Ministry of Defence of UK are the principal customers (Sako 1992:77). PERNEC is the only supplier of commercial international systems design network exchanges, Centrex, and also the advanced intelligent network. From 1993 to 1994, PERNEC was able to add to market with new products such as prepaid pay phones and Stratus computer network peripherals (NADA PERNEC, April-June 1994).

The financial performance of the company has been unstable, because of high reliance on market (tenders) given by Telekom Malaysia, and the company's dependency on a limited range of products. Table 7.1 shows the financial trends of the company.

Table 7.1: PERNEC: Financial performance, year ended Dec. 30, in RM. (million)*

	Year					
	1980	1990	1991	1992	1993	1994
Sales	54.1	7.3	61.6	54.7	53.7	81.0
Operating profit (loss)	5.6	1.3	33.2	10.3	14.5	15.2
Pre tax profit (loss)	3.5	(2.4)	3.5	9.9	6.6	12.8

Note: * Only budgeted/ projected financial statements were released and shown to the author.
Source: Corporate Finance Department, PERNEC 1994.

Sales dropped from 1980 to 1990 by 86 per cent, but recovered in 1991, despite a loss in 1990 of RM. 2.4 million. Sales decreased slightly in 1992 and 1993 but were back on track in 1994. The company suffered a financial loss in 1990 because of a decrease in demand as the market shrank as the effect of the world economic slowdown. The other important contributing factor was the failure of the company to secure its market, due to stiff competition from new entrant companies. In 1970s and 1980s, sales were dominated by transmission and switches products. The situation only changed in the 1990s when new product line such as pay phones, data communication, test instruments, peripherals and mother boards came into the picture. As for 1993/94 sales, 69 per cent came from switches, 26 per cent from transmissions and 5 per cent from other sources (Corporate Finance Department, PERNEC 1994). The switches and transmission products have dominated PERNEC sales since the establishment of the company.

PERNEC headquarters is located at Ulu Kelang Malaysian Industrial Estate, Kuala Lumpur. Here are situated group offices like the human resources department, R&D, marketing, corporate service, company secretary, corporate finance, and management information system, in addition to the transmission division and PerneC Technologies Sdn.Bhd.. The other two subsidiaries, Pernas NEC (Kedah) Sdn.Bhd. and NEC Home Electronics Sdn.Bhd., are in Kedah. The establishment of these subsidiaries was based on product groups. For example, Pernas NEC (Kedah) Sdn.Bhd. produces switches and other telephone exchange equipment. NEC Home Electronics Sdn. Bhd. produces mother boards. PerneC Technologies Sdn.Bhd. produces pay phones, Stratus computer network system, data communication, test instruments and peripherals. And the Transmission Division produces digital multiplexer and drmass.

The PERNEC group is headed by a Malaysian CEO, assisted by a Japanese deputy chief executive officer or resident director from NEC. Each of its subsidiaries is headed by a Malaysian assistant general manager, and all its divisions at headquarters and its subsidiaries are headed by senior managers.

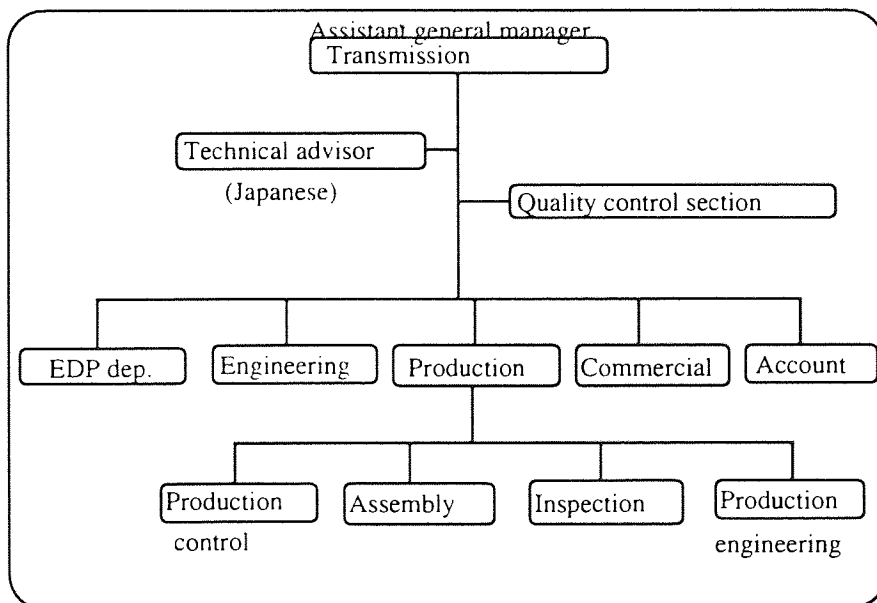
7.3 PERNEC manufacturing system.

The research site that I gained access to was the Transmission Division, Ulu Kelang, Kuala Lumpur, whose standard products are transmission equipment, namely digital multiplex. There were 22 models of digital multiplex being produced. The manufacturing is done in batch production, depending on the requirements of the principal customer, Telekom Malaysia. The technologies used in the process are automatic soldering machines, surface mount technology and also automated testing instruments. Manual insertion accounts for 20 to 30 percent of the production processes. As the market is locally restricted, there is an idle production time within the plant (the utilisation rate is only 75 per cent to 80 per cent). In other words there is excess capacity at the plant not because of lack of demand, but as claimed by one of the manager:

There are many business opportunities outside Malaysia. However, the joint venture agreement allows us to market our products within Malaysia only. Therefore, we are losing business not because there is no demand but as a result of NEC restrictions.

There are 5 departments in the Transmission division; Electronic Data Processing (EDP), Production, Financial, Commercial, and Engineering departments. There is also a quality section responsible for quality assurance for the Transmission products. The organisation of the Transmission Division can be seen in figure 7.1.

Figure 7.1 : PERNEC: Manufacturing organisation at Transmission Division.



Source: Transmission Division, PERNEC 1994.

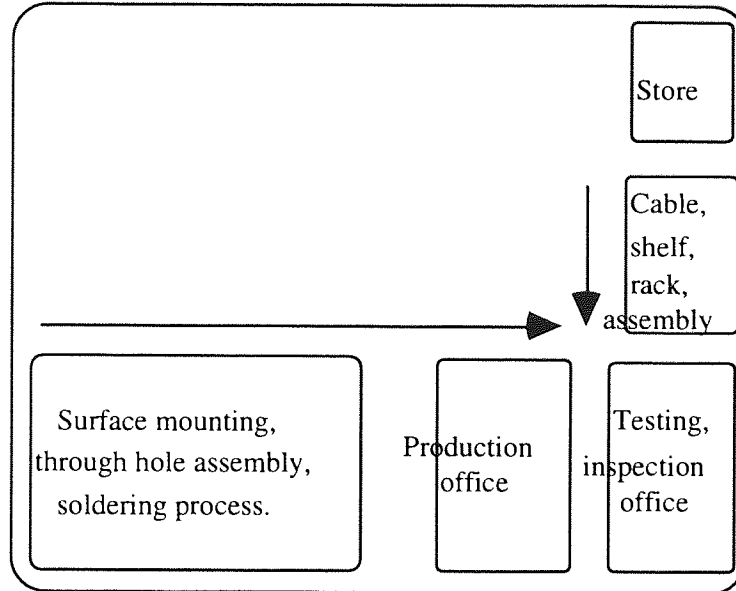
The 5 departments are run by managers or assistant managers. The Supervisor in the production control section is responsible for placing orders for materials, looking after inventory levels, arranging production schedules, and ensuring the products are delivered on time. The inspection section was responsible for all testing requirements on units produced, system and acceptance tests. Production engineering is responsible for establishing documentation, maintaining the machines and tools, and reviewing the process for further improvements. The assembly unit deals with the assembly of modules (units), racks and shelves.

In November 1994, the division was staffed by 172 workers. There was one Japanese technical assistant in the engineering section, sent by NEC, but he was rarely utilised for production purposes. He was only consulted if there was a new product to be produced which required new engineering, or if there were problems with machines. Instead, local engineering groups within the department were utilised.

The manufacturing organisation of the transmission division was divided into 4 sections, production control, assembly, inspection/testing, and production engineering. The assembly section is divided into two smaller sections, namely: (i) Unit Assembly (Module); and (ii) Rack and Shelf Assembly. The Unit Assembly Section mainly handles surface mount technology (SMT) and through hole process (THP) of surface mount devices and conventional discrete through hole components on the printed wiring board (PWB) respectively. It has been argued that PWB is the simplest and the lowest value added assembly (Abdullah & Keenoy 1995). Most (70 per cent) of the jobs are SMT in nature, and only 30 per cent are THP. About 75 per cent of surface mount was automated, and 80 per cent of through hole is automated. The rest of the surface mount, through hole and some inspection work is conducted manually. This is unusual in the sector. In California (Milkman 1991) and UK electronic factories (Taylor et al. 1994), most of the surface mount and through hole processes are automated.

The Rack and Shelf Assembly section mainly handles the back wiring board assembly and cable forming for the making of rack and shelf. The layout for these simple unit and rack and shelf assembly sections and the production flow is depicted in figure 7.2.

Figure 7.2: PERNEC: Layout of the assembly lines.



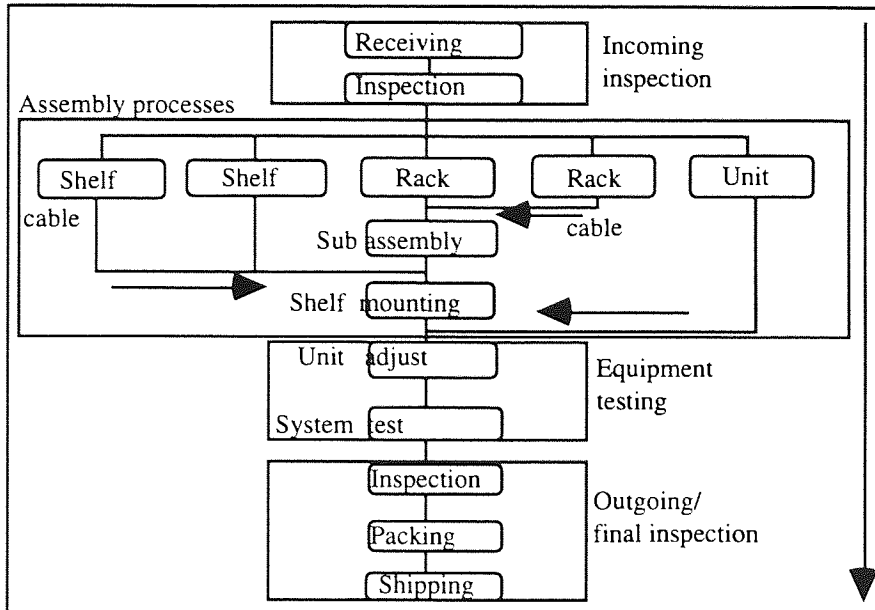
Source: Transmission Division, PERNEC 1994.

The production manager is located in a separate office. She can see through a glass wall what is happening in surface mount, soldering and through hole assembly, but she cannot see what is happening in the testing room and cable forming section, because they are situated in separate offices. The Japanese open office system, where manager and workers are placed in one open office (Azumi 1986: Oliver & Wilkinson 1992), is not applied here. As regards the process productivity and management, the total unit, shelf, cable and rack assembly need to be rearranged to get a better transmissions production process layout.

The general manufacturing process starts with the inspection of receiving of parts and components (printed circuit board (PCB), PWB, cables, racks, shelves). After that there are three separate assembly processes: (i) the assembly of rack and rack cable; (ii) the assembly of shelf and shelf cable; and (iii) unit assembly after shelf mounting. After the unit [module] is assembled, it must be tested. Finally there is an outgoing inspection before packing and shipping.

It takes 30 to 60 minutes to finish the unit assembly process, 3 to 4 hours to complete the rack assembly, and 1 to 8 hours to complete the system testing process. It means the total process to finish one unit ranges from 4.5 hours to 13 hours, for different models. Handling of parts and work in progress is done by trolley or conveyer belt. Machines are inspected every 6 months, by subcontracted workers. The flow of the manufacturing process is depicted in figure 7.3.

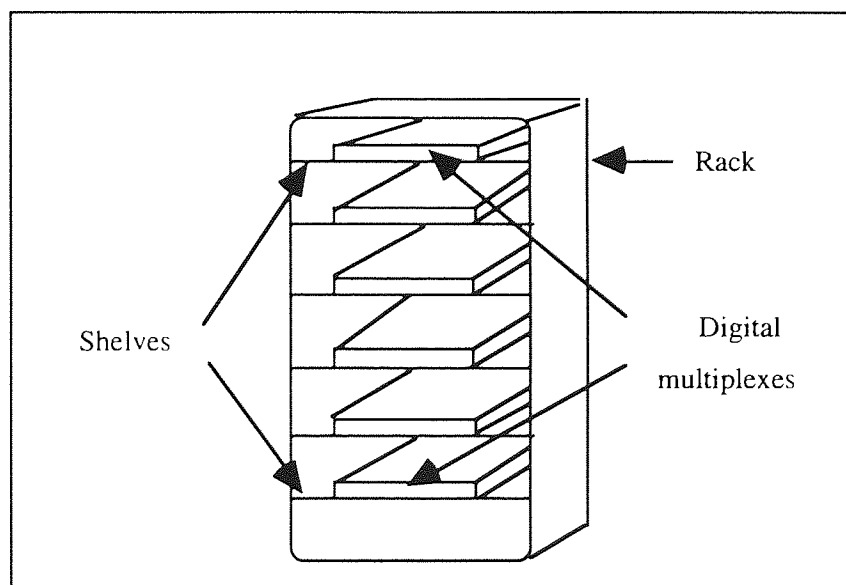
Figure 7.3: PERNEC: General manufacturing flow chart.



The majority of production facilities are from Japan (NEC, Matsushita, and others). When a new machine is delivered, PERNEC requests a supervisor from Japan for testing (10 days) and assembly trials (10 days). For test instruments, equipment is bought from Hewlett Packard and MIKOM i.e., US companies.

At the time of study, the productivity rate of assembly was 10 racks per day. One rack contains 14 shelves. One shelf has 4 systems. The shelf may contain from 2 to 140 megabyte digital multiplex. An example of these rack and shelves is shown in figure 7.4.

Figure 7.4: The Rack.



Source: Testing Unit, Production department, PERNEC 1994.

Japanese influences.

The Japanese influence can be seen clearly in the supply of many things from Japan. Most production machinery and facilities, product design, production systems and standard operating procedures (SOP) are supplied by NEC. These 'ready-made' elements are also effectively transferred to developed nations such as America and Spain (Abo 1994b:195). Moreover, 50 per cent to 90 per cent of parts and components are in the form of completely knocked down (CKD) parts, imported from Japan, and all technical training is handled by NEC. Even markets are determined by NEC. What about the soft technology elements? How far are the good aspects of flexible manufacturing or lean production (Womack et al. 1990) practised by PERNEC after working for 22 years with NEC? Let us start with the JIT production system.

Just-in-time (JIT) production.

JIT production system has prevailed less in the electronics than automotive industry (Kenny & Florida 1993; Abo 1994b). The application of JIT system at PERNEC was explained by a commercial executive as follows:

It is not a total JIT production system. Although we can deliver assembled products at the time required by Telekom, we have to store our parts for 3 months. This is for two major reasons. First, all parts that we order from local suppliers take 2 to 3 months and from overseas take 4 to 6 months to deliver. Although we order from local suppliers, since they are not manufacturers, they also have to import from overseas. Second, there have been an uncertain orders from a single customer, Telekom Malaysia. Almost hundred per cent of markets are monopolised by Telekom. In 1991, Celcom become a new customer, but so far they have ordered only once from us. These two factors force us to have three months' stocks in order to ensure that we can deliver on time to Telekom.

Conventional purchase order (PO) and part records are used, instead of *kanban* inventory cards for inventory control system. The parts and components are not supplied direct to the production lines, but direct to the store, so the zero inventory system is not used by PERNEC. Some local parts are supplied direct to the sites rather than going to the store, but the amount is small.

The PERNEC experience shows that the element of single sourcing and single buyer within JST is 'transparently tactical rather than matters of principle' (Abdullah & Keenoy 1995: 187), because the practice of having a single supplier, NEC, and a single market, Telekom Malaysia, doesn't enhance the JIT process and doesn't accelerate joint R&D activities as claimed by Florida & Kenny (1991), and Womack et al. (1990). Instead, PERNEC has to burden itself with three months' stocks. NEC might practise JIT in Japan, but not for PERNEC.

There is a production control executive who is responsible for inventory control. He is placed in the Production Department. He will get the new requirement or orders from

Telekom Malaysia, and will advise what to purchase. The list of parts comes from production people and the Commercial Department who issue the covering letter. PERNEC gets the order from Telekom Malaysia once a year.

Most of the important parts (between 90 to 95 per cent) are imported from NEC and other companies in Japan. These CKDs items are normally highly technical parts such as connector, printed wire board (PWB), resistors, capacitor etc. The same situation applies at Pemas NEC (K) Sdn.Bhd. The orders are placed between once a month and once every 3 months. Quality checks are conducted on the local parts but not on CKD items. When asked about the localisation policy, the reply from one production manager was:

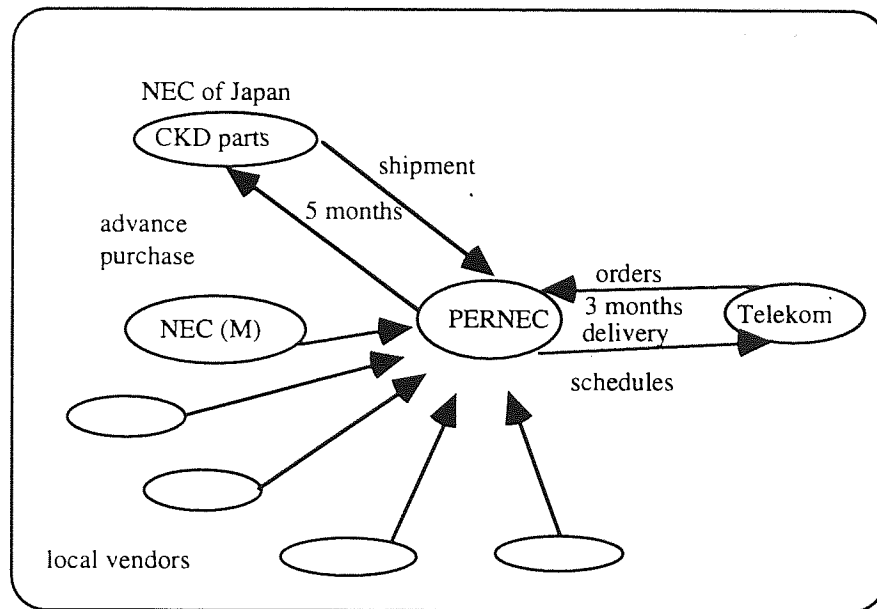
There is a business trick in terms of parts sourced. For PWB, which is a high-tech product, the local manufacturer can supply the parts to us. However, quality is relatively poor compared with Japanese parts. On the other hand, for IC, resistors and capacitors, we can also source locally with compatible quality, but Japan can supply at lower price than the locals. In the first case, we can't source parts locally because of inferior quality. In the second, they offer us very low prices just to deter us from sourcing locally. All these factors force us to procure parts and components from Japan in CKD packs.

There was also evidence that the prices offered by Japanese suppliers of electronic parts and components were far more expensive than what can be sourced from the open market (Guyton 1994; Marappan & Jomo 1994). Both cases show that the Malaysian counterpart's bargaining power is weak because PERNEC does not work together with local vendors to reduce costs and to upgrade quality. Instead, NEC, its affiliates, subsidiaries and suppliers/ subcontractors have worked closely to capture and to keep the world market. The problem with CKD items is that there were often delays in shipment from NEC, sometimes of up to one or two months. According to a production manager interviewed:

Telekom orders come once a year. Most of our parts are supplied by Japan. Sometimes there are shipment delays of between one to two months of parts supplied by NEC. Therefore we propose delivery schedules to Telekom based on our stocks available and stocks to arrive. Since the delivery to customer from the date of order is three months, and purchase from Japan takes 5 months, we cannot wait for the order from TMB to make a purchase. We order ourselves beforehand. In other words we have to stock our materials for up to 3 months. So, the question of JIT does not apply here.

This is as bad as the experience of Orki in the UK, where it took 6 months to receive parts from South East Asia (Elger et al. 1994:203). Delays in delivery have forced PERNEC to stock 3 months' materials from Japan. The parts supplied by local suppliers seem to be more reliable for the JIT production process, where the store becomes a transit house for them. The transportation is done by other companies. The relationships between orders of materials and deliveries to customers can be seen in figure 7.5.

Figure 7.5: PERNEC, NEC and TMB ordering linkages.



Source: Production Department, PERNEC 1994.

On local items or parts, there is more than one vendor for one part. In other words, they practise an open tendering, but to only a few vendors (between 2 and 3). However, the pulsecode modulation and multi-access subscriber parts now go to single sourcing. At present there are no formal written contracts between PERNEC and vendors except the purchase orders used. Sometimes the orders are faxed, then follow up by letter. According to one assistant manager, they want to introduce a formal contracts especially for big purchases for example, more than RM \$ 0.5 million purchased, but this has still not materialised.

Currently, for transmission parts, 20 parts are supplied by 10 local suppliers to PERNEC. They supply only mechanical items, between 5 to 10 per cent of the value. The store at PERNEC acts as a transit point only, where the local parts are received and dispatched. On the other hand, according to store workers interviewed, about 90 to 95 per cent of the materials in the store are imported CKD parts from Japan. The parts are received with a packing list invoice. The good received notes are issued and compared with the actual parts arrived. When there is a shortage, the vendor is informed and told to make a new delivery. If the parts are defective, they are returned to the vendor for replacement. If everything is in order and according to specification, the clerk will key in the record. The parts are then arranged according to specific shelves: PCB, cable, steel etc. Part Control Card is used for the purpose of recording the quantity in, quantity out, and new quantity balance. This is not a *kanban* card as used by the Japanese.

As mentioned earlier, PERNEC gets an order once a year from Telekom Malaysia, so has to order materials in advance. Even though production takes 3 months from the date of order, they have to schedule the deliveries according to the requirement of the customer. The products are normally sent direct to the site as directed by the customer. There is also evidence that for the purpose of safety PERNEC keep a month's stock of finished products.

PERNEC cannot get a good demand forecast from its principal customer, Telekom Malaysia. Normally PERNEC gets 'turnkey projects' where the customer leaves everything to the contractor. Engineering works, market surveys, equipment requirements, parts requirement to manufacture and delivery schedules must all be done within 3 months. As was claimed by a production manager:

The customer has difficulty in forecasting its projects. They leave everything to us, in fact we help them to forecast. We have to deliver within three months from the time of order made. The real headache comes when there are changes in the customer's requirements and PERNEC has to place a counter proposal where we have to alter everything. It is almost impossible to meet these unstable forecasts from the customer. That is why PERNEC has to have 3 months' stocks.

PERNEC is constrained by its high reliance on a single market and single supplier. The unstable demand creates a lot of waste and disturbances to the PERNEC workforces. It is the outcome of a lack of integration between PERNEC and Telekom Malaysia from the beginning, to identify the actual customer and industrial needs. To do this there must be a long-term close relationship between supplier, manufacturer and buyer, where joint R&D and information sharing is nurtured (Sako 1992; Florida & Kenny 1991). The other problem faced by the production department is idle production time, i.e. capacity is bigger than utilisation. This is due to the dominance of NEC, which wants PERNEC to tap the Malaysian market only. According to a manager:

There are business opportunities outside, but we are bound by the joint venture agreement, which says we can only market our products in Malaysia. Therefore, we are losing business, because our capacity is bigger than our actual production. In fact we are capable of going for export markets, but NEC don't allow us to do so.

I was not given the opportunity to see the content of the initial joint venture agreement, designed two decades ago. Everyone in the industry has a new and updated agreement with their partner. The problem is not with the agreement, but the capability of the initial task force who designed the agreement, and more recently the top managers and management team, who did not make enough effort to upgrade and alter the agreements so that this venture could develop technologically and finally become an independent company.

From the interviews with informants, it is clear that underlying to this problem is the low-risk-taking attitude of previous chief executives and management, who did not try to expand the business of PERNEC. They were satisfied with the secure market given by Telekom Malaysia until the contract markets was saturated and threatened by new entrants, when they were forced to move into open market.

Flexible team work.

PERNEC's transmission division acts as a transmission cell, because it produces only transmission products (PWB assembly based). In this division there are three production teams: unit assembly team, rack and shelf assembly team, and testing work team. There are 40 production workers (operators) in the division and, during my visits, 5 workers in rack and shelf assembly, 9 workers in testing works and 28 in unit assembly. They were recruited when they were single and had just left school. 90 percent of these workers are females, which is normal in Malaysian electronics industry (Abdullah & Keenoy 1995; Jomo 1995), British electronic industry (Trevor 1985; Taylor et al. 1994) and in California (Milkman 1991), where the bulk of electronic operative workers are female.

However, about 90 per cent of the work force are 30 years old and above. They have been with the company for more than 20 years, and most of them are married. In 1980, in Japan, 63 per cent of manufacturing workers were aged 35 and over, as compared to only 35 per cent in 1960. The proportion of older female workers also increased from only 9 per cent in 1960 to 24 per cent in 1980 (Brinton 1993:134). This is in contrast to the female workers in Japanese transplants of Sakitech and Sumotech factories (in Kedah, Malaysia), where most workers are single females, recruited fresh from school and easy to mould according to the company's values (Abdullah & Keenoy 1995). These workers are transferable, as long as they are in mounting, through hauling, soldering, bridging, racking, shelving and cabling, touch up and testing works.

Assembly workers work 5 days a week, Monday to Friday, in one shift from 8.00 a.m. to 5.30. After punching their cards, they go straight to their workplace and attend a daily morning talk given by their respective supervisors between 8.00 to 8.15 a.m. In this morning meeting, the supervisor informs them of yesterday's achievements and today's production targets, and advises them on how to improve quality and productivity levels. There are 3 breaks, for morning tea (10.30 to 10.45 a.m.), lunch (1.00 to 2.00 p.m.) and afternoon tea (3.30 to 3.45 p.m.). They punch out at 5.30 p.m. For the details see table 7.2.

Table 7.2: PERNEC: Working structure.

Time	Activities
8.00-8.15	Morning talk by respective supervisor
8.15-10.30	Working time
10.30-10.45	Break
10.45-13.00	Working time
13.00-14.00	Afternoon prayers and lunch
14.00-15.30	Working time
15.30-15.45	Break
15.45-17.30	Working time
17.30	Punch-out

Sources: Human Resources Department, PERNEC.

In Japanese flexible work teams, workers are grouped together with a group of machines and processes to produce a group of electronic products is what has been claimed as 'cellular technology' (Bratton 1992). PERNEC workers are stationed in three assembly bays, unit, rack and shelf bays. They are mobilised to any assembly processes or cells, as the need arises. In other words, they are really 'flexible transmission workers', able to accommodate any transmission products and to work with any design changes given by the production designers. They can produce 22 different product models and also can be transferred to different assembly processes. All of them can do the following kinds of work: mount surface insertion, through hole insertion, soldering check, bridging, touch up, rack and shelf cable forming, rack and shelf making.

Workers are rotated on a weekly basis. One week, a worker might be in unit assembly, but next week she might be in rack making or shelf making assembly. This does not mean that the management wants to develop multi-skilled workers as prescribed in Japanese 'multi-skill' career development. As pointed out by a senior manager at the human resources department: "We don't have a written policy to train our workers so that they are multi-skilled. What we have is separate groups of workers for separate plant or subsidiaries. We will train them in new skills as the need arises". However it does, to some extent, relate to and reflect the fluctuations of demand for the products .

At their workplaces, in front of their work stations there are simple graphic presentations of job specifications, common mistakes, slogans to work smarter and quality check instructions. This enables workers to refer to them while they are

working (Suzaki 1993). From my interviews and observations, workers' skill development was limited by the technology used.

According to a senior manager at HRD, there was a written policy saying that staff are transferable, but there is no written policy saying that staff will be transferred after two to three years. When asked whether PERNEC practises job transfer to develop multi-skills and career development schemes, one manager said: "We do transfer workers but not to increase their skills and flexibility. Transfer will take place if there is a request from a department/ division or from an individual employee concern. We transfer our managerial staff from one department to another, but only as a promotional exercise". Therefore, the transfer is not really due to the planned multi-skills development, as claimed by many Japanese management propagators, but rather to fulfil management production plans as the results of technology changes and demand variations.

***Kaizen* or continuous improvement process.**

Kaizen simply means 'ongoing improvement involving everyone, including both managers and workers' (Imai 1986:3). It is hard to judge whether *kaizen* has been practised at PERNEC, because all those elements are apparently just beginning to be used there. In 1993 the importance of *kaizen* was raised by the new CEO, who gave briefings on *kaizen* to all workers every 3 to 4 months. Prior to that, workers did not have that kind of meeting with their CEO except during formal functions, once a year. For further details see table 7.3.

Table 7.3: PERNEC: The *kaizen* elements.

<i>Kaizen</i> elements*	The availability	
	never used	in use planned or being implemented
Customer orientation		√
Total quality control (TQC)		√
QCCs		√
Suggestion system		√
Automation		√
Total productive maintenance (TPM)		√
<i>Kanban</i>	√	
Productivity and quality improvement		√
Just-in-time (JIT) production	√	
Zero defects		√
Cooperative labour-management relations		√
New-product development		√

* Based on the *kaizen* umbrella, Imai 1986.

Table 7.3 shows that PERNEC is in a new period, with a CEO and management team. There is a report on daily productivity and quality checks by operators and testers, but it is more on current work problem solving and it is done on a routine basis. Although the problems are digested, and suggestions are made, there is lack of management support

and lack of recognition for workers. As explained by a manager responsible for quality movement at PERNEC.

Before, there was a lack of briefing on *kaizen* and the like from CEOs. What we had was a normal speech during an annual function. It is very sad to say that our previous CEOs were also from inside the company, but there was a lack of motivation. Our present CEO joined this organisation as a manager, and he knows well our main problems. That is why he makes an attempt to brief us 3 to 4 times on *kaizen* and related matters in a year.

There was a worry among executives that older female workers might not be as creative and enthusiastic as the young ones, but it was only a feeling. Motorola, which came to Malaysia in 1973 and has about 10,000 workers, has successfully implemented TQC, TPM and the like (Venus 1991). The problem with PERNEC is not the workers, but the internal environment of the organisation, which does not realise the benefit from the workers' loyalty and has failed to keep machinists and engineers. *Kaizen* will not take place by depending on QCC activities, without overhauling the whole management system.

The application of flexible machines and robots and total productive maintenance.

Two groups of machinery are used, assembly equipment and test equipment. There are more than 10 types of machines used in assembly work, such as terminal mount machine, automatic soldering machine, parts placement machine, solder paste printing machine, reflow soldering machine, ultrasonic cleaning machine, in-circuit tester, dip integrated circuit (IC) inserting machine, axial parts lead cutting & forming machine, riveting machine, one man conveyor, jig, feeder and tools. All of the equipment is Japanese made, and all of the machinery and equipment is between 6 and 21 years old. For testing work more than 20 machines are used, such as frequency counter, ME538K system analyser, pattern generator, detector, jig and tools for test. Half are from Japan and half from the US.

Overall, 70 to 80 per cent of the processes are mechanised in assembly and almost 100 per cent in testing inspection. In Japan more than 90 per cent of the processes and 100 per cent testing jobs are mechanised and automated. Of a total of 34 types of machinery and equipment, 32 per cent (11) are US made and 68 per cent (23) are made in Japan. From the same total automation used, 62 per cent (21) are old and 38 per cent (13) are new (note: more than 5 years is classed as old). Of the newly bought 13 testing equipment, 31 per cent (4) are US made and 69 per cent (9) are Japanese made.

The application of automation and machines has reduced the number of staff in the division, as explained by the production manager:

Our company when it started was labour intensive. It was the Malaysian government that encouraged labour intensive MNCs to invest during 1970s. As we grow, year by year the business becomes very competitive. There are many new entrants with new products. PERNEC has to introduce new products faster, more productively and at higher quality. Therefore, in the 1980s all of through hole assembly was manually mounting, in the 1990s, we changed to surface mounting technology, and manual mounting dropped to only 20-30 per cent. Therefore, the number of workers on the assembly line reduced. Likewise with testing, more high technology equipment has been used, and the number of workers reduced significantly.

Before, according to the production assistant manager interviewed, there were about 50 components in one printed wire board (PWB), today there are 200. This is only possible through using automated SMT. The manual mounting has been reduced to 20 per cent and the number of operators to 40. The average number of operative workers was 60 in the 1980s. The number of employees was also reduced in equipment and systems testing/ inspection teams as a result of the utilisation of more high-tech testing instruments. As the application of automation increased, the job of supervisors also changed. Supervisors have to ensure the set up of the production process is done, the set up of the machinery every morning before operators start their job, ensure the machinery and equipment used are off and placed in their respective location, lead daily morning meeting, ensure all parts and components are available, commend workers for performance and recommend promotion, to ensure work schedule. The duties of the maintenance group have also increased. More maintenance and repair jobs are involved. Through on-the-job training, the skills of operators are also improved. As more machines are introduced, more skills are acquired by operators.

As regards maintenance, PERNEC lacks both technical expertise and total productive maintenance (TPM). The TPM is a precondition for the TQC and JIT to take place (Nakajima 1994), because the machines must be free from long downtime (Schonberger 1982). If there is a major breakdown at PERNEC, an expert from Singapore or Japan will be called in to settle the problems, which takes about one week and is very expensive. When a question on what is being done to solve this problem was put to the production manager, the answer was:

We sent our staff to Japan, not once, but every year. The Japanese taught us only basic and simple operation. They taught our technicians only basic repairs/ maintenance, not proper and advanced maintenance. They are not willing to teach us.

The managers I interviewed did not seem to realise that PERNEC is subject to the NEC regional business strategy, in which NEC of Singapore acts as regional headquarters for procurement, marketing, design and also maintenance for the whole of ASEAN (Baba & Hatashima 1995).

Conclusion.

NEC has introduced to PERNEC a simple assembly of unit, rack and shelf works. Based on low value added, PWB mounting and soldering, PERNEC produces about 22 digital multiplex transmission models or products. Within this, PERNEC is dominated by Japanese parts and components; machines, jigs, tools and test equipment; diagrammatic and graphics work instructions, common mistakes, safety and quality slogans at workplaces; and layout of the machines and processes.

Theoretically, the application of JST is low within Japanese electronics as compared to automotive companies (Kenny & Florida 1993, 1995; Abo 1994a; Taylor et al. 1994). In the case of PERNEC, the best Japanese management practices either do not exist at all, or have very limited application. Interviews and observations showed that there is no JIT production, zero inventory storage and *kaizen* activities. Not even single parts and components are supplied direct to the production line. Transmission cells do have flexible team work, and workers do have multi-skills, but workers are required to learn new skills because of the arrival of new machines for new products. There is no proper staff career development plan saying that as soon as a person joins PERNEC, (s)he will be trained in one skill after the other until (s)he masters certain basic, intermediate and advanced skills. However, as jobs become more sophisticated and more oriented to job changes and promotion, the main opportunities have been given to male workers, as in Japan (Brinton 1993:162-3). Nevertheless, the most senior post, i.e. manager, for production function in the transmission division is held by the most senior female engineer. The other point is that workers are transferable only within their transmission cell or 'immediate work setting' (Briton 1993:163). Periodic transfer between department or division for the purpose of multi-skill development does not take place. Transfer may arise due to the request of an individual department and of workers themselves.

Neither NEC nor PERNEC encourages the company to have its own technological centre. After 21 years under the umbrella of NEC, on the initiative of the new CEO product research and development activity has started. It was established without the approval of NEC. The unit is still new. Technical training for engineers and technical workers has taken place in collaboration with NEC, but related only to simple assembly and maintenance of the technology supplied by them. This 'preferred management' (Abdullah & Keenoy 1995) in the electronics sector in Malaysia is practised as 'localised management' in California's factories (Milkman 1991). Therefore, the transferability of JST has been debatable, not only in a mature economy but also in a developing economy. Last but not least, some elements of JST, such as flexible

soldering and mounting machines and the use of SPC by operators and testers, have been adopted by PERNEC.

7.4 PERNEC quality management system.

In Japan, assemblers, suppliers and distributors work together to enhance product quality, to reduce costs and to ensure reliable delivery. How far have these practices been implemented by PERNEC under the supervision of NEC? How far is company-wide quality control (CWQC) or total quality management (TQM) practised within Transmission division particularly, and PERNEC as a whole. During my fieldwork in the Transmission assembly line, I saw some posters or slogans saying 'Do it right the first time'. Did this mean that quality control is important in the Transmission division and in PERNEC as a whole? To answer this, let's proceed to a discussion of quality policy.

Strictly speaking, the corporate quality policy is not clear, even though there is an attempt to take 'QUALITY, COST and DELIVERY' as their motto and 'to ensure the products delivered to customers are of high quality, competitive in price and delivered promptly' as their philosophy. This might be true for the production workers, as quality inspections are carried out right from the checking of receiving raw materials, through inspecting the work in progress, checking assembled products, to testing the systems and inspecting the out going products.

At Matsushita Electric Industrial, quality has been organised through interrelationships between the corporate quality assurance division, and the quality assurance department, quality assurance laboratory, overseas quality assurance group, packaging laboratory and measurement system department (Westbrook 1995:11). It is hard to identify an organisation that specifically looks into company-wide quality management at PERNEC, its subsidiaries and vendors. What PERNEC has in the Transmission Division at headquarters is a Production Department which is responsible for overall quality inspection and which pioneered PERNEC's QCC activities. Under the advice of production manager, the programmes are laid out, i.e. there is no quality manager and no quality department. Quality checks are scheduled and QCC activities are programmed. One executive was appointed to monitor the inspection process and one of the Assistant Engineer was assigned to lead the QCC movement with a technician and a clerk. Therefore, company-wide quality planning and implementation of quality education, quality campaign/movement, quality manuals and documentation have not been assigned to anyone.

Japanese influences.

According to the production manager, quality is a life function of all production employees. Quality checks are done from the receiving of parts to the outgoing finished products to customers. In a real sense this is a conventional quality inspection method (Milkman 1991), rather than taking quality as a way of doing business (Westbrook 1995).

Generally speaking, PERNEC quality management system is at the stage of quality inspection and assurance, that is, the lowest stage in the systematic approach towards total quality management (Bossink et al. 1992:225). As at PROTON, there are no quality checks on CKD items, whose quality is taken for granted. Quality checks are only applied to local parts. 100 per cent checks are applied to a small quantity of parts at the time of arrival. However, random sampling is used for big volumes of parts. For the assembly processes, racks, rack cables, shelves, shelf cables, and units making all of them were 100 per cent checked. According to one assistant manager at a PERNEC subsidiary, there were between 1 per cent and 2 per cent rejection rates for local parts, which is quite high, and normally they send back the defective item for replacement. The records used are checksheets and delivery sheets. The documentation used is mostly bill of material, purchasing specification, checklist, drawing, drawing standard, unit assembly, wiring standard, soldering standard, workmanship standard, test procedure, test data, and mechanical checklist before shipping. All these checks and inspections are done by the line keepers themselves, except for the final system tests, which are done by 9 testers.

Quality and productivity movement.

The quality circles movement at PERNEC was started in 1984, one year after National Productivity Corporation of Malaysia started its propagation of QCC programmes within industries throughout the country. In 1984/5, PERNEC sent a group of potential quality circle facilitators to NEC of Japan for QCC training. However, as there was no support from the management at that time, the movement was abandoned. As pointed out by a manager in charge of quality movement:

Quality control circles and quality movement are a failure. Although they were introduced ten years ago, due to the lack of interest and management support, the activity was soon died out. However, with the directives of the new CEO, QCCs and quality movement were reactivated in 1994. The new leadership wants every division to have its own quality circles.

Since then, a new quality steering committee, consisting of Production Executive, Engineers, Line Manager and a technician as a secretary, has been formed to look into the matter. Its official launch was in May 1994, but today, out of 737 workers within 4

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subsidiaries, there are only 3 circles, Baku, Kami and Semina teams, with 31 members from the Transmission Division. The three circles are from unit assembly groups, sub rack assembly groups and testing groups. The participation rate is only 4 per cent of all employees. They meet on average for one hour per week, within working hours. So far, there are no meetings held outside working hours. At the time of the study, there have been 4 presentations on completed projects by those circles.

These teams are voluntarily organised pioneer circles, and the production manager hopes that they will inspire others to form groups also. According to an informant, PERNAS NEC Kedah will also have a QCCs movement in the near future, with the intention of having 13 circles. The basic preparation for group forming and a reward system has also been organised. So far none of the informants can state clearly when they will have a yearly PERNEC QCCs convention to which every subsidiary will send its best circle to present their projects. The reward system was also not standardised between headquarters and subsidiaries.

Although QCC training was given to PERNEC QC facilitators in Japan in 1984, the movement started only in 1994 with the set-up of the three circles. The participation rate of 4 per cent is 5 times lower than in the general accounting office survey of large firms in America, where 20 per cent or more employees participated in either QC circles or small group activities (Milkman 1991:75). The secretariat is planning to register the circles with NPC and establish the movement properly. They were due to have their first small-scale QCC convention in September 1994, but unfortunately it was postponed. Generally in Malaysia, there are more companies that do not have QCC activity than companies that do have it (Sin & Jain 1988:44).

In Japanese companies, QCC movements are voluntary and meet outside working hours. Management implements any significant suggestions from the circles as soon as they are proposed by workers, and also give monetary and non-monetary rewards to the teams (Inohara 1990). Since this quality circle activity takes place only in its Transmission division, PERNEC does not have CWQC, so the rewards systems for PERNEC as a whole is not yet finalised. As pointed out by a manager in charge of the quality movement:

Only the Transmission division has its own quality circles. Before it was started, my staff did not know how to record data. Today, they already master to utilise SPC tools. The workers are responsible for their works, because the data which has been collected will show the quality and productivity of their works. Other divisions and subsidiaries have not yet started their QCC programmes. We have to perfect the present circles first. We will call other managers to see the presentation of our pioneer circles and from there, hopefully, they will start their own.

In order to fulfil these objectives, the activities proposed include giving an award to the best circle, producing QCC badges, and participation in bigger conventions (such as national, Asian and international NEC conventions). My informant also plans to increase the number of circles in the production department to between 29 per cent and 100 per cent participation within 4 to 5 years. To extend QCC to non-production, it is planned by call in all managers from other departments during the convention and to have a meeting with them after the QCC presentations.

Statistical process control (SPC).

What about the use of SPC, which is widely used in Japanese firms on production lines. At PERNEC, the check sheets are used by assembly operators, testing staff and quality personnel. Production time and output target are two standards which all work teams must achieve. They are given to them so that they will improve their productivity and quality of work. The work sheets are used to record the timing of the process, the down-time, the reasons and the irregularities. These records are kept every day for every production lot. Weekly and monthly analysis is completed and summarised by the supervisor, and presented in the monthly productivity meetings. The monthly productivity meeting is attended to by the production manager, executive, technician and supervisor. The analysis of variations between actual and targeted production time with particular lots is done monthly, with reasons given. If the variation is significant, is it due to labour or machines? Countermeasures are discussed in the weekly productivity meeting. If there is a delay in material supplies, the time is not included in productivity analysis.

Quality Education toward Company-Wide Quality Control.

Most of the Japanese companies and MNCs that succeed in international business emphasise quality education in their company-wide quality control (Macdonald & Piggott 1992; Oakland 1993; Westbrook 1995). Although there are education programmes at PERNEC, they are not for all employees, and the programmes are not linked to quality certification, for example for ISO 9002. Furthermore, company-wide quality control and total quality management would require the total commitment of top management, team building, information sharing, incentives and rewards, recognition and respect, and harmonious relationships between employees and between departments in the organisation (Hohner 1993). Long duration of service is another factor that makes education and quality efforts more fruitful (Westbrook 1995), and PERNEC has to work on this. As one informant said the main problems the company faces in implementing company-wide quality control and *kaizen* were a high level of turnover amongst technicians and engineers. As informed by production manager:

All engineers are new. Most of them have been with this company for less than five years. We have a very high turnover rate for engineers and technicians. Although we train them in Japan or locally, after a few months they leave the company. We are supposed to have product improvement programmes after their return, but as they move away, the programmes that we intend to do are stopped.

This implies that the company has to look into its total promises to its employees. To answer this problem, a member of the human resources department said:

It is true that we have to do something with regard to our remuneration systems. For this purpose we have appointed PA Consultant to do a survey and make a proposal to us on a new salary scheme. With the new system hopefully we can keep our technicians and engineers for longer. We don't want to keep on recruiting people. We should recruit, develop and retain the workers. This will only be possible if they feel secure and happy to stay in the company.

There was a claim that senior production workers lacked motivation and were not so eager to work. As a production manager said:

Another problem is the age of workers. They are in their late 30s and early 40s, They have been working for so long. They seem to lack motivation and to resist change. They are loyal, but less motivated and less productive. When we asked them to make suggestions, we did not get many from them. Therefore we cannot get *kaizen* from them, and they are more than half of our workforce. However, we have young workers who are eager to work, and they are productive.

This assumption was verified by workers, technicians and engineers. According to an operator:

It is true that workers are not interested in quality circle activities. But why are employees not interested? From my experience, it seems to me that nobody is really serious about implementing the quality and productivity improvement activities.

There were other replies from different workers:

There are many reasons why employees are not interested in quality circles and *kaizen* activities. In the first place we are so tight with our routine jobs and therefore we don't have so much time to devote to QC activities. There is also a lack of facilities, training and exposures provided for us.

An operator.

The workers do not lack motivation or resist change, but they have been forced to participate in quality circle activities rather than voluntarily involved. The direction of quality circle activities should be for the improvement of working conditions and work processes rather than for the sake of presentation and convention. In many cases we did not get enough information and guidance to run quality circle activities properly. There has been a lack of seriousness and consistency in organising quality circle activities by the management. To be more effective, there is an urgent need to have a proper quality circle department and our top and middle managers have to be more serious about the movement.

A technician.

I believe that whether quality circles are active or not depends on management involvement. The main reason why QCs have not been active is lack of management support and recognition. The follow through programmes after the implementation were also weak.

A technician.

The above claims were further verified by engineers. One of them suggested that: "The workers were uninterested in quality circle activities not because of their age but because of lack of training and exposure. In order to be effective the objectives and the benefits of QCCs should be explained to all employees" (Zaleha, an engineer). Another engineer replied: "Yes, our workers have not been given enough explanation of the reasons why quality circles have been created. The workers should be able to practise QC activities in a practical way and the other important thing is that they should share the gains as the result of the activities" (an engineer).

The comments from non-managerial workers, combined with the limited market, simple PWB assembly process and the slowness of soft technology practised, show that the claim by senior workers of low motivation and enthusiasm is difficult to prove. On the other hand, it is hard to reject the claim that there are serious managerial problems, because my research showed that PERNEC hasn't got anyone yet who is looking into company-wide quality planning and implementation of quality education, a quality campaign/movement, quality manuals and documentation.

The QCC training programmes proposed by the secretariat are, (i) training for leaders, secretariat and executives, (ii) 2-day quality seminars for all production staff, (iii) intensive training for group leaders (QC tools and functions of QCC). These programmes were supposed to be implemented in 1995/96, but they had to be incorporated into the PERNEC annual training programme organised by the Human Resource Department, and I found no evidence that they were.

Quality joint efforts with vendors.

In the company-wide quality control system, all within the organisation, suppliers and distributors are responsible for quality improvement (Ishikawa 1986; Oakland 1993). For this purpose, they work together to build in the quality right from the beginning. The assembler or manufacturer will station its engineers in or visit the suppliers' plants when necessary (Florida & Kenny 1991; Sako 1992). For PERNEC, these virtues do not apply with its vendors because the system adopted is arm's-length instead of obligatory contractual relations (Sako 1992). When asked whether PERNEC sent any staff to its vendor, an assistant manager of the commercial department said:

We do not really send our staff to develop product quality together with our vendors. However when there is a need to do so, we do send our engineers and technicians to them. In other words we do not send our staff on a regular basis. We just send them for system checking.

According to the vendor interviewed, communication is over after contracts of 2 or 3 years are over. The quality of materials and parts is settled by inspection. If they do not meet the specs, they are returned to the suppliers. There are no joint efforts to build parts and components between PERNEC and its vendors. According to the business manager of one vendor: "PERNEC staff might come to us but not consistently. They may come for system checking (whether it is functioning or not), work in progress, and to check on quality of the parts. They will finalise before the order is made. For product design, in the beginning they may come but not continuously afterwards." For another vendor which supplies VF blocks, PERNEC staff only came once, to get to know the company, and did not help out in product design, or in solving quality or production problems. The philosophy of quality chain (Oakland 1993) and interorganisational relationships (Florida & Kenny 1991) is not applicable to PERNEC and its vendors.

Conclusion.

Although the venture has operated for 23 years with the Japanese, in terms of total quality management the company still is at the stage of 'quality inspection', a level which many organisations have already departed from. PERNEC started to establish its quality circles only in 1994, and the levels of quality movement is still in the 'early stages', as was found with American companies in Michigan by an industrial survey (Chen 1992:51). The main problems encountered in building up the quality culture in PERNEC were not the lack of enthusiasm of the assembly workers and high turnover rates of engineers and machine operators, but rather the lack of awareness, commitment and support of the management toward TQM and CWQC. It was also partially due to the inability of PERNEC's management to create a conducive environment to retain and motivate the energetic engineers and machinists.

The same thing has been found in the UK, where the main barrier to successful implementation of a quality process is a lack of 'top management commitment' (Coulson-Thomas 1992). This finding is similar to other research in California factories (Milkman 1991) and Michigan firms (Chen 1992). It was further elaborated that, empirically, support from top management, and commitment and support from middle and first line management are the most crucial factors that determine the success of quality management practice in a company. However, other contingency factors, such as circle members' training, commitment and support of employees and unions, circle leaders' training, financial difficulties, management philosophy of encouraging workers to participate in consensus decision-making and problem-solving, interest of circle members, proposed solution accepted by management, are all also important (Fabi 1992).

There was an attempt to implement a quality movement at PERNEC in 1984/5 but as there was a lack of management support, the project was abandoned. In my experience and analysis, Malaysian female workers are loyal and ready to learn. If management treats them well, and regards them as the company's most important resource, they will perform and be productive. In most cases, the circles that won the regional and Malaysia's national QCCs conventions were staffed by females workers. It was clear from my interviews and observations that the NEC's role in nurturing company-wide quality control or total quality management within PERNEC is minimal. The implementation of total quality management at PERNEC is not emphasised. In other words NEC dictates not only the market and production technology, as discussed earlier, but also the company's quality management system.

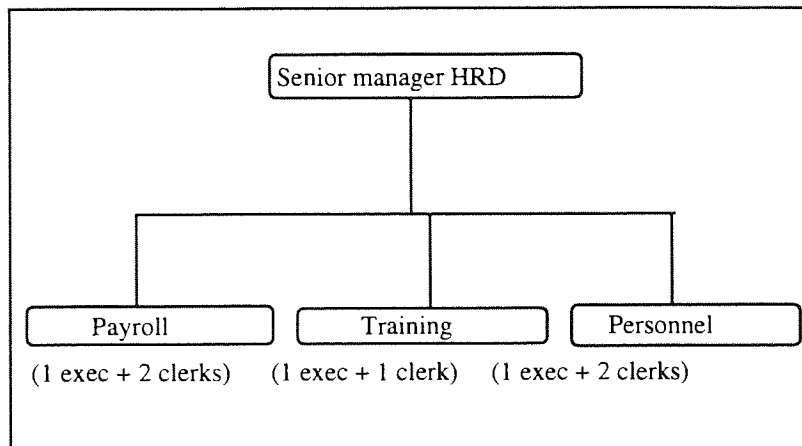
7.5 PERNEC's human resources management and development.

After more than two decades of working with NEC of Japan, to what extent has PERNEC implemented Japanese company-based welfare human resources management techniques? In the forthcoming discussions, Japanese lifetime employment, fresh intake of workers, internal promotion and pay by seniority, multi-skilled production workers and the high dependency on employees will be examined at PERNEC. The discussion will also explore the extent to which NEC influences the management of PERNEC to practice 'core' or high-cost personnel management as found in Japan.

According to a senior manager from the human resources department, it is the responsibility of management to take care of the welfare and the knowledge and skill development of its staff. When asked whether they have a written policies on employees development, management replied: "Some are written, some are not." For example, there are written policies such as: staff are transferable, everybody should be trained at least once a year, and a budget allocation of RM. 600.00 for training per person per year. On the other hand workers are not told when, where and for how long they will be transferred. There are also practices without a clear written policy such as: PERNEC treats everybody the same, gives the same incentives to everybody, and considers that achievement belongs to the group. PERNEC also does not put in writing that trained staff must serve the company for at least 3 to 4 years after receiving training.

At PERNEC headquarters, the human resources department is headed by a senior manager, assisted by three executives. They have ten employees including six clerical workers. The three executives look after three functional sections, payroll, training and personnel, as shown in figure 7.6.

Figure 7.6: PERNEC: Human Resources Department.



Source: Human Resources Department, 1994.

The informant interviewed claimed that their responsibilities cover the whole PERNEC groups human resources management and development. The Training section is responsible for orientation, training, education, development and research, and audit. Personnel is responsible for recruitment, selection, placement, appraisal, job analysis, job description, job specification, job enrichment, job enlargement, organisation development, safety and health, legal complaints, human relations. Payroll is responsible for compensation, salary adjustment, budgets and bonuses.

PERNEC employees are distributed in headquarters 42 per cent (310) and in Kedah 58 per cent (427). There are also about 10.3 per cent (76) contract and casual workers and most of them are at Pernas NEC (K) Sdn. Bhd. These contract workers are paid monthly and the term of service is on a year to year basis. On the other hand, casual workers are paid daily. The distribution of these workers can be seen in table 7.4.

Table 7.4: PERNEC: Workers' distribution by subsidiaries.

Subsidiaries	Number	Employees	
			Per Cent (%)
Pernec (Kedah) Sdn.Bhd*.	427		57.94
Transmission Division	172		23.33
Pernec Technologies Sdn.Bhd.	74		10.04
Headquarters	44		5.97
Casual Workers* *	20		2.71
Total	737		100%

Note: * Includes 56 contracts workers.

Source: Human Resource Department, Head Quarters, PERNEC 1994.

It has been argued that the presence of contract or casual workers not only enables the company to be free from union formation (Abdullah & Keenoy 1995), but also benefits

the company through low-cost personnel management (Milkman 1991; Dedoussis & Littler 1994; Dedoussis 1995).

Japanese expatriate.

At the time of study there were only four Japanese experts working at PERNEC, two at the Kedah subsidiary and two at headquarters. They had been with PERNEC for between 4 months and 5 years. One of the experts at headquarters was assigned to support the production engineering functions. The other one was assigned as a deputy chief executive officer/ resident director, and was responsible for introducing a new management approach for PERNEC. He was sent for 6 years to introduce long-term improvement programmes such as: 3 Ups (One step-up, speed-up, and follow-up), 3 Ks (*Kangaeru*-Think, *Kyaku*-Customer, *Kokoro*-Mind), advanced intelligent management System, manufacturing and marketing strategies (Nada PERNEC, September-December 1995). The other two Japanese, at Pemas NEC (K) Sdn.Bhd., were advisers in the Planning Department and the Engineering Department.

They were sent not only for the purpose of technical assistance but also as liaison officers with Japan (Turner 1987; Kumon 1994). Though this, Japanese experts are important in influencing the decision-making by the parent company in Japan and sometimes favouring the transplants, but my interviews at PERNEC and PROTON suggested that they acted more as eyes and ears for their head offices in Japan. They acted as 'agents', accounting to one senior manager.

Japanese influences.

Although most technical training is monitored by NEC of Japan, PERNEC is free to choose how to manage and develop its potential human resources. The interviews with a manager in the human resources department show that they are not bound to NEC in managing and developing employees. According to him, in terms of taking care of workers, the West and Japan are not much different, because both are concerned with their employees.

The Japanese and the West are almost the same, for they believe that the welfare of the workers is on the shoulders of the management team. In our case, we are practising a human resource management which is suitable to our local environment. Maybe it is a mixture of all.

Since PERNEC and NEC have been partners in their business for more than two decades, does NEC indirectly or directly colour PERNEC human resources management?

Jobs classification.

Japanese companies have small numbers of job classifications and workers can be promoted from the rank and file to the presidency of the company (Abo 1992, 1994; Inohara 1990). PERNEC has two categories of workers, technical (production) and non-technical (non-production), subdivided by skill. In terms of hierarchies, they are non-executive and executive workers. A worker can be considered an executive if he/she is an Engineer Assistant or Trainee Executive and above. A person may join the company as a Grade 3 worker on the assembly line, or as a technician, or as a Grade 4 Clerk; but all of them are given the opportunity to climb up to the top, though the shortest ladder belongs to graduate workers. How can they ride up to the top? See table 7.5 on their career paths.

Table 7.5: PERNEC: The career paths.

<u>Production</u>	<u>Technician</u>	<u>Clerk</u>	<u>Graduate Engineer</u>
		Depart. Manager***	Chief Executive Officer
	Engineer**	Sectional Manager	General Manager
	Senior Ass.Eng.	Assistant Manager	Assistant General Manager
Special Grade*	Assistant Engineer	Senior Executive	Senior Manager
Supervisor 1	Engineer Assistant	Trainee Executive*	Depart. Manager***
Supervisor 2	Special Grade	Special Grade	Engineering Manager
Grade 1	Technician 1	Clerk 1	Assistant manager
Grade 2	Technician 2	Clerk 2	Senior Engineer**
Grade 3	Technician	Clerk 3	Engineer
		Clerk 4	Graduate Engineer

Notes: *, **, *** Lines of continuation.

Source: Human Resources Department at headquarters, PERNEC 1994.

According to a senior manager, PERNEC's present CEO joined the company as a technical manager, but he did not reach the top because PERNEC has followed the Japanese system.

Fresh graduate/ college intake.

In a Japanese factory, workers are hired fresh from college and university (Abegglen & Stark 1985; Inohara 1990). Workers are employed as new members of the working family, not on individualised technical merit, but rather on their potential (Inohara 1990:55). In Malaysia, from my observation, workers are employed mostly on their individual merit and potential workers are proud of their jobs rather than their companies. Only recently, in the 1990s, were people looking for a good company as their preference. Young, single workers are cheap to employ, more receptive to order, and can adapt to factory life better (Abdullah & Keenoy 1995). PERNEC takes fresh graduates and school leavers as the main (80%) bulk of its worker intake. However about 20 per cent of the intakes are older and experienced workers. They are normally for technical line and executive groups.

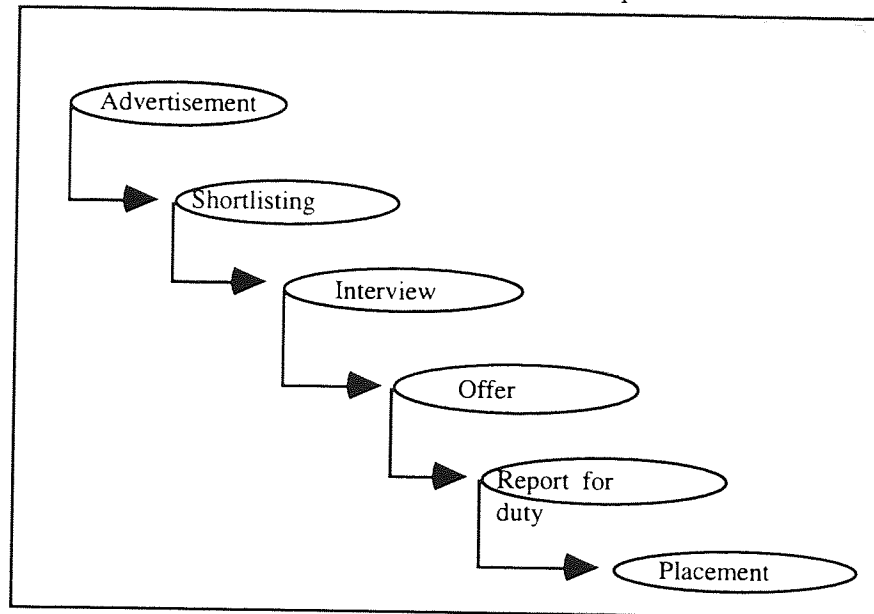
Paper qualifications play an important role in Malaysia's labour market. For executive posts, normally diplomas, skill certificates and degrees from institutes of technology, polytechnics and universities are preferred. For non-executive posts, school leavers with Lower School Certificate, Malaysian Certificate of Education and Malaysian Vocational Certificate of Education are the candidates. According to my interviews, little recruitment is carried out on the campuses at the end of the session, and there is no effort to work closely with any of the institutes to prepare PERNEC's future workforce.

According to a senior manager interviewed, the recruitment process starts with advertisements, followed by shortlisting, interviews, offers, report duties, visits to departments and orientation programmes. They may advertise through papers and in-house, and also use personal contacts. The objective of all this is to get the right people. However, advertisement is normally used to get technical workers, whereas words of mouth is used for operators and non-executive workers. Shortlisting is done after this. Normally 5 applicants will be called for interview out of 15 to 29. The interview is carried out by the human resources department and the department concerned.

The evaluation is based on (i) qualification (ii) experience (iii) personality (iv) attitude towards jobs and (v) communication skills. The ability to work in groups (as practised in a Japanese company), is not counted in these evaluation criteria and tested during the interview. The criteria mentioned above are especially applicable to technical and executive employees. However, in recruiting line operators and non-executive workers, basic qualification are still required. When the qualified person is identified, a letter of offer will be sent. The process takes two months from advertisement to letter of offer.

When new workers report for duty, they are sent to the department concerned. All new workers attend a staff orientation programme, so that they will understand the company's mission and objectives. To summarise the process see figure 7.7.

Figure 7.7: PERNEC: The recruitment process.



Source: Human Resources Department, PERNEC 1994.

Internal promotion and seniority pay systems.

In Japan, seniority or years of service and performance (*nenko*), are all taken into account in promotional exercises. According to Inohara: 'Not all employees with an equal number of years of service are paid an equal salary and promoted at the same time to the same level' (Inohara 1990:24). PERNEC promotions are based on merit not seniority, because:

Our organisation is small, and there is a limit for promotion. After a certain limit, there will be no more promotion and no more increment, so we only promote those who are capable, and we cannot promote everybody. Of course, if there are two or more candidates who have same merits but they joined on different dates, the most senior and existing workers are preferred.

Senior manager of Human Resources Department

The above statement says that even though promotion is based on merit, preference is given to the internal and most senior candidates. For example, their present CEO was originally a deputy technical manager and there are assistant general managers who were originally ordinary executives and engineers. At the time of field research, there were only 2 rank and file managers who had joined the company 20 years ago as ordinary workers. This is small compared to Matsushita Electrical (M) Bhd, where 47 per cent of the management team have been promoted from the rank and file (Akita 1988). As mentioned earlier, promotional exercises are based on merit and whether there are vacancies. According to informants, normally the exercise is done yearly in July with increments taking place in February. The performance appraisal form is filled out by the worker, and sent to the supervisor. The supervisor makes a recommendation

to the manager or sectional head, then to the departmental head or assistant general manager, then it is submitted to the Human Resources Manager, who goes through the proposals and puts them in order, before giving them to the CEO for decision.

The interview is done at a departmental level. There are a few criteria used in the exercise, such as (i) personal /Job details, (ii) Key results areas, (iii) Job attributes, (iv) Personal Attributes, (v) Development Plan, and (vi) Potential. According to senior manager of the Human Resources Department:

In these performance appraisals, the role of the supervisor is very important, because supervisors have been working and supervising all staff under them, and they know who are productive and dedicated to works. As a guide line, we advised them to give emphasis to actual job performance up to 70 per cent and personal attributes up to 30 per cent.

From the above discussions, it is noted that the ability to work in groups, a main criterion in promotion exercises in Japanese companies, is missing from PERNEC performance appraisal process.

Continuous cross-training and transferability.

As technology and the environment change, firms should continuously train their employees (Oakland 1993:387). In terms of training and development, according to the human resources department, the programmes offered by PERNEC can be classified in five categories: (i) Physical, health and recreational programmes; (ii) General knowledge and skill development; (iii) values and morale development programmes; (iv) cohesive or team building programmes; and (v) Total organisational performance (TOP) programmes. All these programmes are carried out both in-house and externally.

The physical fitness includes health and recreation programmes includes indoor and outdoor games, interdepartment and subsidiaries games, sports and marathon and departmental picnics. The general knowledge and skill development programme includes a 5-day orientation programme, factory visits, relevant technical skill training, relevant managerial skill training, communication and presentation skill training and customer service training.

Every year PERNEC sends staff to NEC, Japan, for technical and general training on 2-day to one-month courses. They are sent to Tamagawa Training Centre for theoretical and practical lessons, and to NEC Miyagi Plant, Yokohama, for factory observation. Most of the staff sent to Japan are given the opportunity to learn Japanese life and culture through a side programme organised by NEC and Yokohama International Tourist Association (Nada PERNEC, 1994:9). Staff are also sent to Singapore for managerial development training, to France for equipment testing training, and to the

USA for knowledge of Stratus computers. The majority are engineers, technicians, managers and assistant general managers. On this training, one assistant manager from the commercial department commented:

We did send our staff regularly to NEC of Japan or elsewhere to learn Japanese technology, but most of them were restricted to technical training. People like me who are not directly involved in the technical line have always been left behind. We should also be given a chance to learn Japanese ways of purchasing, dealing with suppliers, accounting and so on.

According to an informant from HRD, the values, cohesiveness and TOP programmes cover weekly, monthly and yearly religious and morale programmes. Through these programmes, employees will understand and relate to positive work ethics (i.e. work as a profession and as a form of worship of Allah), and as a mechanism to create an excellent work culture and unity, so as to enhance the corporate image. Values like unity and integrity, caring, discipline, humility, creativity and innovativeness, accountability and responsibility, trustworthiness and sincerity are inculcated. This programme is designed for everybody in the company. Each batch is a mix of 20-25 executive and non-executive employees, at a cost of RM. 15,000 per group. The classifications of the training and development programmes are detailed in Appendix 12. The yearly budget for training and development from sales is only 0.3 per cent (1992/3 and 1993/4), or RM. 714,060 in 1992/3 and RM. 583,600 in 1993/4.

When I asked whether PERNEC gave any kind of sponsorships or scholarships to its staff, the answer was:

We do not offer scholarships to our staff, but we encourage them to take night classes so that they can improve themselves. When they obtain good results, the company reimburses the costs. So far there are four staff members who have been reimbursed.

In other words, the provision for training is very small. Individual workers themselves have to find a suitable private college and to pay first all the college fees, books and examination fees. The number might be increased if the company took the initiative to arrange the places and the fees. However, the night classes concerned were limited to the Malaysian Certificate and High School Certificate. There was no provision for relevant skill, general diploma and degree courses.

Under skill upgrading (Suzaki 1993), workers are trained to put emphasis on human relations, corporate responsibility, being continuous and versatile, and having multiple purposes (Inohara 1990:69). At PERNEC, the training is both hands on or on-the-job training, and classroom training. Though the training covers many areas, as explained above, the management does not have a policy for multi-skilled workers. Though there

are job transfers and rotation of workers' practices between departments, there is no written policy saying that these staff should be transferred once every 3 or 4 years. According to the senior manager of HRD:

Our written policy states that our workers are transferable within a department, but only according to their capability. If they are good in accounts or commercial, we allow them to cross. On the transfer of workers every three years, I don't think there is a written policy on that and I am sure it is not stated in our policy to have multi-skilled workers. Although it is not stated in the policy, management encourages them to have multi-skills. In transmission, we have separate workers, for separate machines to produce separate products. We train and guide them until they master the jobs. It is our policy that every worker must be trained once a year.

On one hand, there is a lack of concern to develop multi-skilled workers. On the other hand, there is a shortage of skilled workers, especially technicians and engineers, as the result of high turnover. According to the production manager, this is because:

A better salary, promotion and benefits offered by other companies take away our technicians and engineers. We employed them, we developed them. It takes 6 months to train a machine operator. After they have got enough experience and there is a better offer outside, after 6 months the operator leaves the company, and every month new recruitment has to be done. Likewise with the engineers who came here. When there is a better offer and prospects they leave the company.

It was estimated that average turnover of staff per year is 7 per cent, which is higher than the industry average of 4 per cent. An executive from HRD said that, in 1993/94 alone 60 workers left the company. According to him, half of them were engineers, and the other half were technical and contract workers.

This job-hopping does not happen only in Malaysia, but also happens in Singapore (Smith, J.M. 1986; Wong 1990) slowing the technological development process (Ali 1992,1993,1994; JACTIM 1994). The same phenomenon occurred in the early stages of industrialisation in South Korea, Taiwan and Hong Kong (Henderson 1989; Lall 1992). The only difference was that these countries have put more emphasis on technical and engineering education (Dahlman et al. 1987; Lall 1992), unlike Malaysia (Ali 1992; Malaysian Industry 1995). Therefore their problems were not as severe as in Malaysia. On the other hand, as explained by an assistant general manager, some of these machinists and engineers come from lower-income group families. They job-hop to strengthen their family economic status by migrating to a more stable company and higher salary.

Lifetime employment.

Lifetime employment is another Japanese management practice. However, in Japan no company has concluded a written long-term contract for employment. The basis for lifetime employment is implicit understanding and trust between employees and

management. The company expects employees will remain with the company for long tenures, and the employees expect that the company in return will take good care of them (Inohara 1990:8).

PERNEC does not offer lifetime employment to its workers, but there have been no redundancies since its establishment in 1973. During the business downturn, it transferred some workers interdepartmentally and between subsidiaries, as big Japanese companies do (Inohara 1990). Regarding employment security another study found that nine out of ten Japanese companies and Japanese-Malaysian joint ventures operating in Malaysia reported they had never laid off their workers (Sin & Jain 1988). They either have a policy not to lay-off, or had no policy but have not laid-off, or have no policy but try not to lay-off workers. If a worker happened to resign, the post would not be refilled. This practice may (in the short term) be harmful to the company, because those who resign are often key personnel. But in the long term it benefits to the company as total costs are minimised (as claimed by a senior manager at HRD).

In the 1970s and 1980s, all through hole processes were performed 100 per cent manually, following the labour-intensive or employment creation policy. About 50 operators worked in this division in the 1980s. In the 1990s, the components produced are small. The design of PWB is more compressed. Before, there were about 50 components in one PWB, today there are up to 200 components. This was only made possible by using surface mounting technology (SMT). The manual mounting was then reduced to 20 per cent and the number of operators shrank to 40. The number of employees were also reduced in equipment and systems testing/inspection because of replacement by the more high-tech testing instruments.

Although there is no written policy not to lay-off employees, but so far PERNEC has not laid off any workers because of technological changes and business downturn except in 1985 and 1987, although there were workers transferred to other departments or subsidiaries, and a few workers opted to take voluntary redundancy. In Sakitech and Sumotech, permanent employment was secured by 'objective manpower planning' (Abdullah and Keenoy 1995), that is, by employing only 65 per cent to 75 per cent of the actual number required, and using casual workers when there are production variations. At PERNEC, the no lay-off policy is practised, as it is considered more socially responsible (Yusof 1985). It is also practised in Japan (Beasley 1990).

Although there have been no mass redundancies at PERNEC, there was a fear among workers of dismissal as the result of a business downturn or automation process, as mentioned by one operative worker: "Business downturn and automation might invite a

reduction in the number of employees. However, in the case of automation, it might also discourage the creative development of employees because standard products will be produced routinely by the machine."

Those employees who decide to stay with the company can do so until they reach 55 and 50 for males and females respectively. They can retire after this with retirement benefits given by company.

Consensus decision-making.

Another popular Japanese management technique is 'consensus decision-making' or *ringisei*. In this process, workers' views are sought and have some influence. The practice of consensus decision-making is low at PERNEC, because any manager or sectional/ departmental head or even CEO can make decisions alone (territorially bound), without any requirement to consult others. According to a Japanese experts working with PERNEC, since the job scope is very clear-cut, workers tend to limit their work and decision-making power to within their boundaries and they do not feel guilty about saying, 'That is not my work'. In Japan, the job scope is not clear-cut, and people will never say, 'That is not my work'. In Japan, according to him, even CEOs cannot decide anything unless they get consensus from others.

As one assistant general manager pointed out, "As people work in different departments and subsidiaries, their loyalty and commitment to their divisions is more than to the company as group. They are comfortable with the immediate departmental and subsidiary's environment. Therefore, it is very hard to bring them into consensus and to make a change for the betterment of the company as the whole". However, personally he preferred everybody to work closely. It shows that there is still a high degree of segmentalism and power exercising within a division. In other words, there is a lack of corporate integration and holistic concern. In Japanese organisations, it is claimed that corporate objectives and the spirit of groupism and collectivity outweigh individual, sectarian and departmental interests (Ouchi 1981).

Engineers in management team.

Management and engineers are a very important group in a large corporation. They lead decision-making, and continuously improve technological development (Lee & Smith 1992). At PERNEC, during the field study, there were about 50 engineers who were assistant managers and above, and 80% (19) of the management team (manager and above) are engineers (4 in Transmission Division, 11 at Pernas NEC Kedah Sdn.Bhd. and 4 at Pernec Technologies Sdn.Bhd.). Of 4 top management, 3 are engineers.

It seems that PERNEC is run by a team of engineers. As in Japan and Germany, PERNEC manufacturing is dominated by engineers (Lee & Smith 1992:14). But engineers' domination of management teams doesn't mean engineers are well looked after in this company. As discussed earlier, half of the staff who resign are engineers. According to management, the 'brain drain' of engineers is unavoidable, because of 'job-hopping'. The high turnover of engineers is a signal that engineers see a better life outside PERNEC.

Towards a welfare organisation.

The company is moving to create a conducive environment so that its workers will feel proud to be work for PERNEC, not because they cannot get jobs elsewhere or are using PERNEC as a stepping stone. The top management joins in events like 'family day', or birthday celebrations, gives a hamper or present to workers when they are hospitalised or having a baby, and attends the funeral service when a worker passes away. All this is done to show the managers' care for the workers.

PERNEC's Sport Club has existed for 16 years to create healthy and active workers. The budget for this club is RM. 70,000.00 per year. This is a management-initiated informal club, whose committee are workers from all levels. They do not only organise competitions between subsidiaries but also participate in the Telecommunications Industry League organised by Telekom Malaysia and other telecommunications companies (NADA PERNEC 1994). Events like picnics, jungle tracking and rock climbing are also encouraged by management so that every department will have its own event at least once a year. When a staff member passes away, the club contributes RM. 150.00 to help the family with the funeral expenses.

In 1994, HRD launched a special fund for any tragedy like a natural disaster, and abnormal medical expenses faced by PERNEC employees or their dependants. To show the company's concern for its staff, for example, a daughter of a production worker was sent to Australia for a medical operation by the company at a cost of RM. 30,000.00 (NADA PERNEC 1994). When a worker dies, the company will make a donation of RM. 1,000.00, and compensation is paid for permanent injury or death (of RM. 19,800.00) caused by an accident during working hours. All staff are protected by this compensation scheme. This is a paternalist approach in building up loyal workers, and it was found that Japanese welfare expenditure was higher than that of British firms: 8.5 per cent as compared to 2.5 per cent of labour costs (Dore 1973, cited by Oliver & Wilkinson 1992:45).

All workers have their basic take-home pay. They also have an automatic yearly increment. Beside these, they also enjoy a three or four months' bonus (pay) every year. The ratio for the basic take-home with automatic increment and yearly bonus is not known (as it was not released to the researcher when it was requested). In another electronics company in Kedah, Sakitech, the workers get on average of 10 per cent increase annual increment based on performance evaluation (Abdullah & Keenoy 1995:750).

This applies to every permanent employee in the company. Contract or casual workers are paid a 'day-rate'. They are given free uniforms and subsidised meals, and can use other facilities but they do not enjoy paid holidays, or sick leave as permanent workers do. The company considers achievement is related to the group, which is why it gives the same incentives to all permanent employees. The average monthly salaries of selected workers are shown in table 7.6.

Table 7.6: PERNEC: Comparison monthly average salary (RM.).

Worker Level	PERNEC	NEC (M) Sdn.Bhd.
Engineer	2,400	2,000
Foreman / Supervisor	1,310	1,300
Technician	900	1,200
Production Worker	500	500

Source: Human Resources Department, NEC & PERNEC, 1994.

There are two prayer halls (cost about RM. 30,000.00), which can accommodate up to 150 male workers and 50 female workers respectively for them to perform their 5 (times) daily prayers and other religious functions. There is also a big common canteen, located beside the prayer room, which can accommodate up to 200 people. Besides that, there is an executive canteen normally used to entertain customers and guests.

There is also one volley ball court in front of the main building. There is a separate, shaded car park for the managerial staff and one open park for non-executive workers. All production workers are given 3 sets of blue uniforms (shirts and shoes only). No uniform is provided for non-production workers and executives. All departments in the factory are fully air-conditioned. Therefore, the 'classless organisation' concept as propagated by Japanese companies is not applied at PERNEC. A mileage allowance of 51 cents per kilometre and a subsistence allowance are given to any staff who have to work at outstations. In addition, three new recognition programmes were implemented in 1994, (i) the Employee of the Year Award, (ii) Long-Service honorarium (for workers who serve more than 10 and 20 years), and (iii) the QCC award. Monetary

and non-monetary rewards are accompanied by a letter of recognition from the company. There is a plan to revitalise the suggestion scheme through monetary rewards, letters of recognition, publicity in newsletters and a better monitoring system.

There is no free accommodation or free transport service for outstation workers as found in Sakitech and Sumotech (Abdullah & Keenoy 1995). As one operator commented:

There are many facilities and benefits but most of them, for example housing and car loans, are of most benefit to executives. Deductions are made from our small salaries to repay these loans. In the end, it leaves a very small amount of take home pay. The conditions would be better if PERNEC provide other additional allowances like those other companies offer to their employees.

This was supported by another technician, who suggested: "PERNEC should provide and upgrade many other allowances such as: those for shift work, attendance, transport, housing, dental treatment, outstation work, overtime payment and factory uniforms."

Conclusion.

As we can see from the previous discussions, PERNEC practices a mixed way of managing and developing its human resources. It is a combination of Japanese, Western and Malaysian ways. PERNEC follows big Japanese companies in taking new workers from school leavers and fresh graduates, practises no lay-offs, has continuous training, promotes internal workers, and promotes enough engineers to its management team. PERNEC also follows the conventional way such as promotions based on merit rather than seniority, a high degree of centralisation of decision-making by management, and staff trained to be specialist rather than multi-skilled. There are physical demarcations of 'apartheid' rather than a 'classless' society within the organisation, and awards and recognition given are individual rather than group-based. Although there was no policy to lay-off workers, in 1980s there were voluntary resignations by workers.

On the other hand, since PERNEC management has been dominated by Malays, they have tried to incorporate Islamic values in developing their workers and managers, with the introduction of TOP programmes. Like PROTON, PERNEC tries to inculcate positive values within its employees, hoping that in time, employees and managerial teams will work as a group and with sincerity to achieve excellence. However, these programmes have just started. They need to be systematically built up with consistent efforts, and evaluated and improved from time to time.

There was no evidence that NEC was guiding the human resources department in managing its resources. The skill to motivate and to develop human resources at PERNEC depends on the experience and background of Malaysian managers. NEC is responsible only for advice on what machines to buy and how to operate those Japanese made machines. How to motivate staff is left to PERNEC's management. The questionnaires completed by workers revealed some elements of dissatisfaction among employees. They felt their allowances were lower than those other electronics workers, and that benefits and facilities of most advantage to executives. The facts revealed that PERNEC needs to do more to keep and motivate its employees. Now we move on to industrial relations in PERNEC, 'labour-management relationships without a union'.

7.6 PERNEC industrial relations.

PERNEC is located in the centre of an industrial estate, where Texas Instruments and other MNCs are sited. Most workers in this area are belong to in-house unions, but PERNEC workers are still not unionised. So far PERNEC has experienced no strikes or disputes. However, when 12,000 women operatives, approximately 14 per cent of all electronics workers, were made redundant between 1983 to 1986 (Abdullah & Keenoy 1995), PERNEC was also involved. According to a senior manager interviewed, there were two sets of voluntary redundancies during the recession, in 1985 and 1987. The company gave a golden handshake to anyone who opted to resign with one month's salary (1985) or two months' salary (1987) plus retirement benefits. The exact number of workers involved is not known as it was not released to the interviewee when requested. Voluntary redundancy was considered a positive policy in a survey of 628 UK organisations, which found that 57 per cent of organisations had used it to reduce their labour forces (Doherty et al. 1993).

Industrial relations is one of the functions of the personnel section under HRD. There is no special executive assigned to it, but an issue is taken up as soon as the need arises. Under the supervision of a senior manager in HRD, the case will be brought up to the top management, and an ad hoc committee will be formed to settle the case. The following discussions will explain how labour and management established their relationships in the absence of a union. To what extent has NEC influenced PERNEC's industrial relations? Or does PERNEC have its own way of creating 'harmonious' labour-management relationships?

Non-unionised PERNEC workers.

According to one informant, PERNEC was originally established as Pernas Trading (1973-1983), and became Pernas Manufacturing in 1984. In the first company the

workers belonged to a union which was affiliated to a national union. Their bargaining power was quite strong because they had a negotiating team of 3 worker representatives versus 3 management representatives. Every three years they held negotiations on collective agreements. According to my informant, in 1984, when the company changed to a manufacturing entity, the government did not allow workers in electronics and electrical, including telecommunications companies, to form any affiliation with the national union. When a question was posed to the union's officer at the Human Resources Ministry regarding this matter, the answer was:

For the benefit of the nation and the people, and the workers themselves, they should concentrate on the productivity and quality of work and avoid creating unnecessary tension with management. Although they are not allowed to form a national union or a union affiliated to any national union, there is no harm in their forming a purely in-house union.
Union Officer, the Human Resource Ministry.

On the other hand, according to the secretary-general of the Malaysian Trade Union Congress:

A union is established to look after and to improve the welfare of its respective members. For that, we need enough number of workers who can organise themselves internally and if possible nationally. Because workers from the same industry should have at least the same basic welfare and opportunities from their respective employers. Therefore, it is pointless to have an in-house union with too small membership, because their bargaining power is weak.
Secretary-General of MTUC

When the senior manager of HRD was asked whether there is any move from workers towards forming a union, the answer was:

So far there are no moves from workers to establish their union. Maybe they are satisfied with the current working treatment, conditions and facilities provided by the company. Moreover, their views and suggestions are heard, that is why they don't want to have a union.
Senior manager of HRD

These findings contrast with what was found in the electronics firms in California where management practises 'union avoidance' (Milkman 1992:101), a typical Japanese practice in an environment where labour is not organised. In Malaysia, PERNEC, like other electrical and electronics companies, is only allowed to form an in-house union (Ministry of Human Resources 1994; Abdullah & Keenoy 1995; Jomo 1994,1995). This situation favours the Japanese enterprise-wide union. In the case of PERNEC, from my analysis, the management is not avoiding the formation of a union, but there is not much pressure for a union from workers, and it is discouraged by the government. When asked whether they should have a union, one engineer replied:

Though facilities and benefits are provided by PERNEC, they need to be upgraded according to current needs. The cost of living is higher today than it was ten years ago. The need to establish a union does not arise if management are able to fulfil workers' requirements as other companies do. However, looking at the present situation, there is a need for a union.

To support the idea, a technician responded:

Though there are facilities offered by PERNEC, the establishment of a union is important so that workers have better bargaining power. Future employee rights will be more powerful if they are proposed by a union, and it is rather difficult for an individual worker to present his/ her demands to management.

According to operative workers, the needs for a union arises if the company is unable to provide welfare to workers. In the case of PERNEC, the need is there, because the benefits and facilities are below the rate other companies supply to their employees. These comments clearly show that although there is interest in forming and supporting a union, the workers were not solidly behind the idea. This is because potential union leaders, such as educated workers, mostly engineers and technicians, are new to the company and need time to mature, while operators and other clerical workers, who are less educated and less aggressive, are less likely to take a lead. On the other hand, at Sakitech and Sumotech in Kedah, although they are in the same sector, the workers are more aggressive. They have therefore been able to form an in-house union which takes part in collective agreement negotiations and other productive efforts (Abdullah & Keenoy 1995)

The interviews revealed that PERNEC recognises and appreciates its workers not through union and collective bargaining, but through fulfilling the rights and needs of its employees and being ready to listen to them through normal working channels, open communication with top management, and acceptable 'terms and conditions of service' for both executives and non-executives. This approach is characterised as paternalistic (Oliver & Wilkinson 1992; Smith, C. 1992). Everyone is encourage to make suggestions to his or her respective supervisor, sectional head, departmental head and so on up to the top management. As to service conditions, salary, bonus, allowances, leave, medical claim, etc., employees and employer agreed to have something similar to the conditions of service in Pernas Trading-1983, with some modifications.

There are two sets of terms of conditions of service, one for non-executives and the other one for executive. The terms were attractive and the workers had a good bargain, but they are still free to voice suggestions for further improvement. The problem with this type of negotiation is that the workers have no avenue to discuss their needs and requirements and or to put collective proposals to management.

Labour-management relationships.

There have been many efforts to build a close labour-management relationship in this company. The management team has been able to keep down the 'us versus them' feeling, through informal organisations like the sports club, prayer hall committee, annual dinner committee, and family day committee. These committees are staffed by both executives and non-executives. A clean record, with no lay-offs and no strikes, is one sign of the good labour-management relationships at PERNEC, as well as a sign of problems of labour organisation in a non-union environment, because Malay workers are normally reluctant to voice dissatisfaction openly within Malay society or organisation, especially if (s)he is alone. This is in contrast to the experiences of Sumotech and Sakitech in Kedah, where management also provides sports club, annual dinner and family day events, but the feeling of 'us versus them' is high and union avoidance was unsuccessfully practised (Abdullah & Keenoy 1995). One of the reason for the difference is that PERNEC is managed by Malays, and Sumotech and Sakitech are managed by Japanese.

Labour-management council.

Labour-management joint consultation (*ro-shi kyogi-sei*) was promoted in the 1960s in Japan almost simultaneously with the productivity movement. The joint council provides an opportunity for management to communicate managerial plans and information, discuss important issues of production, marketing, and personnel, and negotiate informally items and provisions to be formally agreed upon at formal collective bargaining (Inohara 1990:135). All grievances and problems are handled through normal working channels, where the HRD acts as the co-ordinator/ monitoring body, and there is an open communication system with the CEO. So, according to a senior manager from HRD, there is no need to have a permanent labour-management council. However, a manager interviewed was interested in the idea of having a council.

Awang: Do you have any form of labour-management council as Japanese firms have?

Senior manager: No, we don't.

Awang: Although not many companies buy the council idea, for management, it serves as another platform to communicate with workers effectively on any issues or plans.

Senior manager: I don't think other local companies have this joint council. However, I think it is a good concept, because maybe with this, our communication process will be faster and more effective.

Personal communication and social interaction.

PERNEC uses three media of communication, paper, internal telephone and personal communication. Paper communications include memo instructions, pamphlets on notice board and NADA PERNEC, which comes out 4 times a year. Internal telephones are

also used to enhance communication between section and department. For personal communication they have daily sectional morning meetings, management briefings every two weeks, monthly departmental meetings, high-tea meetings between the chief executive officer (CEO) and management team every 2 or 3 months, between the CEO and non-executives every 6 months, and meetings between the CEO and executives every 6 months.

The Japanese experts and the local workers communicate in two ways. One is through formal scheduled meetings and the other one is an informal interpersonal relationship. There are two Japanese experts working at headquarters, the deputy CEO, and a technical assistant in the engineering department. From the feedback given by the first one, it seems that there is little interaction between him and local managers/ top managers. As reported by the Japanese expert who acts as deputy CEO:

There is only one informal or personal interaction per week and 1 or 2 formal or scheduled meetings per week. However I have very frequent communication with the CEO and assistant general manager on the matter of PERNEC management. I was purposely sent by NEC to support the CEO on aspects such as the link between technology and management. As a subagent of NEC and PERNEC, I have to maintain the interest of both NEC and PERNEC, and find a balance between the two.

The technical assistant in the engineering department, has little communication with the workers, except when there is a new machine launched on the production line or new engineering methods or new product designs on which he has to be consulted.

Grievances handling.

In the absence of a union, in Japanese companies grievances and disputes are handled by the labour-management council internally (Innohara 1990). At PERNEC, if there is a grievance or problem with workers which needs disciplinary action, they call for a 'domestic enquiry'. The case will be brought by a supervisor to the sectional and departmental heads, then to HRD. HRD will carry out a fair investigation and judgement of the matter. The CEO will also be involved in the decision-making process if necessary. As explained by a senior manager in an interview:

Awang: In the absent of a union, how do you handle disputes and grievances?

Senior manager: There are no disputes here. If there is, we take it through the respective supervisors and departmental heads and lastly report to the human resources department. Then we sit together for 'domestic enquiry'. Of course there must be a fair judgement, and for that we set up an ad hoc committee which consists of representatives from workers as well. However, the process has to be in line with terms and conditions of services and employment acts. So far we have had no problems.

Awang: Do the workers feel comfortable with this approach?

Senior manager: If there are dissatisfactions, their voices are heard. They can complain to their manager or to me.

Suggestion system.

Suggestion scheme is one of the *kaizen* tools used in Japanese firms (Imai 1986) for problem-solving (Suzaki 1993). In the UK, this scheme is not new. It was implemented back in 1902 at Cadbury, a chocolate producer. According to Cadbury, the suggestion scheme encourages: "the development of the mental and creative power which makes both men and girls more efficient and valuable workers and fosters an intelligent independence" (Cadbury 1912 cited by Smith 1992:64). According to the human resources department, at PERNEC a proper suggestion system was started very late, in 1993, after 20 years of working with NEC. It is another sign that the previous management regime was not sensitive to new management techniques. As stated by a production manager:

In the 1980s our management or leaders were a bit authoritarian. The doors for opinions were closed. They ran the company with very minimum participation from workers. But at the end of the 1980s and in early 1990s changes took place, whereby our management practised a more open-door policy. Our workers are able to voice their opinions. Currently there is a drastic move towards an open system. For example, we announce those who are promoted, we have management briefings, open dialogue with CEO, produce thank you letters to workers who perform outstandingly and give awards for the staff members of the year.

Boxes are placed in, for example, the canteen, each departmental office, and the HRD office to collect suggestions from employees. The human resources department is supposed to monitor the process. According to one informant, the suggestions are classified as normal or policy related matters. 'Good' suggestions are implemented, and acknowledgement and recognition is given. According to the human resources department: "So far the suggestions are very general, for example, to give Best Employee awards for the year, to improve the cleanliness of the plant so as to improve the corporate image, to diversify the club's activities, yearly gifts to outstanding workers, etc."

Following up this exercise, PERNEC has started to give token gifts of RM. 600.00 to 5 outstanding workers from 5 divisions yearly. At Matsushita Electric (M) Bhd., as mark of appreciation and recognition, each year about 4 suggestion winners are given overseas trips to its sister companies (Akita 1988). At PERNEC, the suggestion scheme was not systematically managed. According to one informant, the suggestion system has been executed, but its progress is not made known to every division. When asked why not, she said:

Actually we do not know what happens to the suggestion scheme. We have no idea about it, we never hear who makes suggestions and what are the rewards for the best suggestion given by management. Maybe we are not serious about it and lack follow up.

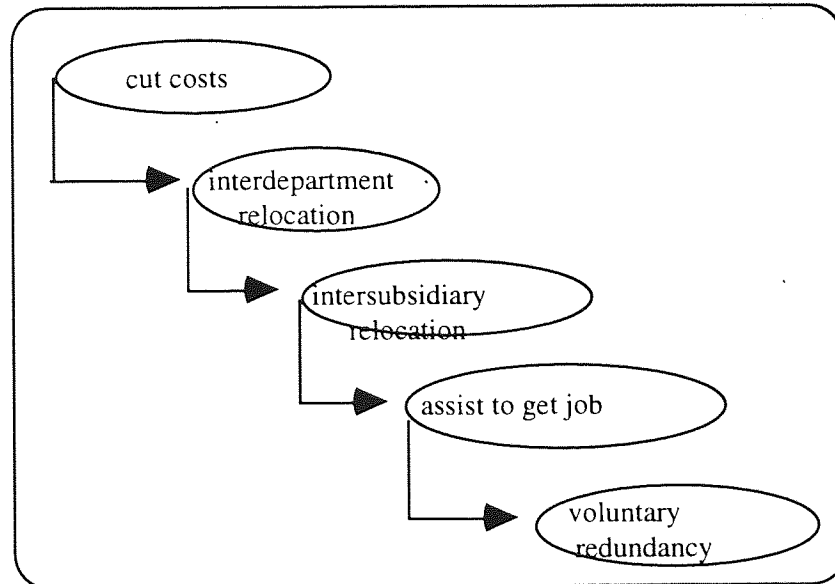
Judging by the observations made, there has been some kind of implementation of the suggestion systems, but there is no proper follow-up or monitoring. The on-going report on the system is not well documented and communicated. I was given a chance to see the suggestion forms, but the progress of the system was not made known to the bulk of the workers, for instance by putting up on the noticeboards in the main canteen, in each division, and outside HRD office, information such as the numbers of suggestions received, the source of the suggestion (divisions), who has won an award, when the awards ceremony will be, etc. The reasons being that, the objectives and benefits of suggestion systems were not really understood by the management and not able to relate suggestion systems, education and career path development and welfare system to the total *kaizen* process at PERNEC. When this researcher analysed the duties of three units under the human resources department, surprisingly the suggestion scheme administration was not located in any of the three units (Nada PERNEC, January 1994). It shows that the duty is placed on the shoulders of the human resources department without a specific officer or team of staff to take responsibility for it. In Japanese firms the suggestions proposed by workers are documented and shown to the everyone in the factory to build morale and to develop the competitions among workers (Suzaki 1993).

No lay-off policy.

Another distinctive Japanese management policy is avoiding lay-offs. In Japan it is the social norms to keep regular employees, even in difficult times, by taking all possible measures to avoid dismissals. However, it is neither an institutionalised system nor a practice guaranteed in all companies (Inohara 1990:251), and large corporations can re-deploy workers in other branches when necessary (Oliver & Wilkinson 1992:45). However, workers are expected to retire at the age of 55 (Bratton 1992:29).

In PERNEC's 23 years of operations, there have been two times (1985 & 1987), during recessions, when employees took voluntary redundancy with 'golden handshakes' in their pockets. According to a senior manager interviewed, what PERNEC does during a recession or business downturn is, first, cut unnecessary costs like entertainment costs, then relocate workers between departments, then relocate them between subsidiaries, then assist the workers to get jobs outside the company by contacting other companies who are searching for labour, and lastly offer them voluntary redundancy selectively, for example those who want to set up their own business or other projects in a different place. See figure 7.8.

Figure 7.8: PERNEC: Steps to Voluntary Redundancy.



Source: Human Resources Department, PERNEC 1994.

Participative management.

Information gathered through interviews shows that there are two ways employees can participate in the management of PERNEC. The first is by expressing their views through their formal working channels to their respective supervisors and managers. The supervisor and manager can transmit it during their weekly productivity meetings and management briefings every two weeks. On other occasions, they can also voice their views in the policy meetings with the CEO twice a year, a practice begun by the new CEO appointment, which when field research took place, was still at an early stage.

The interviews and observations show that the pattern of labour-management relationships at PERNEC is formed and moulded by the local industrial climate. NEC, a loyal partner for more than two decades, is not involved in building up a harmonious humanistic atmosphere in PERNEC. According to an informant from HRD:

We have no standard programmes to develop harmonious labour-management relationships. What we have done is purely dependent on managerial experience and background. Nobody teaches us the Japanese style of industrial relations although it is good. So far all consultants are British and locals, not Japanese. We sent our managers to NEC, but mostly on technology related courses, not on industrial relations. I myself have never been to NEC for IR study tour for example.

It was claimed that the industrial relations practised at PERNEC are suitable for Malaysian values and cultural environment. At the same time, these practices do not contravene the employment act.

Those practices reflect Malaysian values like courtesy, respect for others, respect for one's elders, groupism, open heart and a readiness to listen to others. The informant said that all these values, which are very Islamic, have been tried and are quite successful. The company believes in strong positive relationships and that 'increasing labour-management harmony will lead to higher productivity and company performance' (Senior manager, HRD interviewed).

The practice of industrial relations depends solely on PERNEC managerial creativity and capability. The workers are not unionised, there is no labour-management council, and there is no proper suggestion system, no proper consensus-decision making. So it is local internal and external environmental factors that influence PERNEC industrial relations. In Japanese firms, managers spend large amounts of time on the shop floor and there is frequent use of face-to-face communication (Oliver & Wilkinson 1992:52). At PERNEC, the management has not won the hearts of the workers, due to the lack of human relations between managers and their subordinates. Management is rather mechanical in its approach when dealing with workers.

According to a senior manager, Malaysian managers and supervisors are less conscientious than the Japanese about things like giving recognition to workers, working late, being committed to plans, and taking care of workers' welfare. Japanese managers and supervisors (even workers) work late every day, are good time-keepers, are really committed to their plans, and hold their workers in high regard, giving them recognition and taking care of their welfare. In most writing, participative management refers to QCCs or small group activities (Milkman 1991:74; Oliver & Wilkinson 1992:24). At PERNEC, since QCCs have just begun, participative management takes the form of daily work suggestions from assembly operators to their supervisors, managers, and assistant general managers. Management will discuss the matter and go back to the respective sections for further discussion for finalisation.

Conclusion.

As discussed earlier, NEC was not involved in the moulding of industrial relations of PERNEC, which depended heavily on the initiatives and efforts of local managers. If there are any Japanese practices in PERNEC, it is by coincidence and they are not necessarily the same as Japanese industrial relations. The suggestion systems and grievance handling are being implemented but only half-heartedly, and there is no consensus decision-making, labour and management council or in-house union.

Some commentators suggest that the use of Japanese management techniques such as 'quality circles', 'JIT production', and 'flexible team work' is a tool to prevent 'unionisation' (Milkman 1991:101). However I found that the lack of unionism in PERNEC is the outcome of government restrictions and management paternalist practices, or the result of the Malaysian 'historical and industry context' (Abdullah & Keenoy 1995:762). It may be as a reflection of Malay culture and values such as being 'loyal' and 'peace-loving' to others, especially elders and leaders (Maniam 1988:4). As Mills says of the attitude of Malays: "We like the government (sultan) to consult our interests; but when the government gives an order we like to obey it" (Mills 1964:42). Therefore, paternalistic managers win a place in the hearts of Malaysian workers. However, as Malays have moved away from agriculture and rural society to industrial and urban society (Jomo 1995), and as they have become more educated, Mill's claim appears rather dated. For example, in 1996, Congress of Unions of Employees in Public and Civil Service (CUEPACS), the main union cofederation of public sectors' workers, was able to negotiate a salary increase of 4 per cent, although the government initially rejected their demand (New Straits Time, February 1996)

From my interviews and observations, it appears that there are no proper plans on what aspects of Japanese industrial relations practices must be studied/learned and what to take from them. Most of the practices seem to be, again, adopted by chance. Now we move to another aspect of Japanese management practices. Has PERNEC, under the influence of NEC, established the long-term close relationships with its vendors?

7.7 PERNEC - vendor relationships.

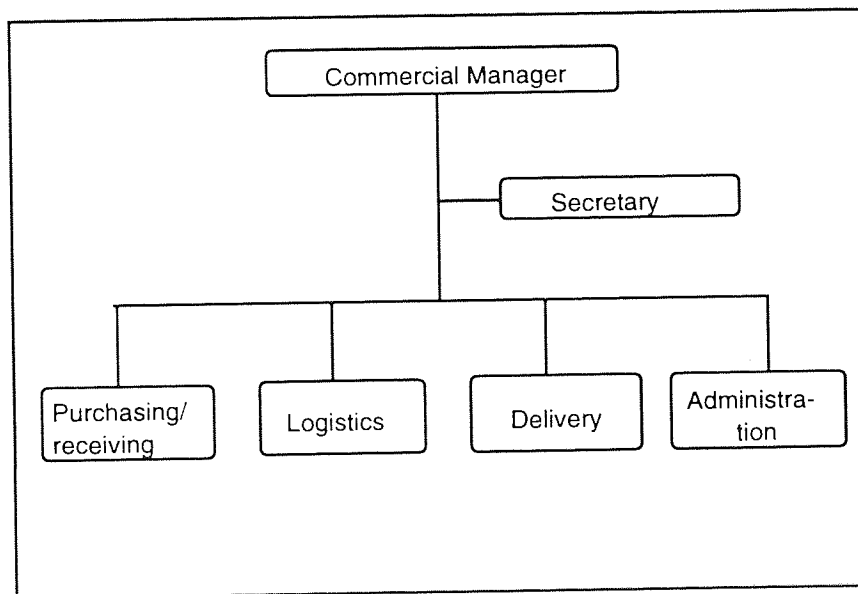
The previous discussions have already explained the limited extent to which NEC transferred its sophisticated manufacturing system, company-wide quality management, company-based welfarism and harmonious labour and management relations. In discussions below the researcher will explain to what extent Japanese long-term and close supplier and buyer relationships are practised by PERNEC? (Ouchi 1981; Sako 1992; Oliver & Wilkinson 1992), and to what extent NEC has contributed to the process. It is important to remember that parts and components supplied by local suppliers are not more than 50 per cent, because between 51 and 90 per cent of the parts and components, depending on the products, for PERNEC groups are in the form of CKD from NEC and other companies in Japan, the US, Germany, Switzerland, France, Italy and Taiwan.

After 22 years in business, how many vendors have been created and developed by PERNEC? What is the nature of their relationships? Which parts have been localised, and how far are they successful in implementing JST? What are the factors that

influenced the process? To start with, first let's examine the department in charge of /dealing with vendors, namely Commercial Department.

The Commercial Department is basically responsible for purchasing parts and components so that scheduled deliveries can be made on time. The department is headed by a manager, assisted by 1 secretary and 4 executives. These executives are responsible for purchasing and receiving, logistics, delivery and administration. They are supported by 12 clerical employees. All employees and the manager are located in one open office space. The organisation chart is as in figure 7.9.

Figure 7.9: PERNEC: Commercial Department.



Source: Commercial Department, PERNEC 1994.

Information gathered from interviews shows that there are three departments involved in getting parts and components from vendors: production, engineering and commercials. Production produces its production schedules, as well as lists of parts and components required. Engineering advises what types of equipment and materials are necessary and whether they can be sourced locally or must be imported. Lastly the Commercial Department prepares the purchase orders (for both local and imports), submits purchase orders to vendors, arranges delivery dates and prepares the necessary documents (import documents). From an interview with an executive in the Commercial Department, it seems that the department is not responsible for creating and developing the vendors.

When getting supplies from local vendors there is no written contract. The transaction is based on trust (Sako 1992:30). Normally, the supply will last for between 2 and 5 years, especially in the case of small amounts of supplies (such as for PCM projects).

For the MAS projects where the quantity is big (up to RM. 500,000.00) per order, PERNEC goes to a single vendor. At the moment, there are no written contracts for large quantities of supplies, but according to the executive concerned, a written agreement for these big orders is being drawn up. In getting parts and components from NEC, and other foreign suppliers, PERNEC commissions the works or orders, but always has a written agreement or contract with them. The agreement is necessary not only because the amount is large, but also because deliveries takes 4 to 6 months (for imported parts from NEC, SIAM Telecom-Italy, NBS Corporation-Japan) and 2 to 3 months (for local parts) to arrive. The journey is very expensive. The Commercial Department used to practise a conventional open tender/bidding policy to get local supplies. Before 1993, for every part and component more than one vendor (normally 2 or 3) was asked for a quotation. However, once satisfied with the quality, price, delivery and other terms and conditions, the department has tended to adopt 'single vendor for single part'. According to an assistant manager in the Commercial Department:

Normally PERNEC will call an open tender from 2 to 3 vendors and will ask 3 quotations from each of them. The lowest tender will win and PERNEC will ask for a discount. The same vendors will be used for future tenders as they know each other. The duration of supplies is 2 years. If there are quality defects, the parts will be sent back to the vendor for repair. If standards are still not met, PERNEC will terminate the purchase and source from different vendors.

PERNEC has to import from foreign companies, including NEC. See table 7.7 for the details.

Table 7.7: PERNEC: Parts and components sourcing (in percentage).

Products	Subsidiary	Foreign Supplies (%)	Local Supplies (%)
ISD*	Pernec Tech. Sdn.Bhd.	90 [Stratus]	10
BSD*	"	80 [Germany, France, US, Taiwan]	20
Pay phone Board, Switching Cable, Line Trans Frame	"	90 [Italy, Switzerland]	10
PCM*	Pernas NEC(K) Sdn.Bhd	51 [NEC]	49
	Transmission Div.	90 [NEC]	10

Sources: Various Commercial Departments from various subsidiaries, PERNEC 1994

Notes: ISD* Integrated system department, a computer mainframe
 BSD* Business system department, a set of test equipment, data communicator, modem, printer & pc
 PCM * Pulsecode modulation

In Japanese manufacturer-vendor relationships, the manufacturer sends in consultants (paid for by the manufacturer) to educate and work with the supplier, often for months, to improve production methods, total quality management, implement just-in-time delivery system etc. (Dyer & Ouchi 1993). These elements are totally absent from

PERNEC and its vendors and the interviews revealed no signs of efforts to introduce them. Both PERNEC and its vendors develop their products independently. The business relationship is over as the contract finishes.

In Japanese management, engineers from final assembler and vendor work together on quality, designs, product development, production and R&D. The buyer executives or workers are transferred to the supplier to work on a temporary or permanent basis (Dyer & Ouchi 1993). There is also a continuous exchange of information and site visits, during setting up of operations between assembler and supplier (Florida & Kenny 1991). The interviews show that minimum assistance is given by PERNEC to its vendors. According to one executive, their visits to vendors are to ensure quality aspects, specifications, and sort out production shortages. According to one of the vendors, the engineers from PERNEC come for system checking, quality confirmation and operation study. They come on an ad hoc basis, but normally they will phone before they come. Since PERNEC does not have a long-term close relationship with its vendors, there are no visits for the purpose of helping out in design, purchase of machinery and equipment, fixing and repairing, maintenance, production line problems, design and construction of the plant, purchase of materials, or solving personnel problems.

The Telekom Malaysia business manager reported that there is a requirement from the Ministry of International Trade and Industry (MITIm) that all projects must contain at least 40% local content, but the majority of PERNEC's parts and components are still imported from overseas. From the interviews made, it seems that PERNEC, the major manufacturer/supplier of transmissions and switches to Telekom Malaysia, does not have a localisation programme at all. Not one single vendor has been created and developed by PERNEC. Every newly formed vendor is an independent company to which PERNEC has no commitment in any form .

There are 27 local vendors altogether, 10 for the Transmission Division, 6 for Pernece Technologies Sdn.Bhd., and 11 for Pemas NEC (K) Sdn.Bhd. None of these vendors are unionised. All of of them are independent companies or *dokuritsu-gakaisha*, not *kankei-gaisha* or affiliated companies (Dyer & Ouchi 1993). There is no attempt by any party to group them under one association. In Japan, some vendors are run by ex-workers of the assembler (Sako 1992; Dyer & Ouchi 1993). They rely on the to Sub-contractors Promotion Associations for any disputes settlement (Sako 1992;170). The Malaysian telecommunications industry as a whole, is not unionised in any form. According to them, they are not allowed (by the government) to form union.

Japanese influences.

Generally PERNEC and its vendors have arm's-length relationships, similar to those found in America and in the UK. There is a lack of effort to develop the components and parts together. It is the responsibility of vendors to supply the parts and components with the right quality and at the right time of delivery. To ensure their supplies to PERNEC are on time, some vendors have to stock their materials and finished products for between one to three months. Vendors' technology and markets are not dependent on PERNEC. Out of four vendors, only JRC Tenaga Sdn Bhd. supplies about 65 per cent of its products to PERNEC. The rest supply on average 10 per cent. This is in contrast with comparatively high average sales by Japanese suppliers to their assemblers (Sako 1992; Dyer & Ouchi 1993), where some of vendors 'remains 100 per cent dependent on JJ Electric for its business' (Sako 1992:68). There are vendors who are visited once per contract, and there are vendors who are visited once per month by PERNEC's staff. In terms of payment, all of the vendors interviewed were satisfied. Payment is normally on time (30 days' credit), so they have no problems over debt collection as happens in Japan (Sako 1992).

When PERNEC finds good vendors it will stick to them, but this single sourcing adoption does not mean that PERNEC is going to develop the vendor. There are no joint efforts in quality, design, product development, production R&D, as claimed by Florida & Kenny (1991). PERNEC do not station its staff at suppliers' plants. If vendors do not manage to supply the parts and components in the right quality, and the delivery is not on time, PERNEC is free to shift to another source immediately. This practice is similar to arm's length contract in America (Dyer & Ouchi 1993) and Britain (Sako 1992). There is no sign showing that PERNEC own equity in any one of its vendors', as many keiretsus do (Cusomano 1988; Dyer & Ouchi 1993), or that it intends to have strategic alliances with any of its vendors. It seems that no advice is given by NEC on this matter, i.e. on business strategic management (JACTIM 1994). If we look into the choice between developing or terminating vendors, PERNEC terminates its contracts with vendors if they cannot meet its specifications.

All PERNEC vendors are located in Klang Valley, which is less than 50 kilometres away from its main plant. When an executive in the Commercial Department was asked whether they have a policy to locate their vendors nearby, the answer was "No, we are not going to bring our vendors close to us". Written contracts are made with NEC and other overseas suppliers, but not with the locals. In other words, they practice dual contracting systems: (i) trust-based contract system with (small) local suppliers, and (ii) legal-based contract system with overseas (big) suppliers.

Japanese management practices within vendors.

Of four vendors interviewed, only JRC Tenaga Sdn. Bhd. had anything like a long-term close relationship with its own vendors, such as discussing with them matters like quality, delivery, design etc. The other suppliers did not show any interest in design and making parts together. JRC made no effort to educate and develop its vendors. The other suppliers had arm's-length contractual relationships. Again, this contrasts with the practice of the first and second layer of suppliers, where they have joint quality, production, design and value chain cost programmes as reported by Florida & Kenny (1991), Sako (1992) and Dyer & Ouchi (1993).

Conclusion.

PERNEC itself is an assembler of low value added simple telecommunications transmissions and switches. The majority of its parts and components are imported from Japan and Europe, so its principal and second-level suppliers are overseas. Only between 10 and 49 per cent of its parts and components are sourced locally, so Japanese JIT and TQC practices between PERNEC and its vendors are not applicable because of geographical distance.

The Japanese partner seems to have made no attempt to transfer the best JST to the venture. The company practises arm's-length and short-term relationships with its local vendors, whereby the vendors have to bid in order to get the tenders, and the relationship is over when the tender is finished. There are no co-operative efforts to develop products and components together. However, there is an initial move to have one vendor for one component (single sourcing). When a question was asked about payment and the terms of contract, the answer was 'so far so good'.

7.8 Summary of JST transfer to PERNEC .

The 23 years of marriage between NEC and PERNEC was enough for PERNEC to acquire technology, and to be an independent entity. However, today PERNEC still seems to be highly dependent on NEC (as a source of materials and technology) and Telekom Malaysia (for contract markets). In other words, PERNEC is both 'source-dependent' and 'market-dependent' (Provan & Gassenheimer 1994). The argument that the 'highly dependent organisation will be subject to the influence attempts of those organisations that control critical contingencies' (Provan & Gassenheimer 1994:55) is proven at PERNEC.

From the interviews and observations made, it seems that the short duration of the CEO's appointment by the parent company, and technical and managerial dependency on NEC have led the company keep on utilising existing technology and producing

traditional products (transmission and switches). It has learned little of the good aspects of JST (Japanese ways of managing people and organisations), especially in the area of manufacturing, company-wide quality control, and supplier and buyer relationships. Therefore, lack of transferability of Japanese management (JST) within the electronics and electrical sector is not only because of the sector (Kenny & Florida 1993; Milkman (1992); Abo (1994a)), but as found in this research, is also due to *lack* of demand from Malaysian managers and to the local industrial climate. The Japanese prefer to have in-house company-wide unions, but in the case of PERNEC the union does not exist not because of NEC influence, but because of the industrial and labour climate in Malaysia. If Milkman (1992) in her research in America, found with 'union avoidance' management, at PERNEC non-unionisation is the result of industrial regulation and lack of pressure from workers to be unionised. The state and workers' attitudes are important.

As to the supplier-buyer relationships, it seems that they do not work together to ensure quality, price and delivery on time. Multiple sourcing or open tender systems to many suppliers are practised, instead of single sourcing. The need may be not urgent, because not many local suppliers are available due to the high cost of supply, and the majority of supplies come from Japan and other foreign suppliers. NEC has positioned PERNEC in its regional and global business network and determined what PERNEC produces, through what type of technology, and where its market is, thus limiting the expansion of PERNEC. In other words, the international division of labour limits the demands for up-grading of labour.

PERNEC is still at the stage of batch manufacturing processes. It can produce many models through the production line, but the speed is slow and the variations are small. As to company-wide quality control, PERNEC is in the initial stage. It still practises conventional quality inspections at the point of arrival, work in progress and out-going products. There is maximum use of quality inspectors rather than a quality build chain (Womack et al. 1990).

PERNEC gets its supplies from a few local suppliers with short-term and arm's-length relationships. It has developed its own human resources and established good rapport with its employees, but in its own way. The Japanese experts from NEC seem willing to teach and impart their best management techniques to their partners. The company is still very much dependent on its Japanese counterparts. The main reason, in my analysis, is that technological acquisition and strategic business plans to become an independent business entity were not on their agenda from the first day of the alliance.

M. Trevor comments in his study of a joint venture electronics company between British and Japanese;

Pressure on the Japanese side to increase investment, technology transfer and collaboration in general is real. British fears of becoming subservient, reluctance to accept changes in the situation and alternate doubt about collaboration and desires for it are also real.

Trevor 1985:5

The problems remain because this company has been headed by short-term seconded (by the parent company) MDs, who tend to be 'an administrator rather than as a entrepreneur or industrialist', who come and go, bringing and leaving no long-term strategic business plans. To date, there have been seven or eight local CEOs (as noted by the senior manager of HRD), which can only have inhibited the opportunity to manage and develop PERNEC into becoming an independent company. The opportunities were there, but have been untapped. The latest opportunity was the coming of the 'cellular phone' or cellular system into the telecommunications industry, but PERNEC is not yet licensed to operate (Malaysian Industry May, 1995).

According to one of PERNEC's directors: "PERNEC as a whole was established with the aim, I think, of being a manufacturing company. So far it does not have its own products. What is being produced now by the two factories is not really manufacturing in the true sense. This is understandable. PERNEC depends on one main client and one main supplier of the main products. The main supplier dictates its products and also the price when tendering" (Nada PERNEC, February-March, 1995:4). Therefore there is a urgent need to develop PERNEC's own technology and products. However, this will be only possible if PERNEC management team has a business plan and is capable of mobilising its resources, especially its human resources. Regarding this, Mr. Akio Sakata, Deputy CEO, stressed: "In the past PERNEC has been dependent on NEC Tokyo, but now I feel that PERNEC has the capability to stand by itself. This does not mean that NEC will no longer give its support, but on the contrary will still supply technologies including new management technologies. I sincerely hope that PERNEC can continue with its business quite independently through self help. Based on the above concept of self help, PERNEC can be a member of NEC Corporation's Mash Globalisation strategy which enables each subsidiary and affiliate to gain fair and well distributed benefits" (Nada PERNEC, Bil 2, 1994:3-4).

Chapter 8: Critical evaluation of management technological transfer within strategic alliances.

8.1 Introduction.

This chapter will critically analyse the 'Japanisation process' within Malaysian-Japanese manufacturing alliances, in light of the transfer of JST or Japanese work organisation and management style, which has been taking place for more than two decades in Malaysia. The discussion will be based on the findings explored in chapters six and seven and will also refer to different experiences in different countries, as previewed in chapter two. This chapter will give new evidence from developing economies on the global Japanisation debate.

8.2 The similarities and differences that count.

The culture and values of the people, political-historical background and their physical environment are some of the important factors in the development of technology, their survival, and their needs to compete and become excellent (Tayeb & Child 1982-3; Jamieson 1982-3; Hofstede 1983; McMillan 1989; Morishima 1990; Waters 1991; Al-Ghailani & Moor 1995). In Japan, they do not have abundant resources (Ishikawa 1976), but possess a huge homogeneous population and united society (Morishima 1990). They face 4 hard seasons, are located away from the shipping lanes, and affected always by many natural disasters. Japan has no regional economic association to work with, like the EU. After their defeat in the Second World War, the Japanese spent their time mostly in economic reconstruction (Nester 1989; Tsuru 1993). In other words, Japan is a land of 'discomforts', which forces them to work hard to live. All these elements push the Japanese always to work hard and always to work in groups and to have systematic planning.

By contrast, Malaysia has abundant resources, its land and soil are fertile, and the population is small and multi-ethnic, and the climate is temperate. It is located on the shipping lanes, is not affected by natural disasters, has co-operative neighbours. In other words, Malaysia is a land of 'comforts'. It has been argued that all these factors have made the Malaysian indigenous population complacent, instead of working very hard to excel and capitalise on their sound environment. Everything is there, despite the absence of hard work and systematic planning. As mentioned by one Japanese expert interviewed:

In Malaysia you just sow any seeds, through the rain and sunlight, just leave it, and it will grow without much care. In Japan we have to continuously monitor and follow up the seed very carefully, day by day, because we have 4 different seasons. We have to plan when we should plant, what should be done to make it grow and when we should harvest.

Deputy Manager (Japanese Expert), PROTON

The idea was supported by the managing director of one of PROTON vendors:

It is the people! Systems, procedures, techniques all are immaterial. How could we emulate Japanese work habits, vision and spirit? We are Malaysian, not Japanese. There is no pressure for Malaysians to work smarter and harder. The Japanese, they have many incentives to rebuild their resourceless country, that is to build the nation from the ashes of the Second World War.
Managing Director, Autoindustries Ventures Sdn.Bhd.

Ironically, according to one manager interviewed, some of the workaholic Japanese, when they have been in Malaysia for two or three years, tend to adopt local ways. If in Japan they have to take leave for golf, in Malaysia they have time to play golf every week (reported by one manager at PROTON), i.e. Malaysia makes the Japanese become more complacent. How far is this argument true? The discussion below will provide the answer.

8.3 The slowness of transferability of JST has been because of lack of demand from Malaysians managers as well as lack of Japanese commitment.

As was discussed in chapter six and seven, there are two forms of technologies transferred/learned and acquired within PERNEC and PROTON: (i) the embodied form; and (ii) the disembodied form (Al-Ghailani & Moor 1995). The first group consists of physical ready-made items comprising products, tooling, equipment, blueprints, processes, techniques and Japanese dispatched experts (also in Abo 1994a). The second group is a pure information form, which must be acquired in order to make the best use of physical items.

Both PROTON and PERNEC have successfully learned and acquired the embodied part of the technology. The embodied form of technology learned by PERNEC was simple 'mounting and through hole', 'racking and shelving' and 'modular assembling', whereas PROTON was able to acquire a 'flexible car manufacturing process', starting from design, stamping, body & engine assembly, painting, trim and final. However, the technology acquired by both of them has been claimed to be outdated (Bartu 1992; Jomo 1994b; Manager interviewed, PERNEC 1994). At PERNEC, the machinery used was more than 20 years old, and was slow. At PROTON it was a labour-intensive car assembly line, which is subject to lower productivity and high defect rates.

Regarding 'disembodied technology' acquisition, it has just begun at PERNEC and it has been very slow and only partial at PROTON. This was due to the conflict of interest between the partners. The Malaysian partners were weak and have just started to learn the telecommunications and automobile manufacturing technology and

international business systems. On the other hand, the Japanese partner was mainly interested in profit and money-making, as well as fitting Malaysia's production into its regional network, leaving Malaysia with low-scale technological development. As pointed out by PROTON's managing director, when questioned about 'conflicts of interest within shareholders': "Of course there have been conflicts, especially after the company was listed as a public company, because most of the investors (local and foreigners) are concerned with profits and dividends. Whereas we have another important agenda, that is, to enhance the Malaysian automobile technological development process". However, according to a production manager, the main reason why JST has been transferred slowly to PROTON was:

We asked our employees to adopt the Japanese working style but we must show a good example to them. For example, in Japan, managers come to work earlier than their workers to plan daily working schedules. Japanese managers wear the same clothes as their subordinates. There are no castes in the Japanese factory where I trained. The other important factor is that, transferability is subject to the vision of the management team. So far, we have not decided when we can have our own car design and manufacture. In other words, what we want is not really clear.

At PERNEC the practice of JST is far lower than at PROTON. When the same question was asked of a senior manager the answer was:

We are expected to develop local telecommunications technology. We can't develop unless our people really work hard with NEC because their technology is very advanced. This may be possible if we have plans for it and work closely with our technological development plan. On the government side, I think our government already have its localisation plans and policies. For example, every product supplied must have at least 41 per cent local content, which every company has to ensure. However, I doubt if any strategic alliance or joint venture possesses such soft technology acquisition or development plans.

In my analysis, both alliances have been interested only in the acquisition of hard and ready-made technology, not in soft technology. From the beginning, they set no target for acquiring management technology, so that with the skills acquired, after a certain period, the venture could operate independently. That is why both alliances have been very slow in developing their own research and development activities.

Although there are 4 main shareholders in PROTON [HICOM (27.5 per cent), MOF(17.5 per cent), Mitsubishi Group (17.2 per cent) and Government Agencies (8.2 per cent)], the most important and influential in technological creation and development is Mitsubishi Motor Corporation (MMC). In replying to the question: 'Why did MMC take PROTON as its partner in the car industry?' a Japanese expert in the production department answered: "We are involved in this joint venture, because it is a national project which is fully supported by the government". This reply suggests that political-economic reasons were the main motivation factors for establishing the alliance, which is heavily protected by the government of Malaysia. It need not worry about losses, its

market is protected and secured. To let the company grow, import duties and other finance regulations are waived. In 1987 alone, RM. 120 million import duties was forgone (Jomo 1994c:287). The overall cost of the PROTON project for the first decade was estimated to be at least RM. 1.6 billion (Chee 1985 cited by Jomo 1994c).

It was confirmed by a report from JACTIM (1994) that the main reasons why Japanese firms came over to Malaysia were: (i) political stability; (ii) incentives; (iii) market; (iv) other government policies; (v) wages; and (vi) labour force. The consolidation of downstream and local industries was the least important reason to expand operations in Malaysia. The same companies operate in Indonesia, China, India and elsewhere because of abundant labour forces, cheap wage rates, and huge markets. Malaysia was chosen as the most popular off-shore factory location in the shifting of operations from Japan to overseas, as seen in table 8.1.

Table 8.1: Preferred location of off shore plants of Japanese MNCs.

Country	Number of companies	Per cent
1. Malaysia	74	34.4
2. China	63	29.3
3. Vietnam	31	14.4
4. Indonesia	20	9.3
5. Philippines	11	5.1
6. Thailand	5	2.3
7. India	5	2.3
8. Mexico	3	1.4
9. Burma	1	0.5
10. Taiwan	1	0.5
	215	98.1%

Source: Adapted from JACTIM Survey 1994, page 49.

Although, in the past, Malaysia was selected as the most popular off shore factory location, and also was as an important strategic location in the eyes of the head offices at Japan, it is becoming less important today compared with China. Thus Japanese MNCs' concern with long-term profits and competitiveness through persistent technological dependency was the main business strategy behind the venture agreements. In response to a question "How serious are the Japanese in the issue of technology transfer?" a manager at PERNEC replied: "the Japanese are mainly concerned with the sales of their products and profitability, and with ensuring localised markets are well served through specific products and services."

In the case of PERNEC, NEC has restricted the business of PERNEC to within Malaysian markets because it has other ventures which look after Thailand and Singapore. In fact, NEC Technology in Hong Kong was established to design a low-end desktop model personal computer for the Japanese market, and (cheaper) parts are

supplied by other Asian countries and assembled in Japan (Baba & Hatashima 1995:738). Singapore also acts as a procurement base for the Pacific Rim and as a centre for comprehensive manufacturing which involves advanced technology (Baba & Hatashima 1995: 742, 744). Thus PERNEC acts as the vehicle of NEC to tap the Malaysian market, no more than that. It seems that the Japanese are more concerned with the prosperity of the parent company than with the prospects and upgrading of the venture in the host country.

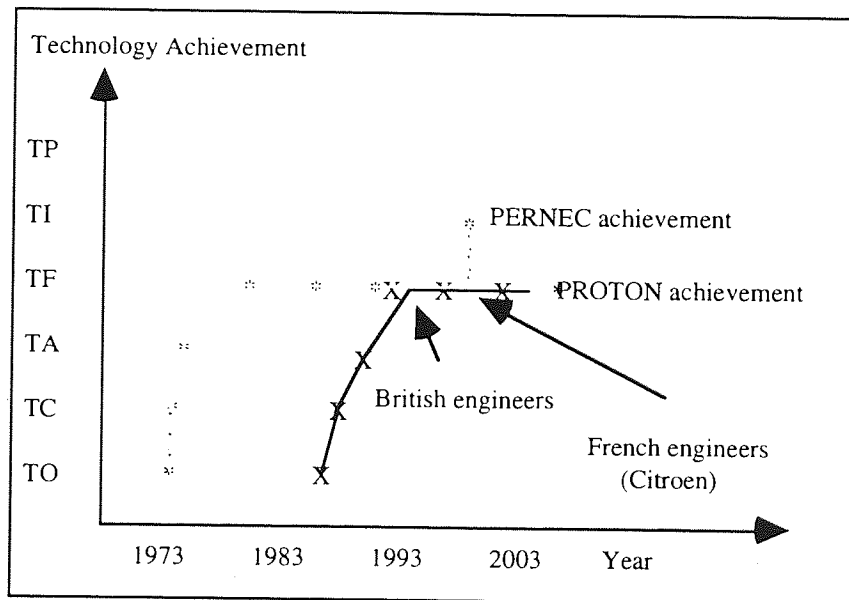
The Japanese do not interfere with the management of the venture as a successful business organisation, and they do not pass on their strategic lessons to the partners. Take, for example, the implementation of company-wide quality control which was supposed to be started with QCC activities and the establishment of R&D works. It took more than twenty years for PERNEC to begin, although there were 3 or 4 Japanese experts within the organisation to help. In the case of PROTON, it took 9 years to encourage 70% of their manufacturing workers to participate in QCC activities, though there were 6 Japanese experts on the quality steering committee. Neither PROTON nor PERNEC has implemented company-wide quality education programmes to all employees, despite the presence of Japanese advisers.

Even though PROTON had an R&D office from the beginning, it was not engaged in the total car design and car-making research, but rather helped the vendors' development and maintenance. Only in 1994 did it start to do the jobs it was supposed to have been doing (engine design and making) since 1985. Probably in the year 2004, then, PROTON will be able to produce its own engine as wished by the Prime Minister (New Straits Times, August 2, 1994). Though there have been Japanese staff working in R&D, they assumed the role of liaison officers rather being involved in than developmental activities.

From my research, a model of technological transfer or acquisition process in a joint venture company can be developed. It has a specific series of technological know-how hands-on learning processes involving six stages: from (i) technology learning or orientation at the parent company in Japan; (ii) technology coaching at the plant in the host country; (iii) technology application, where local workers operate independently without coaching; (iv) technology flexibility or adaptation, where adjustments need to be made as new machines and tools are applied in the manufacturing system. The model then is expected to move to (v) technology innovation, where local people themselves produce their own design and products independently; and lastly (vi) technology propagation, where they extend their innovated technology to others at cost or at a profit. Technologically, the two ventures are not yet able to stand on their own.

In other words, they have not yet achieved the level of Technology Innovation and Independence from partner (stage iv), except that PERNEC, in 1994, started doing its own design and making its own products (working total independently of NEC's R&D), and probably we shall see its products available in markets by 1996, as depicted in figure 8.1.

Figure 8.1: PROTON and PERNEC: The technological achievement.



- Note:
- Stage I (TO) Technology orientation or learning at parent company in Japan
 - Stage II (TC) Technology coaching (from trial run to actual production) at plant in host country
 - Stage III (TA) Technology application independently by local workers
 - Stage IV (TF) Technology flexibility or adaptation (to adjust to changes), with the help of experts
 - Stage V (TI) Technology innovation, have own R&D, work independently.
 - Stage VI (TP) Technology propagation, shared with others at cost or at a profit.

Why has this happened? In the first place, Mitsubishi and Nippon Electronic keep their own innovative R&D centres in Japan. Moreover, the Japanese did not export JST because they did not have a long-term commitment to the host country (Dedoussis & Littler 1994). On the other hand, the overall Malaysian R&D culture and infrastructure are less developed and not integrated. Consensus decision-making, QCC activities and open suggestion systems have been identified as some of the good management practices, but they are not practised in the ventures studied. According to a PROTON's business manager, the reason is:

The Japanese must implement their manufacturing systems and procedures, but for the rest it is up to us how we do it, such as work methods, the management of quality, human resources, business development, marketing, vendor development, research and development etc.

'Up to us' here means it can be managed in whatever ways we decide, which are not necessarily Japanese ways. And, with strong local and Western education and orientation, 'how the Japanese manage their resources' was overlooked and not

learned. Although technological development is one of the key objectives in the venture, soft technology acquisition plans were absent from the first day the venture was established. All of these are actually defeating the purpose of LEP. In 1994, PROTON extended its source of car technology to Citroen Automobile Industry of France. But if they are only interested in importing hard technology not the 'soft technology', Malaysia (through PROTON and PERODUA) will not be able to have its own technology and will continue to be technologically dependent on Mitsubishi, Daihatsu and Citroen. Leaving aside the non-existence of PERNEC's company-wide quality system, at the time of field research, the post of deputy general manager for the quality office at PROTON was vacant and the office was placed under the manufacturing portfolio instead of being on its own. Only in 1995 was the post filled, and only then did they set a target to work for ISO 9002 quality certification (Proton Focus, October-December 1995). Moreover, the Japanese MNCs have been acknowledged to be organisations guided by corporate philosophy, mission and mottoes (Lehmann 1982; Inohara 1990). However, MMC and NEC were not interested in transferring their work philosophy, nor were PROTON and PERNEC interested in initiating their own. Only in 1994 and 1995, did PERNEC and PROTON respectively launch their corporate missions .

Moreover in Japan, from the 1950s to the 1970s, they developed the industry with multi-approaches; securing resources (such as cross-licensing with US companies), building the component base (done with local universities and private companies), creating domestic markets and promoting domestic technological capability through the setting up of 'joint labs' i.e. technology centres, between MITI, the Ministry of Education, and electronic private companies' R&D (Morgan & Morgan 1991:36-37). This technological breeding and bridging effort is less developed in Malaysia.

The conflicts of interests and different missions between Japanese MMC and NEC and PROTON and PERNEC, also between Malaysian and Japanese governments, will make the transferability of the 'soft technology' a minimal affair. The MNCs came with global profit maximisation, cost minimisation and competitiveness improvement objectives (Abraham 1988; Dicken 1992; Tolentino 1993). Moreover, the Japanese MNCs came to Malaysia and other Pacific Rim countries with corporate strategic networks characterised by 'horizontal integration' (Baba & Hatashima 1995: 736) and regional complementing (Lincoln 1993; Jomo 1994b; Machado 1994). For example, there are no comprehensive manufacturers (involving product design, basic design, detailed/ spec. design, and IC design) operating in Malaysia, except for consumer electrical and electronics products (which predominantly involve only simple product design technology). See table 8.2 for further details.

Table 8.2: Localisation of Japanese Electrical and Electronic Firms in Pacific Rim Nations.
(where their development and design centres are located)

Type	Singapore	Malaysia	Korea	Thailand	HK	China	Taiwan
Comprehensive manufacturers	Toshiba Hitachi Mitsubishi Elec. NEC						
Consumer manufacturers	JVC Sony Matsushita	Matsushita Elec. JVC Sony Sharp Sanyo		Sanyo			Sharp
Audio-visual manufacturers	Aiwa		Onkyo				
Components manufacturers	Nemic Lamba Matsushita D. Kami El. Ind. Taiyo Yuden	Nemic Lamba TDK Omron	TaiyoYuden Soshin El.	Matsushita Denshi	Sumida	Sumida	
Total	12	8	3	3	1	1	1

Source: Adapted from Baba & Hatashima 1995, table 1, page 741.

From table 8.2, we can see Japanese MNCs have located 12 of their advanced technology centres in Singapore, compared with only 8 in Malaysia. NEC prefers Singapore to be its technology centre rather than Malaysia. The Malaysian government expects Japan technological centre will be located in Malaysia. They put very high hope and trust in NEC, without realising the objectives of the Japanese MNCs.

Regionally, the Japanese (19,431) staff sent for technical assistance to some Asian countries outnumbered the trainees received (15,031) by the Japanese

Table 8.3: Japan's technical assistance programmes in Asia (1954-1988),
in number of personnel involved.

Country	Trainees received by Japan (e)	Dispatched experts (a)	Dispatched survey teams (b)	JOCV* dispatched (c)	Total dispatched (d=a+b+c)
China	2,349	1,388	3,589	52	5,029
Malaysia	4,560	778	2,749	755	4,282
Thailand	7,497	3,209	6,472	125	9,806
Vietnam	643	182	132	-	314
Total	15,031	5,557	12,942	932	19,431

Source: Adapted from Hiraoka 1995, table 4, page 721.

Note: * Japanese overseas cooperation volunteers

Table 8.3 shows that, overall, Thailand received more technical assistance from Japan than other countries. These experts, especially the survey teams of 12,942, assisted in developing master plans and feasibility studies in agriculture and forestry, manufacturing and mining, transportation, public works, construction and telecommunications. The studies become the basis for grant and loan applications to Japan and other multilateral or regional funding institutions (Hiraoka 1995:720). In fact the Japanese are in a dilemma in transferring out their technology to Asian countries as pointed out by Lincoln:

Furthermore, attitudes toward Asia, or at least that region's newly industrialised economies (NIEs) seemed to be dominated by the 'boomerang effect', in which Japanese businessmen are worried that a transfer of technology or continued economic success of these countries would allow them to take away global markets from Japanese firms. While the Japanese government or industry could not entirely prevent the spread of technology, such negative imagery certainly acted as a deterrent to direct investment and explicit technology transfer.

Lincoln 1993:164

The discussion above clearly shows that there are conflicts of interests between Japanese, Asians and Malaysians. Promoting the SMIs and technological development of the host countries is not the main concern of Japanese partners. Though undoubtedly some technological capabilities development has been transferred by Japan, it is restricted to simple design and assembly technology. Therefore it is easily understood that the transfer of JST is only partial, because it mainly depends on the capability of local management to acquire it. The condition of the JST transfer is worse when from the beginning there was no JST acquisition plan prepared within ventures.

8.4 Does the sector matter?

Both ventures are located within the same field of political and socio-economic environment. Moreover, the majority of equity belongs to Malaysians (PROTON 75 per cent and PERNEC 70 per cent), and the management control of both organisations is in the hand of Malaysians. With this background, theoretically there will be a similarity of impact of JST practices, which is supposed to favour Malaysia. However, the research has found that there are significant differences in terms of JST practices between the two. It was found also that though the Japanese have only 25 to 30 per cent of ownership, Mitsubishi and NEC have had a very strong influence over the strategic decisions and operations made in these companies, especially at PERNEC, and at PROTON particularly under the previous two Japanese leaderships.

At PROTON, the supply of materials (like galvanised coil for making body panels, white ash for making glass, textiles for making car seats, chemical materials for making tyres and batteries; robotics and automation; and parts like engines, transmissions, gear boxes) are wholly imported from Japan. Even though there are local parts suppliers,

they still insist on buying from their affiliate company in Japan. They give a good reason why they must buy from Japan: quality. But according to one of member of the R&D department, when the quality is tested, both parts' quality are alike. The Japanese partner is not interested in the local R&D investment, and retains authority to approve the design of the car from Japan. Only after 9 years, did Mitsubishi Motor Corporation (MMC) agree to build a casting plant for making engine blocks for PROTON, as an initial move to producing engines locally. In fact, in the early years, Mitsubishi agreed to have a joint venture with Malaysia on condition that PROTON limited its products to the local market, and did not export. However, business conditions did not allow PROTON to restrict its outlets, and since 1989 PROTON has independently marketed its cars overseas.

The practice of JIT has been very low, though PROTON has started its QCCs activities as early as 1986. PROTON has also been working closely with its vendors since 1988. Though R&D efforts have taken place since 1985, PROTON has not yet been able to produce its own engine.

In the case of PERNEC, it was worse. PERNEC is tied up with NEC's supply and is not allowed to sell its products outside Malaysia. There was no R&D effort and no company-wide quality control programmes for 23 years. All product drawings and designs and the approval of these drawings and designs come from Japan. Almost all (90 per cent) parts and components, machinery and tools are bought from Japan. PERNEC has been using old production facilities. The 'older technology' (Al-Ghailani & Moor 1995:691) seems to be practised here. The evidence shows that although the ventures belong to Malaysians, the Japanese partners control business operations. Why? This is due to the technological dependency of PROTON and PERNEC on Mitsubishi and NEC.

Overall, PROTON practises more and deeper Japanese best practices, compared to PERNEC. The reasons were: (i) The Japanese management teams are bigger at PROTON (50 per cent) than PERNEC (15 per cent) and so probably is their influence. It means that the variance of management cultural variables was maximised at PROTON; (ii) Cars, as a national project, are politically and socially more prestigious than telecommunications equipment, and therefore, have more pressures to perform; (iii) PROTON attracted better qualified young managers than PERNEC, with an average age of 30s versus 40s; (iv) PROTON has younger (20/30s versus 30/40s years of age) male production and technically sophisticated workers, compared to PERNEC's female simple assembly operative workers. From the discussions in chapters 6 and 7 and previous explanations, there are differences in terms of degree in 'the transferability

of JST or acquisition processes' between the two companies. The reasons behind this, greatly due to the structural differences or contingency factors (Child & Tayeb 1982-3; Child 1984) between the two establishments are explained in table 8.4.

Table 8.4: PROTON-PERNEC: Structural comparison.

Structural differences/ similarities.	PROTON	PERNEC
Year of establishment	1983	1973
Type of industry	automobile	telecommunication
Product lines	passenger cars	switches, transmissions, prepaid phone cards
Production system	Flexible production	Batch production
Production machinery	80% from Japan	60% from Japan
Plant construction	Japanese contractors	Japanese contractors
Ownership	75% Malaysian	70% Malaysian
Parent company	HICOM	PNB
Japanese partner	Mitsubishi Motor Corporation (MMC) of Japan	Nippon Electronic Corporation (NEC) of Japan
Total employees	4188 (as at July '94)	737 (as at Nov. '94)
Management team	50% Malaysians and 50% Japanese	85% Malaysians 15% Japanese
Average age of managers	30s	40s
Number of Japanese CEOs ever served in the company and subsidiaries (past & present).	2	2
Number of MD since operated	4	8
Number of Japanese experts currently available in the company and subsidiaries.	20 (0.5%)	4 (0.5%)
R&D strength	200 engineers (1995)	3 engineers (1994)
Year of operation	1983 1993 (upgraded)	1994
Labour turnover rate (yearly):		
Company	01.2%	4 to 5%
Industry	3.0%	3 to 5 %
Market	82% local, 18% export	100% local

Source: Various Departments, PROTON and PERNEC 1994.

Both ventures are government initiated projects. PROTON operates under the flag of HICOM and PERNEC under the flag of Permodalan Nasional Berhad (PNB). If the first one was responsible for heavy industrial development in Malaysia, the second one is responsible for pooling local capital and to managing the investment portfolios. Both are managed by Malay-Japanese managerial teams, whereas most manufacturing organisations are dominated by Chinese managerial groups (see Bartu 1992; Machado 1994; Jomo 1995).

By nature, PROTON is a national project and there is more pressure for it to work hard than at PERNEC. It benefits from more concentration, protection and efforts carried out by the government to ensure the project is fruitful (Jomo 1994b; Machado 1994). This is similar to the protection given to Hyundai of Korea, Ford of America, Vauxhall of

France, Rover of Britain (Womack et al. 1990), and Toyota and Nissan of Japan (Chang 1981) in the early stage of business operations.

In the 1970s, Malaysia was very young in a modern international business arena, where mistakes may have occurred during the 'memorandum of understanding (MOU)' making stage, such as technology specifications, procedures (how), when (to begin and to finish) and who is responsible for transfer plans. They were not clearly stated and made known to the people who assumed the task (Utusan Malaysia 1993). Because soft technology is intangible, people normally forget it and it was left out of their transfer agenda.

The objective of the venture was formerly not so much technology, but more capital injections, job creation and expected exports income. The difference between PERNEC and PROTON objectives has moved from normal venture to strategic alliance objectives as pointed out by their top managers:

The original objective of joint ventures is to take advantage of government policy, that is, to create employment, capital injections and perhaps technology transfer. But this is only in theory. How effective is another question.

Assistant general manager, PERNEC.

It is a national project and government has to commit. Technology is the key element in the strategic alliance. Therefore, in order to materialise technological acquisition, a close relationship between government and private sector is important. And the success of this project is dependent on our total commitment and government intervention. Through this project, we want to rationalise the auto industry, to develop automobile complement industries and to increase our engineering capability. Therefore, it was expressed and spelled out clearly in the venture agreement. The business must be able to serve customers and investors and therefore it must be viable.

Deputy managing director, PROTON.

The project was handed to CEOs who were highly motivated and enthusiastic but did not have either business exposure or manufacturing experience (Lim 1994b, Jomo 1994b), with the exception of the current CEOs who have both grown together with the company and been exposed to international business. Because of this many analysts worry that they do not know what they want (Malaysian Business, September 1994). However, both alliances have so far been able to secure their business and are slowly building up their technology.

The local partners have been relying on Japanese experts to impart their best 'soft technology' to PROTON and PERNEC. But it is not in the interests of Japanese MNCs to do so (as stressed by one assistant general manager at PPC Sdn. Bhd. and the managing director of PROTON). So the acquisition of the technology has relied much on the capability of local people to want it. However, the 5 areas of soft technology

were not on their agenda of acquisition plans, and they did not include 'soft technology acquisition plans' as part and parcel of a strategy towards an independent business status. Therefore the targets were not set. Probably the comments of JAMECA's President was correct, that there was a different definition of technology between Malaysians and the Japanese (New Straits Time 1994). In table 8.5, the different practices of soft technology at PROTON and PERNEC are detailed.

Table 8.5: PROTON-PERNEC: Soft technology practices.

Management practices (of soft technology) differences/ similarities.		
	PROTON	PERNEC
[a] Lean Manufacturing System.		
JIT	at the early stage	absent
Kanban	part cards	part cards
Flexible machines	yes, but inferior	yes, but inferior
Flexible workgroups	within cell only	within and between cells
Parts supplied	direct to line's stores	direct to store
Zero inventory	3 hours to 20 days	3 months
CAD/ CAM	yes, but approved by Japan	designed & approved by Japan
SPC	highly used in assembly only	highly used in assembly only
Dependency on CKD	30 per cent	90 per cent
[b] Company-wide Quality Control.		
Organisation	only cover manufacturing office	only cover production department
Quality policy	not clear	Nil
Productivity & quality movement	on moved	just begin
Participation in QCCs	53 per cent	4 per cent
Quality Convention	only within Proton	not yet started
Parts inspections	yes on local parts, not on CKD	yes on local parts, not on CKD
Quality education	not yet started	still in planning stage
[c] Welfare Human Resources Management.		
Continuous tech. training	yes in Japan	yes in Japan
HRD budget from sales	0.3 per cent	0.3 per cent
Religious education	yes	yes
Cross-trained	within cell only	within and between cell
Transferability	within cell only	within and between cell
Single status:		
Canteen	1 for workers, 1 for executives	1 for workers, and 1 for executives
Car parks	1 for management team and 1 for ordinary workers (both have open car park)	1 for management team (roofed) and 1 open car park for ordinary workers
Uniform	for all	only for production staff
Intake, between fresh & experienced candidates	mixed	mixed
Promotion	merit based, Internal is preferred	merit based, internal is preferred
Production staff:		
Average stay in company	7 years	20 years
Male/ female	100 per cent males	90 per cent females
Turnover rate	0.6 per cent	7 per cent
Other facilities:		
Prayer rooms	20	2
Indoor games	Available	Available
Outdoor games	Available	Available
Housing (flat)	Available	Not available
Education sponsorship	Proton Foundation	Not available,

[d] Harmonious Industrial Relation.		
Enterprise union	PWU	No union
Suggestion system	Not available	Not active
Communication	Mainly one way	Mainly one way
Consensus dec.-making	Not in practice	Not in practice
Grievance handling	Management-union meeting	Disciplinary committee (ad hoc in nature)
Joint council committee	Not active	Not exist
Lay-off practices	Never happen	Volunteer resignation
[e] Supplier-buyer relationships.		
Vendors' association	Proton Vendor Association (PVA)	No association
Number of vendors	128	30
Getting the supplies	Commissioning	Open tender/ bidding
Sources of supplies	Single or dual sourcing	Multiple sourcing
Relationships	Long-term development	Shot-term termination
Price determination	Negotiations	Quotations
Equity owned	5 vendors (1995)	Nil

The transfer of Japanese work organisation and management style will be low; and reliance on Japanese supply of parts, components and technology will be dominant/high if the conditions listed below prevail:

- (i) Weak leadership and CEO appointment systems.
- (ii) Weak managerial capability and low R&D culture among engineers.
- (iii) Absence of technological acquisition plan right from the beginning.
- (iv) Ignorance of international economic behaviour and systems.
- (v) Lack of overall workers' 'Excellence Working and Continuous Learning Culture'.
- (vi) Too much trust and hope in others.
- (vii) New to the industry.

In other words, the transfer of soft technology is slow when the 'firm technological capability' (Lall 1992) or 'absorptive capacity' (Ali 1994:103) is weak .

Here, we were conducting a 'cross-organisational' study within the same cultural, political and economic environment. This thesis shows that 'contingency' variables influence the transfer of technology (Child & Tayeb 1982-3; Child 1984; Fabi 1992), and also play an important part in the process, because PROTON was headed by two Japanese CEOs and was managed together with Japanese dispatched teams. In every important post and department there were Japanese advisers working together with local managers. This phenomenon was in line with the perspective given by John Child & Monir Tayeb in their discussion of the theoretical arguments in cross-national organisational research:

Rather than concentrate on, or claim primacy for, a particular theoretical perspective, one should consider all three. The cultural, contingency, political-economy variables these theoretical perspectives identify are interactive, but it may nevertheless be possible to identify some particular influences emanating from each.

Child, J. & Tayeb, M. 1982-3: 64-5.

8.5 Managerial capability and commitment towards technology and business development.

Malaysia's privatisation scheme has been recognised as a successful model within developing countries (Hensley & White 1993). The establishment of the companies being studied is one of the 'build-operate-transfer' strategies used in the plan. However, most of the management teams appointed were from the public sector, despite the many experienced managers and workers available in the industry. Neither the PERNEC nor the PROTON pioneer management team was in the telecommunications and automotive manufacturing industries and international business, prior to their assignment. The same is true of the succeeding management teams, whose involvement in business was as business trainees rather than as entrepreneurs. For this reason, it has been argued that they were technically and managerially weak (Henderson 1989; Bartu 1992; Jomo 1994b; Lim, C.P. 1994). They have so far not been unable to create or manufacture their own 'chassis' (for PERNEC) and 'engine' (for PROTON). The ventures are profitable, it has been argued, not due to their capability but because of very strong tariff protection and incentives by the government.

Other evidence of management capability and commitment is the level of communication between local managers and Japanese experts. The interviews showed that the communication was minimal, occurred only within departments concern and took place only during formal meetings. Without good communication and relationships between these agents of technology, how can the transfer or acquisition of technology take place rapidly? Although the Japanese language has been called as a communication barrier and constitutes a general problem in all non-Japanese sister companies (JETRO 1993), from my analysis, it was not always true. Because if language is the problem, it is only so in the initial period of joint venture. In the long run, the issue is overcome by having intensive language programmes for Japanese experts and Malaysian managers/ workers. Ten years for PROTON and twenty years for PERNEC of language learning is more than enough, and by now the problem is over.

Regarding with the development of Malaysian technology, the answer lies with the Malaysian peoples, not the Japanese, as argued by Assistant General Manager of PERNEC.

The main parts of software design are in Tokyo, but we have designed the module since 1985. NEC agreed to release their design rights, I think because they want to please the Malaysian government. We sent our engineers for two years' software training. Our engineers told us that NEC did not have a proper training programme. They just placed you in a room. They did not care whether you wanted to learn or not. They did not teach you according to a schedule like in university. That is why after two years, our engineers still remain as before. We again asked ourselves (through deliberate brainstorming), why they did that. Is it because they don't want to release their technology? I met one Japanese, who said, if you want to learn, you must fight for it. You cannot sit and wait to be taught. It does not work that way in NEC. This is a cultural reason. A lot of our people think that post-university and college learning is as easy as in the university. In working life, you have to work really hard to get knowledge. Use personal relationships with the Japanese and become close friends with them, then you will get information. You make efforts. Go to the files when you don't know and keep on asking to know. That is to be expected.

From the above arguments, there are at least three implications in the industrial learning process: unstructured training programmes within the venture company in Japan, the knowledge and technical acquisition plan prepared by the venture company, and the qualification and skills of the trainees. It should be noted that there are differences between the university and the industrial learning process. In Japan, the parent company has no ready-made modules supplied as at school and university. A person has to be aggressive and know what has to be acquired from the technology supplier. The trainees have to use all skills and talents before they can get the knowledge and the secrets they want. There were also indications that engineers were sent to Japan without proper guidance on what type of technology needs to be investigated, which is supposed to be prepared by the company or its human resource department, which is responsible for providing the necessary requirements and demands, i.e. items to be learned, whether in Japan or in Malaysia.

At PERNEC, although most of the production and quality work organisation is learned and absorbed from NEC of Japan, due to the lack of support from previous management, the lessons learned were poorly developed. As pointed out by a production manager:

Most of the production system, standard operation manuals, quality control circles, flexible team works were learned from NEC of Japan. In fact, we have been trained by NEC. Every executive was sent to Japan for a month or so, on a rotation basis. In 1984/85, we had already sent our staff for quality control circles facilitator training to Japan, but the failure of the quality movement was due to the lack of motivation and support from management.

Different responses were given by human resources and commercial departments. According to their managers, they have never been trained and exposed to the Japanese methods of managing their department. Therefore, they practised either 'a mixed of Japan-Western-Malaysian human resources management and development and industrial relations' or 'conventional supplier-buyer relationships'.

In terms of technological adoption or the learning process at PROTON, there are different experiences, as I was told by managers interviewed. The production and quality systems are biased in favour of Japan. As pointed out by production II manager and quality secretariat:

My working experiences is as old as PROTON, i.e. ten years. After completing my university education, I was sent to Japan under the national car project training scheme. I graduated as a mechanical engineer and chose to go to Japan for car engineering and manufacturing skills training from July 1983 to July 1984. In Japan, I was trained in plant maintenance for eight months and four months in the Japanese language. For me, I was never exposed to British or Malaysian engineering or factory. Therefore my first and only exposure is Japanese car's engineering methods.

Production Manager II

In the beginning (1983), PROTON staff were sent to Japan to learn the QCCs movement for 6 to 12 months. After that, Japanese experts came here and spent 24 to 30 months at PROTON to implement this movement. After that they went back. Now we are on our own. Some good things about them are that the Japanese manual is more diagrammatic, better expressed, more time saving and user friendly.

Quality Secretariat Officer:

Although PROTON has to implement whatever manufacturing process is designed by MMC, in other management functions, it is free to manage. As pointed out by business and information system managers:

We adopted an international marketing system. Japanese management does not apply here. Japanese management applies mostly in the manufacturing process. Otherwise, in areas like how to manage human resources, the way we deal with our labour, the way we communicate with our supplier and business strategy, we have freedom to choose.

Business Manager

We brought in Henderson Consulting to advise on our information system. The development of information system will take place in 5 phases, that is from designing to post production. The first results will be expected from the core manufacturing related processes. The way we do things is very unJapanese. Japanese are very good in production and product development but in software, the West is good. I have been to NEC, Fujitsu and Mitsubishi....but they are not that good. They are also going to the West to learn and take the best.

Information System Manager

The above evidence revealed several points. First, there has been a pragmatic or ad hoc approach to borrowing the best management techniques, which are not necessarily from Japan. Second, there is a similarity between PROTON and PERNEC in taking Japanese manufacturing and quality systems and applying different management styles in human resources, industrial relations and supplier-buyer relationships. Third, there are differences in management support for implementing the techniques learned. One may argue that the Japanese management techniques may not be the best method available in the market. However, The management teams have to be able to recognise and take the best method and suit those techniques to the Malaysian environment. The process should be restricted to manufacturing and quality systems and leave aside the welfare of the employees and ignore the suppliers, because the manufacturing and

quality systems applied will be meaningful only if they are supported by strong welfare and facilities offered to employees, harmonious labour-management and close supplier-buyer relations.

On the other hand, there was also an ignorance by local management teams in the ventures and local agencies of the capitalist behaviour of international business players. Therefore, PROTON had a tough fight with MMC before it could export Saga cars in 1990. In fact, it failed to penetrate the American markets (Bartu 1992:75). Firstly, it was misled by MMC:

The Japanese knew of course that the Proton Saga was not made for export and were deliberately misleading their Malaysian partners. Mitsubishi had installed an obsolete plant in Shah Alam which produced second-class vehicles made of thin and inferior steel, composed of many light plastic parts and equipped with an overall technology that was not sufficient to enable the car to pass the strict regulations prevailing in overseas markets, especially in the United States.

Bartu 1992:76

Secondly, its American marketing agent behaved disgracefully:

Bricklin did not keep his promises. Not only did he fail to obtain the technical approval from the United States authorities for Proton Saga imports, but even worse he suddenly sold off his company in the midst of negotiations with the Malaysians. Bricklin's dishonourable exit cost Kuala Lumpur millions of ringgit and put a sudden end to Mahadhir's dream of exporting the Proton Saga to the United States.

Bartu 1992:78

MMC also delayed the transfer of technology in engine-making. After hard and long debates and political interventions, in 1993 (after ten years of operation) the PROTON Casting factory started its plant construction. It is an initial step towards total engine-making, and by 1995 this plant was able to supply engine blocks to the engine assembly plant at PROTON, instead of importing them from Japan. Even though Malaysia can produce its own engine blocks, 100 per cent of the 'black ash' (a raw material in making blocks) is still imported from Japan.

8.6 The Malaysians work for the Japanese

The Malaysians work for the Japanese in several ways. It may be in the form of investment policies, facilities and incentives; education, industrial relations and human resources policies; technical assistance, loan and aids applied by the Malaysian government and industries from Japan; and import and export dependence of Malaysia on Japan. From the beginning, the political-economic systems and policies developed by the government have favoured the MNCs. The IBRD reports gave freedom to the private sector to manipulate and pattern the economy and industry and let the public sector concentrate on developing the infrastructure, but ignored the development of local SMIs. The import substitution programme (1958-1968), export orientation (1968-

1980), Industrial Master Plan (1980-86) and Promotion of Investment Act (1986), have all provided leeway, and broadened and deepened the involvement of foreign MNCs in the Malaysian economic and industrialisation process. (see also Henderson 1989; Dicken 1992; Ali 1992). 'However, the growth of these industries has not been complemented by the expansion of the indigenous technological capability' (Ali 1992:9).

In 1982/3, the Look East Policy (LEP) particularly identified Japan as a source of capital, technology, working culture and management techniques. MNCs were encouraged to come as joint ventures, but in many cases they can come as wholly foreign-owned transplants (MIDA Business Times March, 1993). For examples: (i) the equity policies give great chances for MNCs to operate as wholly foreign-owned; (ii) investment incentives; and (iii) manpower policies which favour foreign MNCs. The effects of these policies are clearly shown by the increasing trend of foreign direct investment approvals (from 5 per cent to 35 per cent from 1981 to 1989) and the increase in the foreign majority in joint ventures ownership (14 per cent to 20 per cent for the same period). On the other hand, the wholly Malaysian and majority Malaysian ownership in joint ventures is showing a declining trend (from 49 per cent to 24 per cent and 31 per cent to 19 per cent respectively) (MIDA 1990).

Neither in the public nor in the private sector are there systematic ways and instruments to evaluate and to check how far the transfer of technology has taken place. From the interviews with MIDA's officer, it seems that the most they can do is to send out industrial progress reports to be fill up by companies, and hold short interviews during the application and extension of projects. There is no MIDA officer sent to the factory sites or plants to assess or evaluate the technology achievement or transfer which has taken place.

The attempt to nurture Malaysian technology has been less developed (Ali 1992, 1993, 1994; Lim, C.P.1994). In 1988, a vendor development programme (VDP) was initiated by MITIm and PROTON become a pioneer anchor company in the project. As at 10 September 1994, there were 35 anchor companies, 9 banks and 55 vendors involved in the VDP project. According to a MITIm officer interviewed, most of the anchor companies are Japanese and therefore most the vendors created and developed have Japanese links. However, the main problem faced by this project was:

“Not many small and medium industries (SMIs) have responded to this program. Moreover, their engineering and technical background are weak. Therefore, MNCs or potential anchors will use this as an excuse, saying that local SMIs are not capable of producing what they want. On the other hand, the participation of MNCs is sometimes just to get permits and licences to manufacture and to expand their operation, rather than to create and develop local SMIs/ vendors”.

Although, training and education is one method to developing Malaysian technological capability, the percentage of Malaysian students sent to Japan is very small compared to the US and UK.

8.7 The Japanese work for the Japanese

The thesis found that PROTON and PERNEC have fitted well into Mitsubishi and NEC regional production and procurement, capital rationalisation and division of labour (Jomo 1994c; Machado 1994; Guyton 1994; Baba & Hatashima 1995; Hiraoka 1995). These regional Mitsubishi and NEC economic integration efforts were supported by the ASEAN governments through their economic ministers' meetings (Machado 1994; Jomo 1994b).

For PROTON, this involves the 'brand to brand complementation' (BBC) scheme of Mitsubishi in 1987, which was agreed by ASEAN in 1989. Under this agreement, ASEAN is used as a production and export base (Machado 1994) and companies are free to purchase parts from any maker in a participating country. It states emphatically that there will be 'no mandatory single-sourcing of parts/components' (ASEAN 1988, cited by Machado 1994:316; MITI 1994a:117).

Mitsubishi has assembly plants in Thailand, the Philippines, Indonesia and Australia. Through this complementation scheme, in 1989 PROTON was able to supply 20 parts and received 40 parts/ components from MMC Sittopol of Thailand. MMC Sittopol (48 per cent owned by MMC) exported 100,000 Mitsubishi Lancers to Canada through its six years agreement since 1988. This programme is well suited to the global and regional business strategy of MMC, whereby Mitsubishi can source cheaper parts and components from ASEAN as well as make more profits. In other words, Mitsubishi is only responsible for its business, not for PROTON technological learning or development. In fact this plan was objected to by HICOM and PROTON managers because they feared it would conflict with national interests. But it was supported by the Malaysian Automotive Components and Parts Manufacturers Association (MACPMA) and finally was approved by MITI and ASEAN ministers (Machado 1994:317).

Whatever new technological improvement PROTON wants to have, it has to sign new agreement with MMC entailing 9 years' brand royalty and every annual design royalty PROTON has to pay to MMC. For PERNEC, designs and the approval of the designs are done at NEC of Japan, and it must also pay for that. The training given was only for simple machine operations and simple maintenance and limited to the car assembly, as noted by Jomo:

The training was oriented towards gaining proper knowledge of operations and ordinary maintenance. But since this knowledge was limited to certain machines, the training was only good for the operation of some special sections of car assembly. In terms of its implications for technology transfer, the training was also strictly limited to car assembly itself. It did not include design, research and development-prerogatives MMC reserves for itself.

Jomo 1994b:286

NEC has decided that PERNEC can only produce low-end consumer telecommunications components, whereas NEC of Singapore produces comprehensive products, has a telephone switching product design centre and acts as NEC regional headquarters equipped with modern information technology facilities. At the same time, NEC Technology of Hong Kong is responsible for designing a low-end model of desktop, also for other NEC affiliates. All NEC transplants are monitored by NEC headquarters in Japan (Baba & Hatashima 1995). The products to be produced, technology to be used and maintenance to be done are predetermined. As pointed out by a manager:

Sometimes the Japanese are not cooperative, but we have to bear with them, because we bought their technology. When we want to localise some parts they don't want to cooperate. They want us to buy everything from them. They even don't want to release their information. In terms of maintenance, if there is a major breakdown, the machines will be repaired by a supplier either from Singapore or Japan. No local expert can repair it. We sent our staff for maintenance training, but they taught us basic maintenance. They were actually unwilling to teach us. Every year we send our technicians, but they teach operation not maintenance. In fact Sony and Hitachi also called in experts from Singapore or Japan. This is what Malaysia is lacking.

Production Manager, PERNEC.

Therefore, these MNCs and their transplants are working not to maximise the transfer of technology, but to maximise their business profit through technological rationalisation between headquarters, technology centres, regional headquarters and other affiliates. The Centre for Japan Studies also carries out activities which, from my analysis, give more business input to Japan than to Malaysia in their research and information dissemination.

In the absence of Western power, Japan has become the primary engine driving the development of Asian countries, with official development assistance (ODA), technical assistance and volunteer activities (Hiraoka 1995:716). See also the discussion in chapter 5.

8.8 Why is technology transfer by Japanese MNCs disputed?

The expectation from the Malaysian-Japanese relationship is the transfer of the technology, so that in the long run technologically and economically Malaysia can stand by itself (Ali 1992, 1993, 1994; MIDA 1993; MITI 1994a), and be a developed and united nation (Mohamad 1991). After a decade, the politicians and industrialists in Malaysia claimed that the Japanese were reluctant to transfer the technology (New Straits Times July, 1994; Bartu 1992; Jomo 1994). However, technology transfer is a two-way traffic, involving 'the capacity to absorb and the willingness to transfer'. In other words, the Malaysian eagerness to learn or to acquire and the Japanese willingness to teach or to transfer, are the critical factors. A bird needs two wings in order to fly.

Technologically these transplants are inferior to companies in Japan. The problem or dilemma of whether to 'apply or to adapt' (as worried about by Abo 1994) does not arise here, because Japanese partners systematically and objectively determine what products and what level of technology are utilised in their sister companies. They purposely adopt core-periphery practices, as found by Wong (1990) in Singapore, Milkman (1991) in the US and in Australia (Dedoussis & Littler 1994). The transplants remain technologically subordinate to the core company in Japan (Baba & Hatashima 1995).

In this respect, the transfer of JST has fulfilled the aim of the regional Japanisation process. The establishment of R&D activities, *kaizen* and QCC activities, consensus decision-making, open suggestion systems, high cost human resources management, high application of automation and robotisation, zero inventory, long-term close vendor-buyer relationships, and union establishment, all have remained at home in Japan.

Both PROTON and PERODUA produce their cars with the aid of Japanese technology and design expertise, and also use some high value imported parts (New Strait Times, August 1994). The first one is handled by Mitsubishi, the second one by Daihatsu. As pointed out by one senior manager:

They brought many systems and work procedures to us, but left them unexplained. The whys and reasons behind them were not taught and transferred to local counterparts. In other words, they will not teach us how to make our venture a successful business organisation.

They deliver the manufacturing designs, parts, components, raw materials, machinery, robots, people, capital, to the host country, but not the 'proper technology', and for these they charge high 'royalties' (Jomo 1994a). At the same time they make sure the

technical and managerial dependency of the venture is retained (Henderson 1989; Nester 1990; Jomo 1994b). In other words, they are not interested the Malaysian 'how to fish'.

The transfer of JST is low in a situation of weak technological learning processes and poor capability development. For almost nine years PROTON's R&D engineers helped vendors in design, manufacturing/ production and maintenance. After ten years then PROTON's R&D teams started to learn how to design and make engines. This is a positive step toward self reliance, but it should have started from day one! A group of engineers should have been assigned to that in 1985, and others assigned to helping vendors.

Since its beginnings PERNEC has been headed by 8 CEOs assisted by Japanese experts stationed in the company for between 3 months and 5 years. By now PERNEC must be able to operate its business independently (technologically and economically). Because the second-class technology provided (as claimed by its production manager: "The Japanese gave to us an out dated technology") has been mastered, and the market is becoming tighter, in 1993, it took a strategic step by forming a new wing named PerneC Technologies Sdn. Bhd., which is free to design, assemble and to market. Again, in 1994 PERNEC realised the important of having its own technology by forming a small R&D unit with three engineers. These are constructive moves, made under the leadership of the newly appointed CEO, towards self-reliance.

On the other hand, although QCC facilitator teams were sent to Tokyo in 1985 and Japanese experts have worked with PERNEC since its establishment 22 years ago, yet the seeds of the QCC movement were planted only in 1994. The evidence showed a lack of management commitment to the QCC movement in the company. At the time of study there were 2 Japanese experts, one a production technical assistant and the other one deputy CEO or resident director. Were they really being consulted? When this question was posed to the production manager, the answer was:

Yes, he was sent for the whole transmission division, but we actually do not really make much use of him. Although he was sent as technical adviser to the transmission division, he also acts as liaison officer to NEC of Tokyo. His office is in the engineering department, but in the last three months he has never visited my production line. He at the moment only helps on the engineering side. In the early days, they may have been interested in imparting know how, but since 1990s, they have only cared about selling their products and making a profit, regardless of imparting the benefits of Japanese techniques.

From the above comments, we can see that local managers adopted an attitude of waiting to be taught, rather than going to and asking the Japanese experts. On the other

side of the coin, are these experts interested in helping the strategic alliance to become more competitive? The answer from one Japanese expert was:

In the transfer of technology process, both giver and receiver must be good and work closely. Another thing is that good results will only come if there is a conducive environment for technological development to take place, provided by recipient and supplier of the technology. Therefore, if there is a failure in technology transfer, the reasons are likely to come from the poor environment created by both of them.

In other words, the failure of technological transfer and development is contributed to by both parties; Malaysian technological development capability and Japanese global and regional corporate strategies.

Malaysian technological capability.

The interests of Malaysian holding companies are just like those of American and Western companies which emphasise short-term profit and the company's own interests, rather than long-term growth (Cox 1986). Local companies were not very interested in technological development (Ali 1992; New Straits Times, 14 August 1993; Machado 1994), as can be seen from the fact that Malaysia's gross expenditure on research and development across all sectors for 1992 was RM. 550.7 million, which was only 0.37 per cent of Gross Domestic Product (Malaysian Industry, November 1995).

The R&D allocation by year 2000 has been trimmed from 2 per cent to 1.6 per cent of the GDP (Six Malaysia Plan 1992) because of poor response from the private sector to expand the nation's research and development base (New Straits Times, 18 August 1993). When a holding or parent company assigns an MD to a subsidiary, it seems that there is little concern whether the MD seconded has the talent and the capability to manage and develop the organisation and its technological development or absorption within specific period of time (New Straits Times, 5 August 1993).

Investment in human resources management is also small. In a survey of 18 listed companies in Asia, on average Malaysian listed companies spent on training only US \$ 75 per employee per year, compared with US \$ 150 for Singapore, US \$ 163 for Indonesia and US \$ 293 for South Korea (Asian Business 1991:50).

Generally, joint ventures are headed by CEOs who were schooled and graduated in the West (not Japan). In fact, one senior manager did not agree with the existence of the term 'Japanese management style'. The most important points are that: (i) most of these MDs had no international business and industrial experience, and (ii) they came as a managers or administrators rather than as an industrialists, strategists and

entrepreneurs. A person who heads a manufacturing company like PERNEC or PROTON, has to be a person who has future strategic business plans in mind, and will not just let things ride, without knowing the track he is taking and the targets and objectives he is aiming at. (see Lim C.P. 1994a, 1994b; Jomo 1994b for further comments).

At PERNEC, the CEOs were seconded on a short-term basis (about 3 years). They were transferred from one subsidiary to another as ordered by their parent company (Permodalan Nasional Berhad). It is very hard to implement a long-term business plan under this system, because, as the plan commences, a new CEO will come, with his own new ideas, change the plan, and make the life of the employees miserable. This phenomenon dogged PERNEC for 21 years. It operated without its own products and services, as it did not have its own R&D centre.

I also learned that PROTON was headed by 2 Japanese CEOs for 8 years (from 1985 to 1993, see table 6.5). They were able to establish the company with yen denomination, and benefited MMC a lot, but they failed to set up PROTON as a lean manufacturing enterprise. They should have ensured that the production systems, standards and procedures owned by PROTON (at the time of opening and at the time they left) were on a par with whatever systems, standards, procedures, facilities, automation and robotisation Mitsubishi had in Japan.

In 1993, the second Malaysian was appointed as CEO. The changes in leadership, were more or less showing the unsatisfactory signs of Malaysian counterparts on the technology achievement offered by the Japanese management. The latest appointment is an alternative effort to nurture technological acquisition and development.

Moreover, according to managers interviewed (Japanese and Malaysians alike), in Japan the president of a company who knows the industry and factory from A to Z. He has to have at least 15 to 25 years' experience in related industries and business. Both Kieichi Toyoda and Yoshisuke Aikawa, the founders of Toyota (1933) and Nissan (1934) motor companies, graduated from Tokyo Imperial University in mechanical engineering. The route they had taken had built up their skills and attributes such as: industry and organisational knowledge, relationships in the firm and industry, reputation and track record, keen mind and strong interpersonal skills, personal values, high motivation and strong drive to lead (Kotter 1988:30). Toyoda worked and studied at his laboratory in Japan, while Aikawa worked as labourer at a casting plant in the United State. Toyoda had made an engine and a test car even before his motor company was formed. And Aikawa had formulated the so-called 'Aikawa Idea on Motor Vehicle'

(Chang 1981:28). 'A firm that has taken the time to develop practices and programs that build strong management teams able to provide a business with effective leadership has a most powerful source of competitive advantage' (Kotter 1988:133).

The leadership style to some extent will influence the management practices. Since most of the top management and management team consist of locally and Western educated staff, all of them are less familiar with the Japanese ways of managing the resources and organisation. Thus the tendency to utilise local and Western values and practices is great. In fact there is no compulsion to practise the Japanese techniques in the company. If it is done, it is by chance.

As mentioned by managers from PROTON and PERNEC, only manufacturing and quality systems adopted from Mitsubishi and NEC are being practised. In other aspects of management like human resources management and development, industrial relations, information systems, business development, quality management, vendor and assembler relationships, they are not bound to the Mitsubishi/NEC ways of doing things. For this reason, important practices such as consensus decision-making, suggestion systems, company-wide quality control, quality education and the QCC movement are not executed properly. The relationship and communication between managers and workers are through formal rather than informal and personal procedures, even though they practise an 'open office' concept. In other words, relationships are mechanised rather than humanistic. The concept of a 'classless organisation' is also not practised in full. Probably, the benefits of these systems were not explained by the Japanese managers during their occupation. From the beginning, both ventures did not have soft technology acquisition plans. These managers should have learned by now, because they have been given the opportunity and are responsible for acquiring and developing Malaysian technology.

There are some similarities in the recruitment and promotional practices at PROTON and PERNEC such as: (i) having two job entries, non-executive and executive; (ii) promotion based on merit; (iii) promotion from inside as well as outside the company; and (iv) there was a good offer for experienced workers. For workers, moving from one company to another and from one post to another, has been associated with skill enrichment as well as getting a better salary. The companies prefer to pay a higher salary to experienced workers rather than to recruit and train young employees. All of this encourages 'job hopping' by workers, which generally leads to a low degree of loyalty. This finding is similar to the Japanese experience in Singapore (Smith, J.M. 1986; Wong 1992). This will cause low transfer of technology, as the skills and technology acquired are lost when trained workers left the company.

Normally management will blame the nature of the industry and the workers when there is a high degree of employee turnover. It is rare for management to admit that high turnover is due to their inability to keep their employees. In the first place, the management has to provide a conducive organisational climate to keep their employees. If these workers have been moulded and treated well, there is a possibility of developing loyal employees. If after making all efforts, they still resign for other jobs or companies, then it is beyond their capability.

Some JST components have been transferred by the Japanese to PROTON and PERNEC. However, it was not explained why it is important and what is the rationale behind the implementation of all those work organisation techniques, especially to senior management groups. Moreover, the Japanese experts concentrated on communicating with Japan rather than on mixing and communicating with local partners. The language barrier is a popular reason for low communication levels between local employees and Japanese experts (JETRO, January 1993:43). However, according to a chairman of Car Seat Industry Sdn. Bhd., it is not so. "It is just an excuse. At best, it can be partially true but it is not necessarily a barrier", and Arai, a Japanese managing director of Hitachi Asai (Malaysia) Pte. Ltd. agreed; "Language is not a big problem if one takes the trouble to learn Bahasa Malaysia or can understand English. Otherwise one must resort to interpreters or body language" (Malaysian Business, September 1, 1994: 39)

Although importance is given to primary and secondary education (Malaysia 1981; The Economist, 2 October 1993), it was not for the tertiary levels (World Bank 1984; Lim, C.P. 1994a). Technical education is very important to produce technical workforces and potential managers, but it has not been given enough emphasis. Only 2.26 per cent and 0.36 per cent of the total enrolment in secondary school students to vocational and technical schools, compared to South Korea 42 per cent, Singapore 69 per cent, Thailand 21 per cent and Brazil 36 per cent (Lall 1992:174). In terms of numbers, the vocational and technical schools represent only 4.8 per cent and 0.6 per cent from total secondary schools. Under the sixth Malaysian plan (1996-2000), Malaysia will build 6 more polytechnics, 9 more industrial training institutes, and expand Tunku Abdul Rahman College and MARA Institute of Technology. It is rather ambitious to increase the intake in existing technical institutions to 30 per cent of total students in upper secondary schools within 5 years (Malaysian Business October, 1994:16).

Malaysia has not spent enough money training its high-level manpower, compared to Thailand, Singapore, Japan (Lim C.P. 1994a). Institutions under the Education

Ministry are the main supplier of labour. The problems with the institutions were: the supply is too low, the labour supply is not matched to industrial needs, as a result of inadequate technical education facilities and slow adjustment to industrial development (Malaysian Industry October 1994, November 1995).

According to a study conducted by the Economic Planning Unit of the Prime Minister's Department in 1993, the country needs 60,270 skilled workers to meet the demand of new investments within the next five years, and about 158,600 semi-skilled and about 89,000 unskilled workers within the same period. About 20,000 skilled workers would be required by the end of 1997, including electricians, chargemen, boiler men, fitters, welders, wiremen, plumbers, precision machinists, and tool and die makers. However, these figures do not include the manpower requirements of projects not approved by the MITI, or other professional skilled workers like engineers, technicians and high technology operators (Ibrahim 1993).

The existing output of local education and training institutions can only supply 58 per cent of the total requirement for engineers, 45 per cent for engineering assistants and 5 per cent skilled workers (Malaysian Industry, October 1994:15). Currently, the public industrial training institutes are only able to supply about 3,800, while private training institutes can supply about 1,426 skilled workers a year (New Strait Times, August 1993). It is estimated that Malaysia will face a shortage of 4,250 professional and technical workers through 1994 to 2000 (New Straits Times, July 1994). In a report on Manpower survey in 1991, there were significant shortages of engineers of 1,284 within 309 companies, an overall shortage of 22 per cent engineers (especially in electronics and production). There was also a serious shortage in information technology. The overall shortage was 20 per cent (Hussain 1991).

This shortage accelerates 'job-hopping' within the high technical and managerial segment (Malaysian Industry, October 1994; Malaysian Business, 1 September 1994). These workers' loyalty is minimal, which demotivates the management from providing long-term training and development programmes to their employees. This again minimises technological transfer (Majeca-Jameca, 1994:74). Although the current shortage is not solved, yet Malaysia is going to take up a new and advanced technology projects (MITI 1994a:202). I suggest that the foundation of the problems lies in poor manpower planning by the public sector. Education priorities are not right, and these combine with the failure of the companies to keep and to motivate local managerial and highly skilled workers.

Moreover, the government of Malaysia only spends 1.6 per cent of its GDP on research and development activities, as compared to South Korea 2.3 per cent (Lall 1992). The total figure fell from RM. 156.19 million in 1991 to RM. 137.94 million in 1992, a reduction of 12 per cent. Moreover, most of the budget is still concentrated in agriculture research rather than industrial sectors, strategic sectors, the medical sector and finally social sciences studies. The breakdown of the figures can be seen in table 8.6.

Table 8.6: R&D allocations for Sixth Malaysia Plan, 1991 & 1992 by sectors (RM million)

Sector	Year					
	1991		1992		Total (1991-1995)	
	Allocation	Percentage	Allocation	Percentage	Allocation	Percentage
Agriculture	64.84	41.5	57.64	41.8	273.82	46.5
Industry	58.20	37.3	43.14	31.3	165.82	28.2
Strategic	19.62	12.6	23.58	17.0	78.60	13.4
Medical	10.85	6.9	11.28	8.2	59.83	10.2
Social Science	2.59	1.7	2.39	1.7	10.11	1.7
Total	156.10	100	137.94	100	588.18	100

Source: Sixth Malaysia Plan 1992.

In 1992, for example, a total of 28 local research institutes and universities received RM. 137.94 million under the Intensification of Research in Priority Areas (IRPA). About 39 per cent went to agriculture, 22 per cent to manufacturing industry, 18 per cent to the strategic sector, 16 per cent to medical and 5 per cent to social sciences (National Council for Scientific Research & Development 1992).

The situation is worsened because interrelationships between the ministry, research institutes, universities, council, academy, Malaysia Technology Development Corporation (MTDC), on one hand, and industries, MNCs, international R&D organisations and other governments, on the other hand, are weak. This is the result of lack of research and information culture and long-term orientation among both entrepreneurs and bureaucrats.

Japanese Global and Regional Corporate Strategies and Policies.

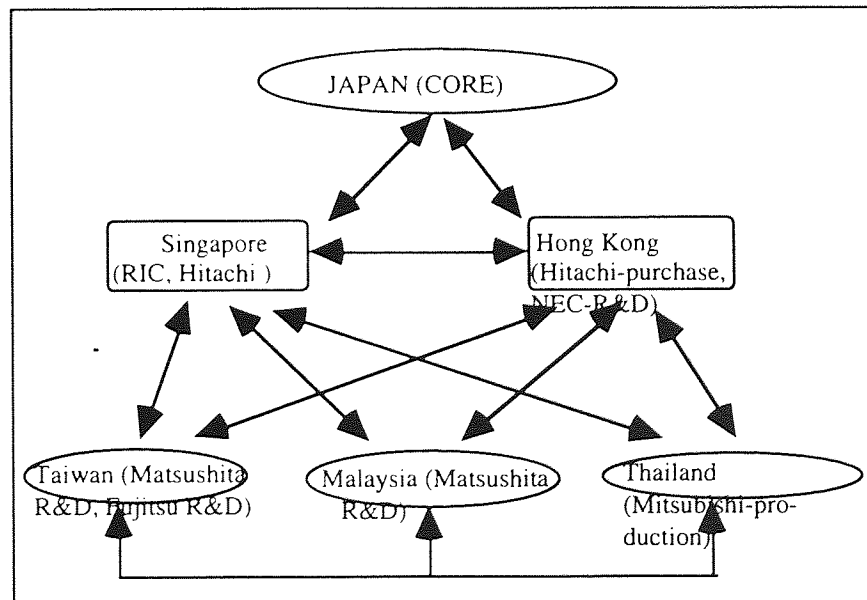
It has been argued that Japanese MNCs are just like the British and American companies who use joint ventures as a means to break into a protective and new markets (Turner 1987:85). Parent companies are normally in Japan, supported by regional headquarters (such as Singapore, UK, Germany, Detroit and Brazil), monitoring global strategic plans and operations of procurement, design, production and marketing and therefore international and regional division of labour. These parent

companies are operated globally, with global visions and objectives (Baba & Hatashima 1995), whereas developing countries like Malaysia formed joint ventures with limited national objectives. If in the 1960s the Japanese adopted what they called 'multi-domestic' strategies, and today, they adopt 'cross-border network' corporate strategies (Baba & Hatashima 1995:735-6), Malaysia has no choice but to strive and struggle for its own achievements. The time for '*melukut di tepi gantang*' or hoping for the kindness of others, has already passed.

Under the 'multi-domestic' strategy, all business decisions, parts supplies, and R&D are placed at the 'core' country, Japan. Technical changes and technology accumulation are generated inside Japan. Each factory or 'scoop', in foreign countries will produce and market locally or within boundaries. In this strategy, the parent company coordinates world-wide R&D, production, marketing and procurements (Baba & Hatashima 1995:735).

But the new 'cross-border network' strategy, also called 'global strategy', is based on horizontal integration and complementation and quasi-autonomous management/ quasi-autonomous production. It stresses 'chain' of process, and benefits from horizontal interactions. Every factory or establishment interprets global coordination, is flexible to adapt to changes, procures regionally or inter-regionally whichever is better (cost and quality), and has its own R&D. The technical changes and technology accumulation take place outside Japan. But this strategy only applies to low-end electrical and electronic products (Baba & Hatashima 1995:735-6). For the details see figure 8.2.

Figure 8.2: Japanese MNCs: Cross-border network corporate strategy



Source: Adapted from Baba & Hatashima 1995.

Note: RIC = Regional Information Centre.

Under the new 'cross-border network' strategy, in the Pacific Rim, there is a high degree of horizontal integration and interaction between countries. Some MNCs have transferred their R&D for low-end products to countries such as Hong Kong (Hitachi-purchased, NEC-R&D), Thailand (Mitsubishi room air conditioner production for Japan, Thailand & Australia; refrigerator production for Thailand, Hong Kong, Singapore & Malaysia); Philippines (Sharp production). The 'capability transfer' also takes place when Japanese MNCs' transfer out their R&D centres for low-end products, such as to Hong Kong (R&D for Hitachi), Taiwan (R&D for Hitachi and Matsushita) and Malaysia (R&D for Matsushita) (Baba & Hatashima 1995:737-8). According to an analysis of the international networking and product development of Japanese MNCs by Imai, K. (1992:148): 'a crucial part of Japanese system including highly advanced sub-assemblies will and should remain in Japan; some factories making advanced components will be located in newly-industrialising economies (NIEs) through joint ventures; and standardised components will be produced in ASEAN countries by subcontracting or licensing'. According to his analysis, the manufacturing process, components and raw materials are classified in the following four categories:

- A What should be located within the core factories.
- B What should be located in an area adjacent to the core factories.
- C What should be located in an area where relatively frequent transportation and communication are possible.
- D What can be located almost anywhere in the world.

Normally A and B should remain in Japan, C should be located in NIEs to secure good transportation; and D could be located in other countries, including ASEAN economies. For example, in optical fibres and word-processing, assembly stages should remain in Japan. But all parts, components and raw materials are located in NIEs and ASEAN countries (Imai 1992;148-151)

To coordinate the regional operation Singapore has been acting as a regional information centre (RIC). It is also the regional procurement centre. As a regional headquarters, they coordinate not only procurement but also management, finance, marketing development and design in the region (Baba & Hatashima 1995:739). For example, Sony Asian headquarters in Singapore, as in Japan, Europe and the US, has a direct line computer network with Tokyo, linking with all Asian production bases, and has established a design centre. Here regional data on products to be produced by sister companies are gathered and monitored. The Japanese parent companies even determine what and when to produce, and where and how to market products (Baba & Hatashima 1995:737).

For example, the number of regional headquarters for the electrical and electronics industries has increased from only 78 companies in 1991 to 103 in 1993 (Baba & Hatashima 1995:739). Their functions are product design and development, information centres on local markets, coordinate local purchase of component, without any coordination from parent company in Japan. They are mainly in the USA, UK, Germany, and Singapore.

At present, Japan has divided the globe into 4 regions; America, Europe-Africa, Asia-Oceania and Japan itself, as in table 8.7.

Table 8.7: Regions according to Japanese MNCs.

Function	Region	Head quarters	Country
Headquarters	Whole world	Japan	Whole world
Sourcing	Asia, Africa	Japan	Indonesia, Iran, Africa
Off-shore production	European Countries	UK	The whole of Europe, Africa & Middle East
	America	Germany California Mexico Brazil	Canada, North America, Middle America South America
	Asia-Oceania	Singapore Thailand	The whole of Asia
Market, financial & other services	North America	California & Detroit	The whole of North America
	South America	Brazil	The whole of Central and S. America
	ASEAN	Singapore Hong Kong Taiwan, Malaysia	The whole ASEAN
	Europe-Africa	UK	The whole EC, Eastern Europe and the whole of Africa

Source: Sugiura 1992, Baba & Hatashima 1995, Popham 1995.

A group of countries are put into a cluster because of geographical location and they have some common features. The establishment of these regions is needed for better economic rationalisation and coordination between different countries. All these countries are monitored under one regional headquarters, for better strategic regional coordination and integration. The regional headquarters must have specific advantages in order to be selected, such as language, having free trade traditions, and good labour, as in Britain (Popham 1995).

The annual Japanese MDs' regional meetings with members countries' businessmen are held, based on each region. The problems and prospects of a particular region are discussed, and suggestions are made. Normally, various government representatives are also present at these dialogues and meetings. The place of meeting is moved from

country to country, and every country in the region will give the chance to become the venue. In the case of Japan-ASEAN regional communication, they have yearly meeting and dialogues (MAJECA-JAMECA 1994).

Overall regional information about each country in each region is crucial in determining the regional approaches by Japan. This role has been given to the Asian Productivity Organization (APO) for Asian countries. The regional and country data and information are updated by repeat training and seminar programmes year by year in the form of a 'country paper from each participant' (Japan Productivity Centre 1990), research activities (Hiraoka 1995) and also through a Productivity Conference every two years (National Productivity Corporation 1994).

The yearly performance of Japanese MNCs in each region is taken care of through yearly conferences and conventions held by each *keiretsu*. Sharp, for example, held its third Sharp Asian Region quality Control Circle Convention at Kuala Lumpur in 1993 (New Straits Times August, 1993). This is only one example. Actually, all big Japanese MNCs have national, regional and global conferences and conventions.

The 1987 New Asian Industries Development Plan, by the Japanese Ministry of International Trade and Industry (MITI) set a framework for investment in and relocation of export-oriented industries to the region (Unger 1990, cited by Jomo 1994b). After that, many follow-up studies were undertaken by Japan with various ASEAN governments, and recommendation were made regarding products in which their countries should specialize (Wall Street Journal 1990, cited by Jomo 1994b:297). Japanese MNCs design and promote integrated regional production schemes based on an intra-industry international division of labour. To implement it systematically, Japan-ASEAN Investment Corporation and the ASEAN-Japan Development Fund were set up to finance and to recycle some of Japan's trade surplus in Southeast Asia (Jomo 1994b:298).

On the other hand, the Japanese dominance in this region is also highly supported by the investment incentives and policies offered by ASEAN countries and their own regional development plan towards ASEAN free trade targets (Nester 1991; Dicken 1992; Machado 1994; Atan 1994). As a result, all ASEAN countries (non-oil members) except Indonesia, have from 1973 to 1986, been trapped in a trade web and financial trap, i.e. 'trade deficit' and 'yen indebtedness' to Japan, (Woon 1987; Nester 1989). Japan has also become the major foreign investor in these countries. See table 8.8 for further details.

Table 8.8: Regional Japanisation, selected countries.

Country	Japanese investment % of total in country 1986/1987 ¶	Average trade imbalance (1973-86) in US million f
Indonesia	34.2 b	4,419
Hong Kong	20.5 c	-
Singapore	41.5 bcd	-1,973
Thailand	20.5 b	-975
South Korea	51.6 b	-
Malaysia	30.7 b	143
China	11.7	-
Taiwan	23.6 e	-
Philippines	15.7	-135.9

Source: ¶ Adapted from Hiraoka 1995

f Adapted from Woon 1989

Notes: b Japan is largest foreign investor

d % not based on cumulative positions

c manufacturing investment only

e based on cumulative inflows up to early 1980s

The major reasons for the trade imbalance are: (i) dependence on yen loans; (ii) being tied to Japanese imports; (iii) investment practices by Japanese MNCs and transplants (Woon 1989; Nester 1991; The Economist 1993).

The reliance of a particular region on Japanese supply of parts, components, capital and technology is high/ dominant if the conditions listed below prevail:

- (i) Too much localism within regional countries and lack of common interest.
- (ii) Absence of strong regional organisation to act as a platform to develop cooperatively.
- (iii) Focus on short-term gains and self benefits within government and private sectors in the region.
- (iv) There is weak company and national technological capability within the region.
- (v) There is relatively weak bargaining power of regional cooperation or associations (for example, ASEAN and APEC).

In Japanese transplants in Australia (Dedoussis 1995), and Singapore (Wong 1990) local managers are excluded from consensus decision making. In Malaysia, almost all Japanese transplants are headed by Japanese, and local managers' promotions are limited (New Straits Times, July 1994; Ismail, M.N. 1993; Guyton 1994). It was confirmed by a MIDA officer that most of the 'top management posts are held tightly in the hands of Japanese' (MIDA Officer interviewed, 1994). In fact, the Japanese have been urged 'to learn how to listen to Malaysians on this matter' (Malaysian Business, September 1, 1994:1). There were cases where a local chairman was appointed, but

Japanese management still exerted control. There were cases where Japanese managers practised a 'divide and rule' policy among the workers along ethnic lines, even though this goes against their own teaching of teamwork and loyalty. They also used 'high-pressure tactics' to gain productivity (Malaysian Business, September 1, 1994:41).

In interviews with a Japanese-Malaysian venture of car component maker, I found that to minimise labour costs (at RM 350 ± US \$ 160 per month per worker), they hired 70 per cent Indians. The company built a temple within the factory site, and this created unease among Malay workers. There was no quality movement. These workers were not unionised, either. If the workers are fragmented the Japanese management take advantage of this. For example, when there are significant numbers of ethnic variations among workers, the conflicts of interests between ethnic groups have been used as an excuse for not doing anything to improve the working conditions of workers in general (Smith W.A. 1994:179-1). In other words, local managers were not given full authority by the Japanese management and workers got fewer benefits compared with those given in Japan.

In order to strengthen international competitiveness in air conditioners, Matsushita Electric established its Matsushita Air Conditioner Research and Development Centre (MACRAD), and Technology Centre (MACTEC) in Malaysia in 1992. The main function is to research, develop, and design air conditioners, as well as providing technical assistance to other Matsushita air conditioner producers in the region. With the presence of MACRAD and MACTEC, Matsushita Electric has complete development, design, test and production functions in Malaysia (Baba & Hatashima 1995:738).

In a study of technology and research, Roberts, of M.I.T. Sloan School of Management, revealed that major Japanese Corporations are spending more money on research and centralising their research activities at company headquarters, while US corporations are moving towards decentralising these activities (New Straits Times October, 1994).

The common practice of big Japanese MNCs when they go out from their country is that they come in groups, with their affiliates and vendors. They say quality and familiarisation factors are the reasons (Turner 1987). This will actually become a hindrance to the creation of local SMIs' and technological development (Dewan Masyarakat October, 1994:25). For example, Sumitomo came to Malaysia not alone but with 23 affiliates, and Mitsui came with 16 team members. The other members of selective *keiretsus* can be seen in table 8.9.

Table 8.9: The *keiretsu* and its' affiliates and subsidiaries in Malaysia.

Keiretsu	Affiliates	Year of establishment/ operation	Business lines
Sumitomo	23	1976	Electronic, chemicals, leasing and finance chemical wholesales, construction, utilities, general trading, electrical & other engineering, non ferrous metals, non ferrous metal products wholesale, insurance, rubber products, transportation, metal products.
Mitsui	16	1973	Automobiles & parts, investment, petroleum & coal products, forestry, general trading, leasing & financing.
Hitachi	14	1972	Non ferrous metals, chemicals, electronics, general machinery, electrical equipment, electronic equipment wholesale, plastic, transportation, plant engineering.
Matsushita	13	1965	Home electric appliances, electric equipment, electronics, electrical equipment wholesale.
Mitsubishi	12	1972	Electric equipment, electric equipment wholesale, industrial machinery wholesale, chemicals, non ferrous metals.
Toray	7	1972	Textiles, plastics.
Itoh	7	1969	Steels, wood & furniture, transportation, plastics.
Sony	7	1973	Electric equipment, electric equipment wholesale, home electric appliances, electronics, warehousing, electrical equipment.
Asahi	6	1979	Electronics, electric, glass, general trading, non ferrous metals, hotels.
Sanyo	6	1977	Home electric appliances, home electric appliances wholesale, automobiles, general contractors, general machinery.
Sharp	5	1976	Home electric appliances, electronics home electric appliances wholesale, electric equipment.
NEC	4	1974	Communication equipment, electronics, communication wholesale, home electric appliances
Honda	4	1976	Automobile & parts, transportation.

Source: Toyo Keizai, 1992

I am reasonably confident that this is a correct interpretation of Japanese policies towards advocacy of regional economic development (Kobayashi 1994) especially in Asia. Through this strategy there will be a high degree intra-firm trade with prices higher than in outside markets (Guyton 1994; Marappan & Jomo 1994). Most of the parts and components are supplied by their affiliates and subsidiaries, either locally or imported from Japan. If at PROTON and PERNEC they have to import CKD parts and components of 30 per cent and 90 per cent respectively, for NUMMI it was 60-70 per cent and in a study of 23 Japanese subsidiaries in the UK, in 1981, was 58 per cent (Turner 1987:92).

8.9 Can Malaysia rely on the private sector and MNCs to develop its long-term technological and economic development?

As discussed in the previous chapter, the problems of technological development in Malaysia, were anticipated right from the beginning, that is, at the industrial planning and designing stage. Malaysia cannot totally rely on the private sector and foreign hands (with their interests) to develop its economy and technology, and the government should concentrate on providing the right industrial climate (as proposed by IBRD Report in 1958). There was no technological development plan designed in 1958, which the government and industrialists could start work on.

The Federation of Malaysian Manufacturers (FMM) advised its members to overcome labour shortages in the 1990s through:

Shift assembly line to less labour intensive production, upgrade their machinery, obtain training assistance from overseas, train workers to increase productivity, slow down expansion activities and transfer production out of Malaysia.

New Straits Times, 13 August 1993.

But with the right approach Malaysian public agencies could play a greater role to enhance R&D culture and links with private sectors. It is important to note that there are very few companies who have their own training institute or university (such as Motorola University, Hitachi University and Matsushita Educational and Training Centre) to develop their human resources, tailored to their needs. But they should not stop there, they could also supply to others.

In terms of technological development and education programmes, South Korea and Taiwan emphasised the 'indigenous technology development' or 'self-help' programme, and re-evaluate and restructure vocational and technical school from the beginning (Lall 1992; Dahlman & Westphal 1983). Only in 1988 did Malaysia start its indigenous technological development programme, through the vendor development programme (VDP) pioneered by PROTON (MITI 1994b). It is 30 years behind South Korea and Taiwan. The emphasis on technical education is also very late, only taking place in 1995 (Malaysia Industry, September 1995).

Singapore has achieved success in technology transfer through tie-ups between MNCs and local SMEs under their Local Industry Upgrading Programme (LIUP), it started in 1986 by the Economic Development Board (EDB). To date, the programme has given benefits to more than 30 MNCs and about 180 local SMEs (Malaysian Industry, August 1995:31), compared to 23 MNCs and 39 local vendors created (MITI 1994b:13-5). Malaysia should intensify this programme with new measures so that

every MNC and big local company has to take part. Gentle government persuasion is not enough. Problems of low quality, late deliveries and insufficient supply at SMIs would not arise if VDP or SMI-MNC links had been started in the 1960s.

8.10 Conclusion.

The thesis suggests that the transfer of JST in Japanese transplants is a process where Japanese work organisation and management style is learned and transferred by both local managers or workers and Japanese dispatched experts within strategic alliances. It takes place through technology orientation, coaching and upgrading programmes, and also through personal communication and relationships between locals and Japanese experts. Along the way, Japanese materials, money, management power and methods of work and management style dominate the firm. But it is important to note that the transfer of methods of work and management style is not necessarily wholesale and a superior one. It is also rely on the local managerial capability to acquire and the contingency factors that prevail in each firm. It is an organisational Japanisation which leads to technologically dependency of the firm on a Japanese *keiretsu*.

The JST transfer process is an integral part of the macro-Japanisation process, that is, 'as a result of global and regional Japanese corporate strategy' (Baba & Hatashima 1995:737), in which it is part and parcel of'. In other words, Japanese *keiretsus* predetermine 'what, when and where' to produce and to market within their regional transplants. The level of technology used in each sister company is decided by parent companies in Japan. Thus the theory of Japanisation as proposed by Ackroyd et al.(1988) is tested and extended in Malaysia.

The evidence shows that the transfer of Japanese best practice 'soft technology' within the Malaysia-Japan strategic alliances is low, because it was not the main concern of both parties in the technological development process. This finding neither supports the 'Japanese core-periphery' Japanisation theory of Dedoussis & Littler (1994), nor rejects the 'innovation-mediated production' theory of Kenny & Florida (1992; 1993). This is because the context of the study and the samples are different. In America, Europe and Australia, research has focused on Japanese transplants dominated by Japan. The thesis focuses on Malaysian-dominated strategic alliances, which were purposely created to absorb Japanese technology. Therefore, although the transfer process involved the readiness of the Japanese to transfer and the eagerness to learn by local recipients, the latter was given more attention. Malaysians must not waste their time in finding fault with others, but must learn and improve themselves. As agreed by one assistant general manager at PERNEC:

We blame ourselves for not being able to acquire and develop the technology. That is not the fault of the Japanese, but from our side. We cannot rely on others to give it. We must realise that Korea took the same lessons from Japan. If Korea can do it, why can't we? Korea paid for technology, and got it. And maybe their work culture is also similar with Japan, homogenous. Technology is costly. If we want it, we must pay. Another point is that generally we wait to be taught.

A managing director from a PROTON vendor claimed in an interview:

I do not blame the Japanese. It is our people who are lacking in the desire to excel, and the desire to learn. The important lessons to be acquired are not the hard technology, but positive work culture, habits, values and behaviour. As long as it does not conflict with our religion, we should take it. It is something to do with the inner thing of the people.

If Malaysian companies are unable to learn from Japan, they are repeating their failure to learn from the West (for the past 200 years). As the theory of technological competence explained, the impact of foreign technology on local development is dependent on the level of domestic technological competence (Cantwell 1991). There are three possible consequences of the theory. The first is that the host country has a high technological capability, like in NICs, where MNCs will act as an input to the innovative efforts for local firms. The second is that, where the local firms are weak, foreign MNCs help them to upgrade their capability through joint ventures and other strategic alliances. The third is that, when local firms are weak, and not able to learn from MNCs, then these ventures will remain dependent on foreign support (Tolentino 1993:131-2). In this thesis, the strategic alliances were purposely created by joint efforts between government entrepreneurship (Tang & Yeo 1995) and MNCs, where local parties are not familiar with the business and industries. Therefore initially there is a total reliance on MNCs' help in technological development. And at the same time strong innovative efforts are expected to take place among local managers and workers, so that in the end the firm will be independent and technologically well off.

Chapter 9: Conclusion.

This study has focused on the Japanese soft technology (JST) transfer within two Malaysia-Japan strategic alliances. The soft systems of technology studied were the way the manufacturing system is organised; the way company-wide quality control is implemented; the way human resources are managed, developed and cared for; the way labour and management interact; and finally the way assembler and vendor relations work. The Malaysia-Japan strategic alliance case studies involved were, PROTON (a national car assembler, a joint venture with Mitsubishi Motor Corporation) and PERNEC (a telecommunication equipment supplier, a joint venture with Nippon Electronic Corporation). Both ventures were established not only to create employment, but also to absorb and develop Malaysia's indigenous technology and enhance the Malaysian industrialisation process (Prime Minister Department 1983, MIDA 1993a, MITI 1994a). They were supposed to emulate the good aspects of Japanese work organisation and management styles (Prime Minister Department 1983; Nester 1990; Bartu 1992; Hensley & White 1993; Smith, W.A. 1944).

The main objective of the research has been to examine the extent to which 'soft technology' is practised within the firms, how the process has taken place, and why it has happened. Furthermore, the research aimed to learn whether there are differences of JST practices between sectors and why. An important factor in the process, the capability and eagerness of local managers to learn and the readiness of Japanese experts to transfer JST, was explored, and the research also aimed to learn how the Japanese agencies and MNCs operate in Malaysia. How far do their activities favour Malaysian technological development? How far do Malaysian industrial policies and instruments favour Malaysia's own technological development? These questions have led the researcher to adopt the case study method as the best approach to tackle the problems.

Although there are many determinants in the transfer of JST (Wong 1990; Lall 1992; Al-Ghailani & Moor 1995), I have focused upon two major factors, that is, the capability and eagerness of local managerial groups to learn, and, to a lesser extent, the readiness of Japanese experts to teach and transfer JST. Thus variables like their work experience, soft technology acquisition plan, expectations and perceptions toward Japanese experts, frequency of communicating with and using Japanese experts, the work delegation process, floor visits, and the numbers of JST elements being implemented were investigated. In addition variables like soft technological transfer plans, roles and functions, time spent in the plant, frequency of communicating with local workers, shopfloor/site visits and number of JST elements being introduced in the

firms since establishment, have been explored to evaluate the readiness of the Japanese experts to transfer the technology.

The research has shown that not all five aspects of JST or the Japanese work organisation and management style have been transferred to Malaysia. Furthermore, JST which has been transferred does not necessarily take the same form as in Japan, because it has been moulded by the local industrial climate and organisational culture. Moreover, the application of the JST has taken place in the absence of a soft technological development plan from both recipient and supplier of the technology.

The traditional objectives of strategic alliances have moved from employment creation, capital injections and technology transfer (Ballon 1967; Wilczynsky 1976; Trevor 1985; Liebreuze 1987) to technology innovation (Dahlman & Westphal 1983; Lall 1992; Tolentino 1993). This research, however, suggests that the new role of strategic alliances is extended to acting as a catalyst for industrial development in a host country, enabling the creation and the development of small and medium industries. It also nurtures industrialisation and economic development in the donor country.

After a certain period of time, when the MNC failed to transfer the expected technology, local partners started to shift their collaboration to other foreign partners who could supply the technology needed. They also improved their research and technological development independently, by having their own technology centres. On the other hand, the MNCs, in order to retain an interest in the venture, have been forced to change their traditional objectives of markets expansion, re-locating their plants for cheap labour and supplying simple or older technology, to develop local technological capability: in other words to create and develop SMIs, and to nurture the industrialisation process. As soon as the strategic alliances improved their technological capability, they were able to expand their markets not only locally but globally. Today, PROTON markets its car overseas directly (Ballon 1967; Tolentino 1993) and indirectly (Machado 1994). However PERNEC is still domestically oriented.

The study also suggests that the transfer of soft technology (work organisation and management style) is taking place but slowly. It implies that much depends on the commitment of local managers and the interest of Japanese experts (also in Kenny & Florida 1995). The present work organisation practices are actually a cocktail of Japanese, Western and Malaysian styles. The machinery, materials, parts, components, designs, and standard operating procedures are supplied by Japan or by companies related to Japan. The manufacturing system, company-wide quality control and long-term assembler and vendors relationships have been transferred but adapted to the local

environment (see also Milkman 1991). As to high cost human resources management and harmonious labour-management relationships, there are mixed influences of Japanese, Western and Malaysian.

Technologically the alliances are dependent on Mitsubishi and NEC of Japan. The thesis challenges the practices of transfer of JST within Japanese transplants described in the works of Florida & Kenny (1991), Kenny & Florida 1993, Oliver & Wilkinson (1992), and Womack et al. (1989). Instead, it tends to support the 'core-periphery JST practices', whereby JST is only practised in Japan and not in host countries, as found in the works of Milkman (1991), Dedoussis & Littler (1994) and Humphrey (1994).

However, the difference of this research from previous studies is the context of the study. This research deals with purposely created strategic alliances (built-operate-transfer companies) by a government in a developing economy. The previous studies were dealing with established Japanese transplants or emulators in developed economies. In America and the UK, the companies are already established and they have their own technology. By applying new Japanese management techniques, the firms are expected to become more efficient and competitive. In Malaysia, these strategic alliances were created to acquire and develop the technology as they worked with Japanese partners. On the other hand, this research also suggests that the transferability of JST into Malaysia was part and parcel of Japanese-ASEAN regional strategies. It explains how PROTON and PERNEC play their roles in realising Mitsubishi and NEC regional business strategies (also in Nester 1990; Humes 1993; Hiraoka 1995), by complementing other plants of the same Japanese *keiretsu* in the ASEAN economic bloc. The level of technology utilised in Malaysia is predetermined, because the parent companies in Japan decide who produces what in ASEAN countries. Therefore, the true picture of JST transferred is less fully understood if the research on the JST transferability is treated in isolation without linking it with *keiretsus'* regional and global corporate strategies. Evidence shows that inferior technology has been transferred and it is further dampened by the lack of a sense of responsibility to develop the venture's technology, which in the end enhances the Japanese MNC's hegemony (Hymer 1976; Dicken 1992; Bartu 1992; Tolentino 1993).

The research also suggests that the JST which has been transferred happened through venture agreements, which are ad hoc in nature, rather than by a series of efforts in a short and long term soft technology development plan. The transfer has taken place through work orientation and hands-on experience in Japan, trial runs and coaching at plants, and retraining programmes provided by the foreign partners. From the beginning there was no proper and systematic plan or targets for soft technology

development. For example, when should this company target to get ISO 9002 (manufacturing and design) quality certification, or when should the company-wide quality education programme achieve this target? Of course, not all JST practices are suitable for the Malaysian environment, and further research on its applicability is needed. There were also indications of a lack of effort to evaluate the best management and business secrets/ methods available in the markets by some managers, before selection and implementation.

The interviews conducted suggest that there are many factors hindering the transfer of JST. The short-term nature of CEOs' secondment; the leadership is not technologically oriented and lacks international business experience (especially at PERNEC prior to the present managing director); the Japanese experts are not really consulted and utilised; the high turnover of staff, especially skilled workers; lack of R&D culture and the fact that most managers and engineers are educated in the West and connected with Western working procedures and culture rather than Japanese. It is clearly shown there is a lack of company and national technological capabilities (Dahlman & Westphal 1983). The managers claimed that they are free to manage their departments or divisions and not bound to MMC or NEC styles, but in practice this was not the case. According to my observations and interviews, much decision-making (for example to purchase, to design, to approve designs, and to market) was influenced by MMC and NEC. The strong influence of MMC within PROTON was also addressed by Lim, C.P. 1994b, Jomo 1994b and Machado 1994.

Generally, there is much evidence to show that PROTON has practised more of JST than to PERNEC. As was found by Milkman (1991), Abo (1994a) and Kenny & Florida (1993), the application of Japanese production methods within auto and auto components is higher than in the electronics and electrical industries. This reflects the 'contingency effects' of the sectors (Child & Tayeb 1982-3). As the car manufacturing process involves 'high technicality' compared to switching equipment assembly (Kenny and Florida 1995), the practice of Japanese management techniques is higher there. Although the Japanese are not responsible for developing and strengthening venture technology, their involvement within PROTON has been deeper and wider than in PERNEC. In PROTON, they are involved in designing and styling, corporate planning, production, quality checks, R&D, engineering and vendor development, whereas in PERNEC they are involved only in engineering and corporate planning.

There are other factors that mean the transfer of JST in PERNEC is lower than PROTON, such as the high degree of turnover in skilled workers and engineers in PERNEC compared to PROTON, the appointment of CEOs based on temporal

secondment without being able to build and to execute long-term business plans. There was a lack of optimisation and communication between Malaysian and Japanese experts in PERNEC compared to PROTON.

An important conclusion from the PERNEC case especially is that long-term involvement with a Japanese partner doesn't automatically mean that more JST will be practised. There are various factors which affect the JST practices, such as sectoral factors, socio-political influences, industrial climate, contingency factors within the organisation and the way these companies are treated or managed by their parent or holding companies.

Generally, there is a lack of effort in on innovative technologies (to design and to make Malaysian models) by PROTON and PERNEC, though in the end this could bring independence from MMC and NEC of Japan. For PERNEC, only in 1996 were they able to produce their own products. PROTON constantly worked with foreign experts from Japan, Britain and lately France, for new model development. However, I am reasonably confident that PROTON has built up new strategic alliances in the absence of their own engine, so the new technical agreements remain in the circle of product development or product strategy rather than corporate development or strategy. In the 1980s they built cars with Mitsubishi engines, but in the 1990s with Citroen engines. This is totally different from Japanese corporate strategy as shown by Japanese-American, Japanese-British, Japanese-French, Japanese-German car strategic alliances (Chang 1981; McMillan 1989:277; Financial Times, 19 August 1993). All these partners were able to produce their own engine and technology. They also merged as a corporate strategy rather than for product development. For example, General Motors has a 35 per cent interest in Isuzu Motor, jointly to produce a 'world car' and enable General Motors to penetrate the Chinese and other Asian markets. It built alliances with Japan to upgrade its car technology, joint R&D, business expansion, to gain benefits from economic of scale and interchange of parts (Chang 1981).

Although the initial objective of the alliance creation was to absorb Japanese technology and to learn the Japanese management style and work ethic, firms have their own preferences on how to manage themselves. Generally the JST has not been well transferred because there was no compulsion for managers to practice it. There a tendency for employees to follow the Japanese work organisation system and the managers to stick to the conventional working system. For example, line workers work by following the SOP design by Japan, but executive and managers still manage and supervise results instead of the process orientation as practised by Japanese managers. It is important to note that most engineers, managers and top managers were educated

and graduated in Western countries. Although they have been trained in Japan for their current job assignment, they are more familiar with and inclined to Western work systems and management (also in Abraham 1988). On the other hand, all line keepers and operators are locally educated and Japanese trained. Therefore, the difficulty of practicing JST comes not from line workers but from managerial levels.

The research also suggests that Malaysian industrial policies and strategies have been able to attract foreign capital and technology, but most of the MNCs that came in 1960s and 1970s were labour-intensive industries. Only in the late 1980s and early 1990s, was the encouragement of capital-intensive MNCs nurtured. However, the incentives supplied were not enough to create and develop Malaysian classes of technology. Both Malaysian public agencies and private firms lack commercial and industrial research and technological development activities. There is a lack of instruments to link local SMIs with these MNCs technologically. It seems Malaysia did not follow the steps taken in the 1950s and 1960s by Japan, South Korea and Taiwan in developing SMI technology right from the beginning.

The shortage of technologists, managers and industrial leaders has made the situation worse, not to mention the serious mismatch between the supply of labour and the requirements of the industries. The country's manpower planning and implementation seem not unrealistic, because the failure in the industry reflects the failure of the total system.

To react to and compete with Japanese MNCs, American and Western MNCs have been encouraged to create new management practices (Ackroyd 1988; Oichi 1988; Kanter 1983). The developed countries also open their economic territories to Japanese MNCs, hoping that they will transfer their best management practice to them (Milkman 1991; Oliver & Wilkinson 1992; Popham 1995). They have been encouraged to learn and absorb the 'best' Japanese technology and management practices since the 1980s.

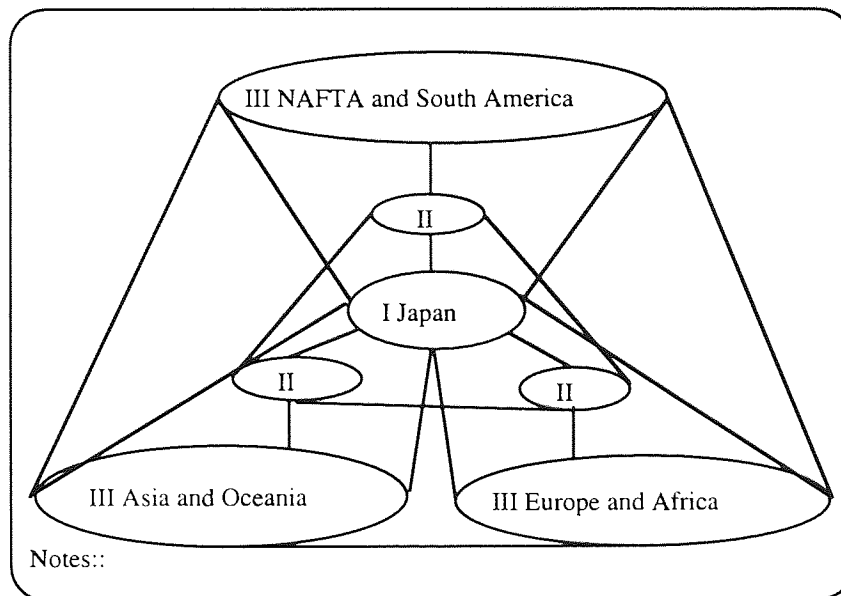
There have been some successes in those attempts, (Ackroyd et al. 1989; Oliver & Wilkinson 1992; Anderson Consulting 1992; Florida & Kenny 1993), but not always and not everywhere (Smith, J.M. 1986; Wong 1990; Milkman 1992; Dedoussis & Littler 1994; Schütt 1994; Elger & Smith 1994). The reasons are twofold. Those who succeed in implementing the Japanese management are normally aided by strong management capability (Kumon 1994), the nature of the technology and the willingness to transfer (Kenny and Florida 1995), and the size of the company (Florida & Kenny 1991).

The Japanese transplants in countries such as the UK, America, Australia, Singapore, Thailand and also in Malaysia transferred their technologies selectively so that all these transplants will be technologically and technically dependent on parent companies in Japan (see also Henderson 1989; Nester 1990; Baba & Hatashima 1995). In the beginning, many off-shore transplants were operated as a simple assembly process. There have been a few technological upgradings but only for low-end consumer electronic products (Baba & Hatashima 1995). For maintenance and innovative R&D, these plants still have to go to Japan. In the case of PROTON and PERNEC, the designs of the products need to be approved in Japan.

During the colonial period, the developed economies acted as capital and technology providers and manufacturers, and the developing economies acted as raw material suppliers and consumers (Dicken 1992; Tolentino 1993). After the Second World War, the picture changed. The United States supplied the capital and technology, Japan supplied mass consumer and capital goods, and Southeast Asia supplied raw materials in a 'triangular trade' (Nester 1990). The developing countries were also known as 'peripheral economies' because they did not have the capacity to produce the technological core of the industry (Henderson 1989).

The theory of international production through MNCs which developed in the 1960s says that: 'These transplants are more competitive than the local (host) companies but less competitive than the parents in Japan' (Tolentino 1993:21). Japan is able to establish and organise business networks between off shore miners in Africa; with off-shore simple assemblers in ASEAN, California, Australia and Scotland; with several regional headquarters (in Singapore, UK, California, and Brazil); and their headquarters in Japan. They are bringing the whole globe into the "Japanese Web", as depicted in figure 9.1

Figure 9.1: The Japanese Web



Therefore both technological and economically, Malaysia is dependent on Japan. Many countries became trade-dependent on Japan, and many more will follow soon.

The theoretical side of this research was based on Japanisation theories popularised by Ackroyd et al (1988), Womack et al. (1990), Florida & Kenny (1991) and Oliver & Wilkinson (1992). However, the debates on the transferability of Japanese management were based on the work of Smith, J.M. (1986), Wong (1990), Elger & Smith (1994), and Dedoussis & Littler (1994). This research, however would like to extend the definition of Japanisation process into a total commitment by the Japanese (human and non-human) to the socio-economic development and industrialisation process of any country. As these countries are technologically and economically weak, this will lead to a high degree of dependency of the host firm/country on Japan's technology, managerial/technical skills, material and capital supplies. For example, 30 per cent of PROTON's cars parts by value and 90 per cent of PERNEC switches' parts are imported CKD parts from Japan. Most of the machinery, jigs, tools are also imported from Japan. Not only the ventures but also the country's trade is yen dominated.

The hegemony of the Japanese does not stop at one particular firm and country. They have continuously expanded and spread their capital investment, technology, experts, organisation, and agencies globally. They locate strategic planning and decision-making at Tokyo (as headquarters), and have they established a few regional headquarters to coordinate procurement-marketing-labour deployment (such as Singapore, UK, Germany, France, California). They transfer out their production plants, trading

corporations, bank, financial and insurance corporations to foreign soils. All these movements have been strengthened by their ODA loans and grants, volunteers, charities and humanitarian donations under the banner of United Nation aid. The yen dominates the International Monetary Fund as the main source of world industrial development loans. In the end, many rich and poor nations are trapped in trade deficit and indebtedness to Japan.

From the experience of Japanese management transfer, the research suggests that the transfer of any organisational and business management technology shouldn't be looked at from the supply side only. Both the supply and the demand side must be taken into consideration.

Both short and long-term assembler and supplier relationships (Sako 1992; Oliver & Wilkinson 1992; Dyer & Oishi 1993; Kanter 1994) are present in Malaysia. But there are what I called multipolar relationships, which exist within PROTON and its vendors. First, there are long term and close relationships with newly created and highly dependent vendors. Second, there are long term relationships with old and established but independent vendors. These vendors are normally Japanese-related. However, joint efforts with these vendors are limited to sourcing, production, quality and human resource matters only. There is a lack of joint R&D activities and information exchange efforts between suppliers and buyers. Third, although they are newly created, but because they are non-Japanese related vendors, their relationships are arm's-length and work independently from PROTON. However, these vendors are still get their orders through commissioning rather than open tender bidding.

The study also suggests that there are peculiarities in the field of labour-management relationships in both cases (PROTON and PERNEC). The employees have been developed not only in terms of knowledge and skills, physical and health, but also in terms of values or religious aspects. From the data gathered, through these programmes they are building up responsible, productive, motivated, sincere and creative managers and employees. These programmes educate everyone in the factory to treat his or her work in the factory as a form of general worship or good deeds, which will be rewarded in this world and hereafter. This will affect their work behaviour and labour-management relationships. However, these value or religious programmes were not optimised properly because they were not systematically designed, evaluated and improved from time to time. There is also a need to research how this programmes are linked to productivity and quality levels. Another implication of the research is that the functions of industrial relations staff have moved from curing grievances and disputes

to preventative measures, that is, providing a conducive organisational environment covering physical, moral and religious facilities.

The intention of Malaysian strategic alliances to learn and absorb soft technology from Japanese partners has been marginally realised. This is mainly due to the lack of awareness within management teams that this soft technology has to be learned in order to be able to develop Malaysia's own technology and to operate independently in the near future. It is also partly due to the reluctance of Japanese experts to transfer and develop this soft technology in the alliances. Although both parties are equally important in achieving the transfer, the commitment and the capability of local managers to learn is considered most crucial. From the beginning, firms from developing countries should have their own agendas on technological development, rather than relying on the foreign partners, if at the end of the day the objective is to be technologically independent. Foreign partners may assist, but it is not for free.

The alliance companies have to realise that MNCs from developed countries have come with global aims and strategies. As soon as they form alliances with them, they are brought into the map of the 'New International Division of Labour' (Hymer 1974). There are two possible outcomes. First, if the firms remain technologically weak, if they are not interested in learning or if no technological innovation takes place (Lall 1992), the new firms are technologically chained, and the country will be caught in a trade web and financial trap i.e. trade deficit and indebtedness, as shown in international trade and investments and the effects on balance of payment (Vernon 1966, cited by Tolentino 1993, also in Chang (1981).

However, if these firms are technologically developed and become stronger, there are new products, methods of production, markets, source of supplies and new organisation (Schumpeter 1976), because they are innovators and emulators. Therefore technological hegemony and trade surplus have moved from the hands of European countries (1914) to America (1950s -1960s) to Japan and Europe (1970s-1980s) and are currently shared by Third World Countries (Dicken 1992; Tolentino 1993). This 'life cycle is a dynamic process' and will transfer to those who strive for it. The research revealed that both alliances fall into the first category of the technologically weak and therefore technologically chained.

The formulation of industrial policies and strategies, so far, has been able to accumulate an inflow of foreign investment and low-end, simple technology. However it cannot create a conducive environment for Malaysia's own technology to be created and developed, because there is a lack of instruments to nurture SMIs technological

development and a failure to link with MNCs from the beginning. The 'self-help' strategy which was supposed to be held from the beginning must be nurtured urgently. Malaysia must look internally as well as looking to the East and the West, because it is very difficult to find a sincere partner in materialising technological development through MNCs, although there are indications that American companies are more open to transferring technology than the Japanese (MIDA 1994).

Related to this research, there are some potential studies that can be explored in the future, at either macro-country or micro-firm level. At the macro level, there is a need to have more comprehensive research of 'regional Japanisation' in other parts of the developing economies, especially in Africa, South America and other parts of Asia .

At the micro-firm level, there is a need to study the convergence (differences/similarities) of management style in MNCs experienced by different ethnic dominated firms, in different regions. There is also a need for an in-depth study on the influence of culture and values in the technological learning process in different companies (e.g. Motorola and Matsushita and Sapura). Since there are defects and weaknesses in current industrial and organisational management practices, it is high time to have an in-depth study and to establish alternative ways to develop industrial technology management, together with entrepreneurial and managerial capabilities, at least suitable for Malaysian interests if not for the whole world.

The transfer of JST is taking place within PROTON and PERNEC, but at a very slow pace. Both cases show there has been little effort to learn JST. There has been a lack of commitment and demand in managerial teams in creating a conducive environment for workers to practise JST. Not all aspects of JST are suitable for the Malaysian industrial climate and Malaysian culture, but the managers and top management forget to evaluate and plan the acquisition of good management techniques systematically from the beginning.

The practice of JST in Europe has been seen by some as a failure not because of workers, but because of a lack of management support. As Gill puts it:

The evidence of case studies and surveys suggests that QC programmes often fail not because of employee or trade union opposition, but because of lack of management support, the poor response to circle initiatives from management, a close management style, and lack of recognition given to circle activities. Gill 1993:12

Malaysia shouldn't be in the state of '*seperti enau dalam hutan yang melepaskan pucuk masing-masing*' (as the palms in the forest, individually growing their own leaves) which will end up with a collective failure. As stated by Trevor:

What the Japanese were searching for in the United States and elsewhere was good management and production techniques that work, which they adapted brilliantly to their own social situation. The encounters between British and Japanese managers described in the case studies show how different the social conventions and ways of thinking remain; but the British managers interviewed, who are more individualistic than their Japanese counterparts, such as the British manager at Leisure Goods Company who 'would not kow-tow to anybody', have not in some way lost their 'British' character by getting to grips with techniques of good management that Japanese managers have been successful in applying.

It is a mistake to look for the 'secret' of Japanese industrial knowledge in the sense of a 'quick fix'. But it is necessary to look at the essential knowledge, which in some cases we have know but neglected or forgotten, and find out how to implement it in a way which is practically possible in the present situation. As the Japanese have shown, the two 'sides' of software' and 'hardware' are in reality two aspects of the same question.

Trevor 1985.107

In my final analysis, if Malaysia wants to have its own technology and to contribute to world civilisation, Malaysians have to work hard themselves. Foreign MNCs are there to assist but Malaysians cannot totally rely on them to work for Malaysia.



Aston University

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A study on management practices in Malaysia

As a doctoral student at Aston University, Birmingham, I am undertaking a study of "the transferability of Japanese management practices within manufacturing industry". At the same time I am working with the National Productivity Corporation (NPC), P.Jaya.

It is more than ten years since the implementation of the Look East Policy (LEP) in 1983, and it would be advantageous to know whether the Japanese work culture and management practices are really being implemented within Malaysia. I am interested in examining the barriers and opportunities for transferability.

My study will involve interviews, observations and document searches within relevant departments from the months of April to July/ August to October of 1994. The areas of study will include Japanese methods of production, human resources management, quality control, industrial relations and supplier network relationships.

The objectives of my study are to learn the current management practices in Japanese-Malaysian joint-ventures, and to see the degree of transferability and adaptability of management practices.

I am selecting a number of companies to test my ideas, and I would greatly appreciate your company participating in this research. Your company seems ideally situated to examine the issues involved in my research and I sincerely hope you will be able to assist me in my aims.

I have deliberately selected your company as a potential case study not only because of your performance and contribution to industry and economy, but also because I believe I could learn from your company. The research findings will be made available to you and there should be mutual benefit to you in the process.

Should you want more information on the project I would be willing to supply answers. I appreciate the difficulties of granting open ended access without an interview and I would like to request an interview with your company when I return to Malaysia in April/ August 1994.

I am looking forward to hearing from you soon.

Thank you very much.

Yours sincerely,

Awang bin Musa.
Aston Business School,
Doctoral Programme-South Wing,
Aston University, Birmingham B7 4ET, UK.

Semi-structured questionnaires

Top management group.

Appendix 3a

Part I: General Policy.

1. Why did you take MMC/ NEC as your partner?
2. What did you expect to get out of this joint venture?
3. What are your strategies to ensure you get what you want from them?
4. What are your alternatives if you can not get what you want from them?

Part II: Current management practices.

5. What aspects of Japanese work organisation and management practices have you adopted so far?
6. How do you learn and practise their work culture and management style?
7. Do you take them 100 per cent, why?
8. What are the barriers to the transfer?

Part III: Future corporate planning.

9. When could this company will be an independent manufacturer?
10. What are the current plans and strategies to achieve that?
11. In Japan, in order to strengthen the competitive advantage of the company, they not only apply the best manufacturing methods and take care of their workers/ customers/ suppliers, but also own some shares in their distributors and suppliers. What about this company?
12. With the strength this company has, how could this company materialise business expansion for overseas opportunities?
13. Do you want to add anything concerning Japanese/ European/ US - Malaysian joint ventures, as a strategic way to acquire their technologies?

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

Manager.

Appendix 3b

SECTION A: RESPONDENT BIODATA.

1. Age:.....
2. Sex: (female or male).
3. What is the department/division you are in? (production, quality, Corporate Planning, finance, human resources, industrial relations, administration, business, procurement, vendor, other).
4. Nationality (Japanese or Malaysian)
(Overall, what is the dominant nationality?)
5. If Malaysian, what is your ethnicity? (Malay, Chinese, Indian, Other)
(Overall, what is the dominant ethnicity ?)

SECTION B: EDUCATIONAL BACKGROUND.

6. What is your educational background?
7. Further training. Please give details of any special training which you have participated in. [Type of training Length Place (overseas/local)]

SECTION C: JOB HISTORY.

8. Did you work in industry as soon as you left school/college/university?
(Work with government first/ No training/ Trainees)
9. Could you explain your career to date ?
(Job title/ responsibilities Duration Agency/Company State/Country)

SECTION D: JAPANESE MANAGEMENT TRANSFER AND ADAPTATIONS

10. Can you explain to me your current working system (flexible manufacturing/ total quality management, human resources management and development/ labour-management relation/ supplier-buyer relationships)*?

11. Is your current working system adopted from MMC/ NEC of Japan?
 12. Do you think it is the best method of working available in the markets?
 13. What was the process changed in terms human resource, machines i.e. technology, materials and methods of production, for PROTON (since 1980s), and for PERNEC (since 1970s)?
 14. How much of the elements of Japanese flexible production systems is adopted, and how was it has been transferred? *
 - 14.1 To what extent is the just-in-time production process practised?
 - 14.2 Do you apply *kanban* inventory control in your parts supply system?
 - 14.3 Zero inventory is very famous in big Japanese firms, what about this company?
 - 14.4 How many product models can be produced from your productions line?
 - 14.5 How many parts and components are supplied direct to production lines, what are their frequencies?
 - 14.6 Are your machines flexible enough to produce varieties of models?
 - 14.7 How many per cent of your parts and components can be applied to different models?
 - 14.8 Are all the simple graphics works instructions of Japanese origin?
 - 14.9 Where and how far do your workers utilise the statistical process control mechanism?
 - 14.10 Do your staff have multi-skills, do you have a plan so that your workers will have certain skills by certain times after joining your work station?
 - 14.11 Are your workers rotated daily or weekly, can you explain?
 - 14.12 Do you transfer your workers to different work stations? How frequently? If not why not?
 - 14.13 How are the machines are grouped?
 - 14.14 Who designs the products and approv the designs?
 - 14.15 Are your products and mould & dies designed concurrently?
 - 14.16 To what extent are these Japanese shop floor working tools practised here: 5S, 3M, 5 why?, PDCA, morning meetings, and the use of the standard operating manual (SOP)?.
-
14. How much of Japanese Company-wide quality control is adopted, and how it was transferred? *
 - 14.1 Do you have an organisation to look after the total quality management system in this company?
 - 14.2 Can you explain to me what is your company's quality policy? Is it documented and disseminated to all workers?
 - 14.3 Do you have continuous productivity and quality improvement activities or *kaizen*, and is it company wide?
 - 14.4 Do you have *kaizen* offices where QCCs activities and meeting take place?
 - 14.5 How many quality circle have you, is their size equal, what is the average membership?
 - 14.6 What is the participating rate of manufacturing employees and total employees in QCCs?
 - 14.7 How many times does the circle meet in a week or month, and is it after working hours?
 - 14.8 Do the circles do it voluntarily or because it is enforced by the management, could you please explain?
 - 14.9 Can you elaborate on the quality check at parts arrival, work-in-process, and final process points?
 - 14.10 Between repair works on line and in repair-bay, which one is done more?
 - 14.11 How far has building quality together been practised by all workers and your suppliers?
 - 14.12 Can you explain about quality awards system and convention in this company?
 - 14.13 Do you also participate in national and international quality circles conventions?
 - 14.14 What are the other motivational programmes for developing quality culture in organisation?
 - 14.15 Do you have company wide quality education?
 - 14.16 How do you train your quality facilitators?
 - 14.17 What are the problems which have been hindering the QCC movement in this company?
 - 14.18 What are your suggestions to improve it?
-
14. How much of elements of Japanese high-cost of human resources management has been adopted, and how it was transferred? *
 - 14.1 In the first place, what is your commitment towards your employees?
 - 14.2 Can you explain your human resources organisation and policies?
 - 14.3 Do you have a clear career development path for your employees?
 - 14.4 Do you have long-term organisational education programmes for all employees and how much is your budget?
 - 14.5 Can you explain your human resources training and development programmes, and how Malaysian ones are different?
 - 14.6 Do you have a classless society (one uniform for everyone, single canteen, one car park) in this company?

- 14.7 At Japan, they practise single work entry, what about your company. Can Malaysia have only one job entry, why?
- 14.8 How many job classifications do you have?
- 14.9 Does the company recruit new workers fresh from college and university. Can you explain the recruitment system?
- 14.10 How do you work with those respective colleges and universities for the intake?
- 14.11 Does the company prefer internal promotion or from the market?
- 14.12 What is your promotion system, and is it based on merit or seniority?
- 14.13 Can you explain your job performance appraisals?
- 14.14 Do you have a written policy on job transfer and cross-training for acquiring multi-skills among your workers?
- 14.15 How frequent and for what purpose are your workers transferred?
- 14.16 Can you explain to me the spirit of working together within departments and managers?
- 14.17 How far are Malaysian workers and managers like the Japanese?
- 14.18 On average at what time do managers clock in and clock out and spend time in factory compared to Japanese experts?
- 14.19 How frequently do you communicate with the Japanese experts?
- 14.20 What are the facilities and benefits provided by the company to workers?
- 14.21 Can you brief me on the turnover rate of different groups of workers? Why do they leave the company?
- 14.22 How many per cent of engineers are in management teams?
- 14.23 From your observation what is the job function of Japanese experts in this company?
- 14.24 Can Malaysia develop its own technology. How?

14. How much of these elements of Japanese harmony labour-management relations has been adopted, and how it was transferred? *

- 14.1 Are your workers unionised? If so is it company wide? If not, in what form they are organised, and how do you communicate with them?
- 14.2 Historically how was the union formed?
- 14.3 What is the function of the industrial relations section?
- 14.4 What are the programmes formed in order to achieve those objectives and functions?
- 14.5 How much budget have you been given for that?
- 14.6 So far has there been any strike or lay-off, and how did you manage it?
- 14.7 Can you explain how do you conclude your collective agreement on term of works?
- 14.8 In what way has Japanese consensus decision making been practised in this company?
- 14.9 Can you explain the grievance handling system in this company?
- 14.10 Are labour-management relationships co-operative rather than confrontational?
- 14.11 Can you explain to me your open suggestion system, how you organised it, what are the rewards given to workers?
- 14.12 Do you think you have been communicating and treating your workers as the Japanese have been doing?
- 14.13 Has a joint council committee (JCC) between workers and management been established. Is it still active?
- 14.14 How many times do you have meetings with the union and normally what are the issues discussed?
- 14.15 Normally who attends those meetings?
- 14.16 Do you have any comments on the existing benefits and treatment given to your employees?
- 14.17 Can you explain to me the working hours system (daily, weekly, monthly and yearly), and do you discuss this with the union?
- 14.18 When do you pay their salary?
- 14.19 Do you want to comment on the interrelationships between productivity and pay increase?

14. How much of these elements of Japanese long-term closed supplier-buyer relationships has been adopted, and how it was transferred? *

- 14.1 I was informed that your section is dealing with the development of the company's vendors or subcontractors. Is it true?
- 14.2 What are your functions and activities?
- 14.3 Do you have a written policy on the development of vendors?
- 14.4 In total, how many vendors are dealing with you, where are they located and what are their profiles?
- 14.5 Do you have some share in your suppliers' equity, why? Do you want to have it/ to increase it?

- 14.6 Do you work together right from products design to parts and component delivery, helping and developing the vendor rather than terminating them?
- 14.7 Do you practise single and dual sourcing rather than multiple sourcing?
- 14.8 How do you place the orders with your vendors, by commissioning or open bidding?
- 14.9 Do your product design engineers and suppliers' designers work together closely right from the beginning?
- 14.10 Can orders be placed verbally and how frequent is it?
- 14.11 How is the price of the parts and components determined by you and your vendors?
- 14.12 Do you have mutual (periodic or random) visits of officers and also staff stationed in suppliers' factories or your plant. Can you give examples (how many engineers stationed for how many vendors for how long)?
- 14.13 Can you details the reasons they have been dispatched (either to improve quality, cost, delivery performance, information sharing, R&D, periodical meetings).
- 14.14 Are you responsible for creating and developing your own vendors?
- 14.15 Do you continuously upgrade the competitiveness of the supplier by having continuous training and development programmes and yearly award systems to the best supplier?
- 14.16 Can your explain to me the frequencies of the suppliers' delivery of parts and components (hourly, daily, weekly, monthly etc.)?
- 14.17 Can you explain to me how you order and receive supplies of CKD parts from Japan?
- 14.18 In monthly vendor meetings what are the agendas discussed?
- 14.19 Did you set up the plant based on JIT supply system and JIT city concept? If yes, what is the achievement. If not, why, what is your suggestion for future plan?

14. How much other Japanese organisational practice in corporate planning, management information system, business and marketing, R&D adopted, and how it was transferred? *

- 14.1 Hierarchically, how many layers does a worker have to go through in order to rise to the top?
- 14.2 Are information and data useful when utilised in decision making, long term planning as well as formulating strategies to compete competitively?
- 14.3 What is your product's (model) life cycle?
- 14.4 Historically what main research and development activities have taken place from the beginning until now, when Malaysia can design and manufacture its own car and telecommunication equipment?
- 14.5 Japan *keiretsus* normally have their own corporations to market their product throughout the world, what about this company?
- 14.6 Do you open new assembly or manufacturing plant in new country with a team of vendors or a lone?
- 15 What are the problems your encounter in your work? (with workers, technology, Japanese experts, top managers, others)
- 16 What are the factors that affect the Japanese management transfer processes (within and outside organisation)
- 17 Do you know whether this company has had its own 'Japanese management techniques acquisition plan' from the beginning?
- 18 May I know your future planning and suggestions?

* These questions were given to different managers according to their related area of management.

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

SECTION A: RESPONDENT BIODATA.

1. Age:.....
2. Sex: (female or male)
3. What is the department/division you are in?
4. Nationality? (Japanese or Malaysian)
5. If Malaysian, what is your ethnicity? (Malay, Chinese, Indian, Other) (Overall what is the dominant ethnicity ?)

SECTION B: EDUCATIONAL BACKGROUND.

6. What is your educational background?
7. Further training. Please give details of any special training which you have participated in. [Type of training, Length, Place (overseas/local)]

SECTION C: JOB HISTORY.

8. Did you work in industry as soon as you left school/college/university?
(Work with government first/ No training/ Trainees)
9. Could you explain your career to date ?
(Job title/ responsibilities Duration Agency/Company State/Country)

SECTION D: JAPANESE MANAGEMENT TRANSFER AND ADAPTATIONSGENERAL

10. Can you tell me your duties and responsibilities?
11. Do you think the way you are running your job is a Japanese way, which you learned from them?

MANUFACTURING/PRODUCTION PRACTICES*

12. What are the stages of work processes involved in your department?
13. What are the machinery and tools used?
14. How do you receive and schedule the coil?
15. What are the model and the capacity of the machinery used?
16. Are you using the best models and methods of work? (CNC, CAD, CAM, CIM, Robotics, etc)
17. How much 'team work' do you have?
18. Are they multiskilled workers?
19. Are they cross-trained?
20. Do you have to stock your parts/ raw materials a few hours/ days/ weeks/ months before you use them?
21. Do you pass over your output immediately to the next manufacturing process?

COMPANY-WIDE QUALITY CONTROL*

22. Is your department involved in quality movement and productivity improvement programmes?
23. How many QCCs do you have, and are they still active?
24. Could you state the quality policies of the company?
25. Are these QCCs voluntarily organised?
26. How many hours per day/ week/ month do they spend in QCCs activities outside of working hours?
27. Do you think QCCs activity is highly motivated?
28. Have *kaizen* and zero defect concepts been imparted, and have these concepts become a way of life for everyone?
29. Do you think that you are already moving out from the stage of quality inspection?
30. Can you name some problems in implementing quality as a way of life?
31. What are your suggestions in order to bring quality as a way of life into existence?

PARTICIPATIVE MANAGEMENT*

32. How do you go it about if you have ideas to improve your jobs?
33. Do you think everybody is interested in having a suggestion systems in this company?
34. Do you have a regular and open dialogue with top managers?
35. Do you have regular meetings and open dialogue with employees?
36. Have you and your subordinates ever been asked to make suggestion, to comment, to give opinions on any plans by your top managers?

37. How far is total preventive maintenance practised here?

THE WELFARE AND THE DEVELOPMENT OF HUMAN RESOURCES*

44. Do you agree that the productivity of workers and the quality of products is very much dependent on how are employees treated?
45. Do you believe in the importance of close relationships between industry-government-university. Do you have any plan to prepare your future workforce with any university/institute/college?
46. Many successful companies are satisfying both external and internal customers. What about this company ?
47. What is the main problem with the multi-skill development of your employees?
48. Do you face any difficulty in hiring workers direct/fresh from colleges/university?
49. Does local colleges/institutes/universities supply the workforce you need?
50. How far does this company is avoid laying-off workers?
51. Do you have any comments on work and reward between individual and group workers?

LABOUR-MANAGEMENT RELATIONSHIPS*

52. Do you consider your workers as a family members or an ordinary factor of production?
53. Do you welcome any moves to establish many unions in this company? Why?
54. From previous experience, have you had any clash with union/workers that brought you to court? (See also between company with customers and suppliers)
55. Can you explain your open communication systems between management and workers?
56. Is there any such thing as 'consensus decision-making' between management and workers in this plant?(On strategic issues.....design jobs specification.)
57. Many companies try to harmonise their relationships through labour-management joint consultation or company council. What about this company?
58. So far there have been no disputes/strikes and no big complaints from your workers. Do you think it is due to 'management care' and 'employees are satisfied'?

OTHERS.

59. How far are the management groups interested in transferring the best of the technology into this plant and Malaysia?
60. How far do the employees benefit from the success of the company?
61. Does this company succeed in changing the environment to meet its needs?
62. From your experience, what are your suggestions in order to improve the productivity and the competitiveness of this company? (technological transfer & development; employees-training & development, remuneration & welfare; supplier network; government hand)

Note: * Separate questions given to different assistant managers according to their related area of management.

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

SECTION A: RESPONDENT BIODATA.

1. Age
2. Sex: (female or male).
3. What is the department/division you are in?
4. Nationality (Japanese or Malaysian)
(Overall, what is the dominant nationality?)
5. If you are Malaysian, what is your ethnicity? (Malay, Chinese, Indian, Others)
(Overall, what is the dominant ethnicity ?)

SECTION B: EDUCATIONAL BACKGROUND.

6. What is your educational background?
7. Further training. Have you been trained by Japanese?. Please give details of any special training which you have participated in. [Type of training, Length, Place (overseas/local)]

SECTION C: JOB HISTORY.

8. Did you work in industry as soon as you left school/college/university?
(Work with government first/ No training/ Trainees)
9. Could you explain your career to date ?
(Job title/ responsibilities, Duration, Agency/Company, State/Country)

SECTION D: JAPANESE MANAGEMENT TRANSFER AND ADAPTATIONS.

10. Do you receive any clear instruction from the management to learn the Japanese ways of working and supervising?
11. Can you tell me your job functions and responsibilities?
12. How do you organise your work within your section?
13. Have you and your team been given opportunities to give suggestions to improve company's performance?
14. Are you and your workers responsible for producing quality output?
15. Can you explain how do you organise your QCCs activities in your team?
16. Do you really have a set of flexible machines and a group of multi-skilled workers in order to produce many product models?
17. Are your subordinates given enough training? Do you have and agree with the idea of cross-training system?
18. What do you think is the main reason for high turnover of production workers, and how to overcome it?
19. Are there any complaints from your workers that they are underpaid?
20. From your evaluation, how far do people here work like the Japanese, and in what ways?
21. What are the different of working styles between Japanese and Malaysian managers?
22. Do you learn a lot of things from Japanese experts, and how?
23. Do you feel that Malaysian should work and live as Malaysian?
24. What is your suggestion in order to improve the productivity and quality of working life in this company?

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

A. RESPONDENT BIODATA.

1. Age:
2. Sex ? (male or female)
3. How many years have you worked for your current employer?.....years
4. How many companies have you worked for?
5. Your total working years?....years
6. What type of union does your company have ? (craft, industry, national, enterprise, others)
7. Position in union (committee members or common membership)

**B. THE IMPLEMENTATIONS OF ENTERPRISE UNION, CONSENSUS
DECISION-MAKING, and HIGH-COST OF HRM.**

8. Can you tell me the history of the union in this company? (the initiation of union)
9. From your experience, does the union play a significant role in improving the wellbeing of workers of this company? (to see the importance of union)
10. The relationships between union with management are very close and helpful. How far is this true? (attitudes of management toward union)
11. Can you tell me about the facilities provided by the company to workers? (Staff cafeterias, company housing, commuter buses, medical treatment, sports facilities, locker rooms, company uniforms, others (status, problems and prospects).
12. Is the union involved in the strategic decision-making and planning process of the company?
13. How often does the management call union for discussing ways of improving productivity in your company?
14. Do you support the plan of the management to have flexible worker teams?
15. What is the most important way of expressing any complaints or suggestions about your company? What is your comment on these modes of communication?
(labour-management council/joint consultation, suggestion (box) system, open yearly/ quarterly/ monthly dialogue with management, collective bargaining).
16. How seriously are complaints and suggestions taken by management in your company?
17. Do you feel workers are loyal to the company. Why?
18. Can you describe the practices of each items below, and give your comments on each. (in-firm promotion system, seniority-merit wages system, reconciling human relations between management and workers, continuous, cross training system, retirement benefit scheme, wage (bonus) incentive scheme, housing scheme, vehicle loan, personal loan, other).
19. What do you do, if you have ideas to improve your organisation. Do you go to discuss them with union leaders first or your supervisor ?
20. How well do you know your company's financial and management conditions?
21. How do management communicate their proposed reward systems, policies, plan & strategies, procedures, or any changes to workers? (Company leaflets, presentation meeting, in training programmes, circular letters, labour-management meeting).
22. Do you think these activities are a benefit or a burden to workers? (quality circle, just-in-time production schedule, kanban material control, zero-defect, *kaizen* i.e. continuous improvement, productivity movement, quality campaign, Company-wide quality control).
23. How do you know whether your company are more concerned with people or profit or both. Give examples?
24. We should have more joint ventures and other multinational companies, so that our economy can be developed faster. Do you agree?
25. How do you think this company should be managed, Western or Japanese or Malaysian way? Please explain.

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

SECTION A: BIODATA DIRI (RESPONDENT BIODATA).

1. Umur
Age:.....
2. Jantina
Sex: (female or male)
3. Jabatan anda bertugas
What is the department/division your are in?.....
4. Lama anda berkhidmat
Years of service:.....
5. Jawatan
Position:.....

SECTION B: AMALAN PENGURUSAN (MANAGEMENT PRACTICES).

1. Pada pendapat anda, apakah kesan baik dari penggunaan otomasi terhadap pekerja?
From your opinions, what are the positive effects of automation applied to workers?
2. Pada pendapat anda apakah kesan buruk dari penggunaan otomasi terhadap pekerja?
On the other hand what are the negative impacts of the automation process?
3. Bolehkah anda menerangkan bagaimana anda dan rakan-rakan bermasyuarat dan berbincang dalam kumpulan kawalan mutu, adakah peruntukan masa dan ganjaran yang disediakan oleh majikan memuaskan?
Please explain how do you organise your circle meetings and discussions. Are you satisfied with the time and rewards provided by management?
4. Adakah anda bertukar tugas setiap hari atau minggu. Terangkan sistem bagaimana anda ditukarkan tugas oleh penyelia anda selama ini, adakah ianya sesuai?
Are you rotated by your supervisor on a daily or weekly basis? Please explain to me the job rotation system applied to you. Are you satisfied with it?
5. Apa pendapat anda untuk memajukan organisasi?
What is your suggestion to improve the situation in the organisation as the whole?
6. Kenapa anda setia bekerja, adakah masa depan anda cerah dengan organisasi?
Why you still loyal to the organisation? Do you think your future is bright here?
7. Apa pandangan anda, syarilat telahpun menyediakan segala keperluan dan kemudahan untuk pekerjaanya. Maka tidak perlulah pekerja menubuhkan persatuan pekerja PERNEC.
Since company provide good salaries, many facilities and benefits, it is not necessary for workers to have a union in this company. Do you agree?
6. Kumpulan kawalan mutu tidak aktif dan kemajuan yang berterusan sukar di laksanakan di sini, kerana ramai pekerja tidak berminat dan tidak memahami apa maksud dan tujuannya. Adakah ini betul?
Quality control circles have not been active and the continuous improvement process is difficult to implement because many employees are not interested, do not understand the concept and the purpose, and can not see the benefits of it. Is it true?

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

SECTION A. SUPPLIER BIODATA.

1. Do you supply your products to PROTON/ PERNEC?
2. How long have you been supplying to PROTON/ PERNEC?
3. What are the part (s) you supplies to buyer and what are the value added and proportion to final products? [Part, value added, proportions (%)]
4. Can you explain the nature of contracts with your buyer?
5. Does PROTON/ PERNEC own some shares in your company, and how much?
6. Do you have to stock much raw materials and finished parts so that you can meet the just-in-time requests from your buyer?
7. Do you have warehouse(s) close to the buyer?
8. How far is your warehouse(s) located from buyer?
9. How far is your factory/company from buyer?
10. What is your average delivery to buyer?

SECTION B
SUPPLIER-TIER RELATIONSHIPS

11. Generally how do you feel about your relationship with your buyer?
12. How frequent are the visits by an engineer from your buyer, or maybe your final assembler, to your plant?
13. What are normally the reasons they visit your plant? (To help in design of the product, purchasing of machine/equipment, solve quality problems, fixing/repairing, maintenance of the machine, production line problems, design and construction of the plant, purchasing of materials, personnel problems).
14. Do you have any comment on their visits? (product design, purchasing of machine and equipment, quality problems, fixing/repairing/maintenance of the machines, production/ manufacturing problems, design and construction of the plant, purchasing of raw materials, personnel problems, do your assembler or buyer helpful in your relationship with your suppliers?)
16. Do you send your engineers/ staff to your suppliers as your assembler did for you? (to help in design of the product, to help in purchasing of machine/ equipment, to solve quality problems, to help in fixing/ repairing/ maintenance of the machine, to help in production line problems, to help in design and construction of the plant, to help in the purchasing of materials, to help in personnel problems, others)
17. Do you have any comment on these services? (product design, purchasing of machine and equipment, quality problems, fixing/repairing/maintenance of the machines, production/ manufacturing problems, design and construction of the plant, purchasing of raw materials, personnel problems, others)
18. Do you have any other customer(s)?
19. How many of them, and what is the percentage of the sales distributed among them?
20. Are they from a different industry?
21. Do you think your business will collapse as soon as your existing buyer and assembler (PROTON/ PERNEC) collapse'?
22. How do you get the order (s) from buyer/assembler? (through bidding or commissioning).
23. Is the contract (s) of supplying always written or not?
24. Do you start production of parts/products even before you receive a written order?
25. When do you settle the price of your supplies?
26. From your experiences, were there any inspections of parts on every delivery?
27. How do you send your parts to your buyer? (Plant-warehouse-direct to the assembly line or to purchasing department?)
28. How many times have you failed to fulfil your supplies to your buyer/assembler?
29. How many times has your buyer/assembler delayed the payment to you?
30. What unfair practices do you experiences with your buyer/ assembler?
(refusal to receive delivery, delaying payment, discounting payment after price has been agreed, forced price reduction, forcing to pay in advance for material supplied by parental firm etc.)
31. Can you explain how you manage to solve these disputes with your buyer/assembler?
32. Do you think there is a need to have a legislative body or an agency to look after these matters. How should it function?

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

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1. Can you explain to me how vendors supply to PROTON/ PERNEC?
 2. What are the forms of help and facilities given by PROTON/ PERNEC? (manufacturing systems, quality management and control, production design-process, human resources development, R&D, plant maintenance, etc.)
 3. What are the Japanese working techniques practised by vendors?
 4. What are the main barriers to the JIT supply of parts to assembler?
 5. How far has the objective of the association has been achieved?
 6. How do you perceive the long term and close relationship between vendors and assembler?
 7. Are there any cases where some vendors' payment has been delayed?
 8. Do you think assembler-vendors relationships need to be improved? (JIT, TQM, MRP, TPM, etc).
 9. Could you explain the status of help given by Japanese experts to vendors?
 10. Do you want to say something about the assembler-vendor, and also Japanese-vendor relationships?
 11. What is your opinion on how to improve the relationship between assembler and vendors?

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

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1. Is it your first time working outside Japan?
 2. What are your duties and responsibilities in this company?
 3. How do you transfer your knowledge and experience to your Malaysian counterparts?
 4. What is the intention of having this joint venture?
 5. Are both Japanese and Malaysians interested in technology transfer. What is your comment?
 6. What is your comment on the supply and the development of these elements in Malaysia? (labour force, capital, raw materials, technology, infra-structures etc.)
 7. What are the problems with Malaysian workers and managers in learning and adapting Japanese work ethics and management style?
 8. What is your suggestion to improve it?
 9. What are the differences and similarities between Japan and Malaysia about this aspects; human resources management and development, manufacturing systems, industrial relation, vendor system and others.

TERIMA KASIH DI ATAS KERJASAMA ANDA
THANK YOU FOR YOUR CO-OPERATION

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1. Name of the company
 2. Year of establishment
 3. Year of operation
 4. Form of company (public listed, private limited, partnership, joint-venture)
 5. List of partners:
 6. Ownership shared (in the beginning and today, in percentage)
 7. Address
 8. Telephone number
 9. Fax number
 10. Number and list of subsidiaries, and business lines.
 11. Number and list of suppliers, and products supplies.
 12. The philosophy of the company (written or not)
 13. Structure of the organisation
 14. List of subsidiaries and equity ownership.
 15. Product lines and services offered
 16. Marketing outlet
 17. Financial performance by year,
 18. Production performance by year, by products.
 19. Market development by year, by segments.
 20. Employees development by year
 21. Number and percentage of Japanese dispatched experts (from management team and from total employees)
-

Malaysian agencies:

1. Name of agency/ ministry: **MITI, VDP**
2. Address:.....
3. Tel.:.....4. Fax no:.....
5. Contact person:.....6. Informant:.....7. Designation:.....
8. Can you explain to me how Malaysian SMIs have been effectively linked with the MNCs.
9. So far, what does the response from MNCs look like.
10. Do you think MNCs willingly transfer their technology to us.
11. What problems do you anticipate arising from SMIs, MNCs and banks?
12. Is there any better way to develop Malaysian technology?

Terima kasih di atas kerjasama anda
Thank you very much for your co-operation.

Documentation collected from MITI:
Policy and objectives of MITI, activities, annual reports.

1. Name of agency/ ministry: **Malaysia Industrial Development Authority (MIDA)**
2. Address:.....
3. Tel.:.....4. Fax no:.....
5. Contact person:.....6. Informant:.....7. Designation:.....
8. Can you explain how MIDA ensures that transfer of technology from MNCs has taken place particularly within the foreign or joint venture companies. If yes, what are the problems faced? If not, what are the alternatives?
9. Do you send your officer to the factory sites to check how far the agreement to transfer the technology has taken place?
10. May I know the progress of the technology transfer agreement between MNCs and local companies?
11. Between Japanese, American and the Western MNCs, which are more open to transferring their technology?

Documents collected from MIDA:
Objective and functions, annual reports, report on electronic and car industries, reports on technology transfer agreements.

Terima kasih di atas kerjasama anda
Thank you very much for your co-operation

1. Name of agency/ ministry: **National Productivity Corporation (NPC).**
2. Address:.....
3. Tel.:.....4. Fax no:.....
5. Contact person:.....6. Informant:.....7. Designation:.....
7. When did NPC start promoting QCC activities in Malaysia?
8. How far it is practised by the industry, why?
9. What are the future plans in order to bring quality culture into the life of Malaysia?
10. What is the function of the national QCCs secretariat. How far it is effective?
11. So far how many circles have been registered and from which industry?
12. Can you explain to me the other Japanese management tools and techniques that your organisation delivers to the industries?
13. What is the NPC's role, and how does it perform it, in developing Malaysian SMIs (in relation with Proton vendor development programme)?

Terima kasih di atas kerjasama anda
Thank you very much for your co-operation

1. Name of agency/ ministry: **Economic Planning Unit (EPU).**
2. Address:.....
3. Tel.:.....4. Fax no:.....
5. Contact person:.....6. Informant:.....7. Designation:.....
8. To what extent is Official Development Assistance (ODA) important to the overall development of Malaysia?
9. Can you explain to me who have been the biggest donors of ODA since the beginning?
10. What is the main utilisation of this aid today compared with before?
11. Is technological development element covered by this aids? If so, how?

Terima kasih di atas kerjasama anda
Thank you very much for your co-operation

1. Name of agency/ ministry: **Ministry of Human Resources (MHR)/ Union section**
2. Address:.....
3. Tel.:.....4. Fax no:.....
5. Contact person:.....6. Informant:.....7. Designation:.....
8. Is it true that workers in electronics and electrical companies are not allowed to form unions inside the factories?
9. What are the reactions of MNCs to this regulation?
10. Do you think this policy is of more benefit to MNCs or to Malaysian workers and the country as a whole?

Terima kasih di atas kerjasama anda
Thank you very much for your co-operation

1. Name of agency/ ministry: **Malaysian Trade Union Congress (MTUC).**
2. Address:.....
3. Tel.:.....4. Fax no:.....
5. Contact person:.....6. Informant:.....7. Designation:.....
8. In the first place do you think all MNCs are positive towards unionism?
9. Of MNCs which are more hostile to unions?
10. I am doing a research on: To what extent the Japanese-Malaysian joint ventures are practising the best Japanese management techniques in Malaysia. From your observations are the Japanese keen to practice them here?
11. Why do you think they are not practising them here?
12. From your experiences, are Malaysian managers are more biased toward Japanese or Western ways of managing and developing Malaysia's human potentials?
13. Why is that so?

Terima kasih di atas kerjasama anda
Thank you very much for your co-operation

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1. Name of the agency:.....
 2. Year of establishment:.....
 3. Address:.....
 4. Tel. no:.....
 5. Fax no:.....
 5. Contact person:.....6. Informant:.....7. Designation:.....
 8. Total employees:.....Malaysian:.....Japanese:.....
 9. What are the objectives and the functions of the agency?
 10. What are the services offered?
 11. The achievement (of activities) since establishment.
 12. Do you operate your agency with the cooperation of Malaysians and how?
 13. In what way your agency is nurturing technology transfer?
 14. Do you operate your agency with the cooperation of other Japanese agencies or MNCs, and how?
 15. What are the main problems of working in Malaysia?
-

Japanese management techniques or JST propagated by NPC.

Appendix 7

Course	Duration	Fees in RM. per head
5 S for Productivity & Quality Improvement	1 day	100.00
TQC for Managers	3 days	375.00
QCC Appreciation Seminar for Top Management	1 day	125.00
Regional QCC Mini Convention	1 day	*
QCC for Facilitators	5 days	625.00
QCC Tools Workshop	2 days	200.00
New Management Tools for QCC	2 days	300.00
Evaluation of QCC Presentation	2 days	250.00
TQC for Supervisors	4 days	400.00
QCC Camp	3 days	*
Implementation of ISO 9000	1 day	150.00
National QCC Convention	3 days	*
Total Productive Maintenance	*	*

Source: Information Centre, NPC 1992.

Note: * To be confirmed by project managers.

1. Government agencies.

1. Japan International Co-operation Agency-JICA
2. Japan External Trade Organization-JETRO
3. Institute of Developing Economies-IDE
4. Employment Promotion Project Corporation
5. Metal Mining Agency of Japan-MMAJ
6. Japan national Oil Corporation-JNOC
7. The Overseas Economic Cooperation Fund-OECF
8. The Export-Import Bank of Japan-EXIM
9. The Japan Foundation
10. The Japan Chamber of Commerce & Industry-JCCI
11. Asian Productivity Organisation-APO
12. UNIDO Investment Promotion Service-IPS

2. Private Organisations.

1. The Association for Overseas Technical Scholarship-AOTS
 2. International Development Centre of Japan-IDCJ
 3. Japan Overseas Development Corporation-JODC
 4. Japan International Training Cooperation Organisation-JITCO
 5. Institute for International Studies and Training-IIST
 6. International Centre for Environment Technology Transfer-ICETT
 7. Energy Conservation Centre of Japan-ECC
 8. Pacific Resource Exchange Centre-PREX
 9. Interchange Association-IA
 10. The Japan-Thailand Economic Cooperation Society-JTECS
 11. Japan Cooperation Centre for Middle East
 12. Engineering Consulting Firms Association-ECFA
 13. Japan Consulting Institute-JCI
 14. The Federation of Economic Organisations
 15. Japan International Development Organisation-JAIDO
 16. The ILO Association of Japan, Inc
 17. Overseas Vocational Training Association-OVTA
 18. OISCA Industrial Development Body-OISCA
 19. Overseas Fishery Cooperation Foundation-OFCF
 20. The Overseas Construction Association of Japan, Inc
 21. Overseas Shipbuilding Cooperation Centre
 22. Overseas Electrical Industry Survey Institute
 23. Japan Overseas Enterprise Association - JOEA
 24. Japan Productivity Centre - JPC
 25. Japan Management Association - JMA
 26. Union of Japanese Scientists and Engineers - JUSE
 27. Japan Standards Association - JSA
 28. Association of International Education, Japan
 29. The Asian Students Cultural Association - ASCA
 30. The International Students Institute
 31. Japan International Association for the Exchange of Students for Technical Experience
 32. Asian Rural Institute
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Source: Chew 1993, appendix 1. p.129-130.

Companies	Equity	Business activities
<u>Sale distribution & after sale supports.</u>		
Proton Parts Centre	55%	The trading of motor vehicle components, spare parts and accessories.
PROTON Cars (Europe) Ltd.	56%	Facilitating marketing in Europe.
PROTON Cars (UK) Ltd.	70%	Facilitating marketing in the UK & Eire.
Proton Corporation Sdn.Bhd.	100%	To facilitate the sale of Proton vehicles in the domestic and export markets
<u>Manufacturing & of components</u>		
PHN Industry Sdn.Bhd.	35%	Stamping and sub-assembly of automotive metals components for PROTON cars
Aluminium Alloy Casting Sdn. Bhd.	25%	Development, manufacture, and sale of aluminium alloy casting products (alloy wheel, inlet manifold, engine diecast parts) using gravity and low pressure casting.
Ara Borgstena Sdn.Bhd	20%	Making car seats, design, manufacturing and sales of textiles and other related products
Marutech Elastomer Industries Sdn.Bhd.	25%	Manufacture of moulded products, extruded and rubber hoses for motor vehicles.
Technomeiji Rubber Sdn.Bhd.	25%	Manufacture of hydraulic brake hoses, power steering & fuel hoses for motor vehicles.
<u>Manufacturing & Assembling activities.</u>		
Usaha-sama PROTON-DRB Sdn.Bhd.(USPD)	30%	Develop, manufacture, market sale and distribute model variants of PROTON vehicles and other motor vehicles.
Vina Star Motor Corp.Vietnam	25%	Import, assembly & sales of automobile.
Proton Pilipinas Corporation	20%	Assembly and distribution of Proton vehicles in the Philippines
<u>Others.</u>		
Proton Properties Sdn.Bhd.*	100%	Property management and development
Average	45.0%	

Source: PROTON Corporate Profile 1994. Unless stated.

* Proton Focus October-December 1995

PROTON car exports by country by year (1986-1993)

Appendix 10

Countries	Year								Total
	1986	1987	1988	1989	1990	1991	1992	1993	
Bangladesh	25	73	40	37	1	0	0	5	181
Sri Lanka		43	47	0	0	0	0	0	90
Brunei		80	40	20	20	69	147	290	666
New Zealand		167	91	210	59	320	210	2	1,059
Malta		80	30	0	0	0	0	0	110
Jamaica			73	112	15	96	0	108	404
United Kingdom & Eire			540	10,670	11,666	12,667	16,423	18,525	70,491
Singapore				793	1,208	1,848	1,824	2,172	7,845
Nauru				12	12	0	0	0	24
Mauritius					150	90	158	120	518
Malawi						20	0	60	80
Fiji							13	7	20
Bantam Island							12	0	12
Trinidad & Tobago									52
Total	25	443	861	11,854	13,131	15,110	18,787	21,341	81,552

Source: PROTON Corporate Profile, 1994.

1. Physical, health, recreation and teamwork development programmes;

- 1.1 Adventure learning; rock climbing, jungle tracking, boating
- 1.2 Games and sports-interdepartmental, HICOM, and World Corporate level.

2. Knowledge and skills development programmes;

- 2.1 Orientation programme
- 2.2 Supervisory courses
- 2.3 Diploma in administration
- 2.4 QCC training
- 2.5 Robotics and machinery related training (e.g. electro-deposition (ED) tank, top coat booth)
- 2.6 On the job training (OJT) (e.g. casting, tooling, cylinder block, bearing cap, die casting)
- 2.7 General management (at Proton Training Centre and local training agencies)
- 2.8 Battery repair courses
- 2.9 Others

3. Values and morale development programmes;

- 3.1 Religious guidance classes
- 3.2 Symposium and marriage courses (2 times a year)
- 3.3 Leadership courses (how to lead congregational prayer)
- 3.4 Public service activities
- 3.5 Monthly religious talk (5-6 pm, for everybody)
- 3.6 Fasting month (lunch talks)
- 3.7 Biro 'Tata Negara' or National Biro programmes

4. Religious cohesiveness development programmes;

- 4.1 Family day
- 4.2 Aidul Fitr day (getting together to end the fasting month)
- 4.3 Daily congregation prayers
- 4.4 Friday congregation prayer
- 4.5 Funeral gifts and visits

5. Human Development or 'Bina Insan' program:

- 5.1 Jungle tracking, sport and games, productivity and quality action plan exercises, religious discussion and workshop, night prayer or 'qiam al lail' and daily congregational prayers.

However, these programmes (except programmes 2), were done not in proper and systematic ways. The objectives and benefits of each programme were not spelled out clearly. An evaluation (effects) of each programme (before and after) is not carried out., so that the effectiveness of these programmes is not properly measured. And the relationships of these programmes to work and managerial behaviour and productivity and quality of work is not linked. Therefore the significant effects of these programmes towards the development of employees motivation, creativity and productivity are little known.

Source: Human Resource Department, PROTON 1994.

1. Physical, health and recreation programmes.

- 1.1 Sports (within PERNEC group of companies and telecommunication industry).
- 1.2 Games (within PERNEC group of companies and telecommunication industry).
- 1.3 Gymnasium and aerobic

2. Knowledge and skill development programmes.

- 2.1 General (examples: Company Orientation, Effective performance appraisals, Office Productivity, Organisational Behaviour, Effective Business Correspondence Skills).
- 2.2 Skill (examples: PCM equipment, Data Voice Multiplexer-DVM, Digital Branching and Crossconnect-DBX, Sound Programme Channel, Synchronous Digital Hierarchy-SDH, leadership & Human Relation Skills, Reading Dynamic, Filling And Record Management).
- 2.3 Motivation (Examples: Motivation for higher productivity, Personality & Positive attitude, Excellency in Work Ethics, Motivational Leaderships).
- 2.4 Customer related courses (Examples: Developing Customer Service Excellence)
- 2.5 Safety related Courses (Examples: How To Establish A Safety Committee)
- 2.6 Management related courses (Examples: Counselling At Work Place, Financial & Accounting For Non-Financial Managers, Time Management For Executives, Contemporary Management Thinking, Excellency in Management of Conflicts and Stress, Excellency in Decision Making and Problem Solving, Man Power Planning And Personnel Audit, Project Management And Control).

3. Values and moral development programmes;

- 3.1 Weekday religious guidance classes
- 3.2 Public service activities
- 3.3 Fasting month (lunch talks)

4. Cohesiveness or groupism development programmes;

- 4.1 Family day
- 4.2 Aidul Fitr day (getting together to end the fasting month)
- 4.3 Daily congregation prayers
- 4.4 Friday congregation prayer
- 4.5 Funeral gifts and visits
- 4.6 Yearly Dinner
- 4.7 Departmental picnics

5. Total organisation performance (TOP) programmes (4 days outward bound programme).

- 5.1 Understanding Work Ethics and culture and their importance to PERNEC.
- 5.2 The comparison of several work ethics and culture among Western, Japanese and Muslims as an exposure.
- 5.3 Effective communication skills.
- 5.4 Collective and professional decision making skills.
- 5.5 The important of team work.
- 5.6 The inculcation of integrity, caring, sincerity, discipline, humility and innovation.
- 5.7 The increment of personnel trustworthiness.
- 5.8 The religious contribution towards enhancement of corporate image.
- 5.9 The preparation of action plan as a starting point towards improving the corporate image of PERNEC. This action plan will also be used as a reference, besides to ease the PERNEC training division in designing the follow up actions.

Source: Human Resource Department, PERNEC 1994.

Note: Except for programmes no.2, all programmes are offered to everybody.

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